

# ADDENDUM #1

Belleayre Mountain Ski Center

ORDA PIN: BEL.21.006

Admin Building Renovation and Gondola Maintenance Building Construction Project

Contract No.: BEL.21.006.100, 101, 102, & 103

Contract Name: General Trades Contract, Plumbing Contract, Electrical Contract, HVAC Contract

Item #	Item	Changes to Project Manual
1	00 11 14 Notice to Bidders	<b>DELETE:</b> <ul style="list-style-type: none"><li>• End of Questions: 19 May 2023 5:00 PM (Local Time)</li><li>• Addendum*: 23 May 2023 5:00 PM (Local Time)</li><li>• Bids Due: 30 May 2023 2:00 PM (Local Time)</li></ul> <b>ADD:</b> <ul style="list-style-type: none"><li>• End of Questions: 09 June 2023 5:00 PM (Local Time)</li><li>• Addendum*: 13 June 2023 5:00 PM (Local Time)</li><li>• Bids Due: 15 June 2023 2:00 PM (Local Time)</li></ul>

Q & A #	Questions & Answers
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RFI's will be answered in the next addendum.

NOTICE TO BIDDERS

Notice is hereby given that sealed bids will be received by the New York State Olympic Regional Development Authority (ORDA) up to the date and time as identified in the **Schedule of Important Dates and Times** and will be publicly opened and read at the ORDA Administration Building located at 37 Church Street, Lake Placid, NY 12946, in the Conference Room located on the First Floor.

**Mailing Address:** Olympic Regional Development Authority  
Attn: Office of Environmental, Planning and Construction  
37 Church Street  
Lake Placid, NY 12946

*(Overnight postal service to Lake Placid is typically not guaranteed by most carriers)*

*(Mailed bids shall be identified on the exterior of the envelope with the Project Identification Number and Name, and the Contract Identification Number and Name)*

Pursuant to Public Buildings Law § 8(6), effective January 11, 2020, for any projects where the project design commenced on or after January 1, 2020, and for any contracts over \$5,000 for the work of construction, reconstruction, alteration, repair, or improvement of any State building, a responsible and reliable NYS-certified Minority or Women-Owned Business Enterprise that submits a bid within ten percent (10%) of the lowest bid will be deemed the apparent low bidder provided that the bid is \$1,400,000 or less, as adjusted annually for inflation beginning January 1, 2020. If more than one responsible and reliable MWBE firm meets these requirements, the MWBE firm with the lowest bid will be deemed the apparent low bidder.

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**Project Name: Admin Building Renovation and Gondola Maintenance Building Construction Project**

<b>CIN: BEL.21.006.100</b>	<b>Contract Name: General Trades Contract</b>
<b>CIN: BEL.21.006.101</b>	<b>Contract Name: Plumbing Contract</b>
<b>CIN: BEL.21.006.102</b>	<b>Contract Name: Electrical Contract</b>
<b>CIN: BEL.21.006.103</b>	<b>Contract Name: HVAC Contract</b>

***See Section 01 10 02 "Summary of Work for Multiple Prime Contract" for a general description and the Technical Specification Sections for the specific descriptions.*** A general overview of the contract scope includes: All labor, tools, equipment, materials, temporary facilities and profit & overhead for the removal of the existing administration building's envelop elements, including but not limited to, exterior siding, associated flashings, soffit/eaves system and window systems. Areas where the exterior envelope was disturbed, increase thermal elements are added per contract documents. Proposed vestibules and additions shall include standing seam metal roof. The first floor plan includes a revised floor plan to address an open office floor plate and includes all new finishes throughout. Abatement scope has limited work, limited to isolated abatement of ACM transite ceiling panels. First floor shall include abatement of non-friable exterior acm caulk at windows, doors, wood siding and trim as indicated on the abatement drawings. Site improvements includes excavation and grading for revised parking, ADA entrances and a repaired gravel access drive that transitions to asphalt pavement east and west of the building. Asphalt parking accommodating 11 stalls including one accessible stall per code flanks the access drive. Revised building access includes accessible entry via concrete walk pavement and patio space south of the building. Stone line rip rap swales convey surface runoff from the norther mountainside around the existing building and have been sized to prevent erosion and maintain the new access drive. A stone drip strip is proposed at the building façade for splash protection and maintenance purposes.

Time is of the essence. Work shall be completed as per the Schedule of Important Dates and Times.



### Schedule of Important Dates and Times

- Notice to Bidders: **08 May 2023**
- Pre-Bid Site Visit: **12 May 2023 10:00 AM** (Local Time)
- End of Questions: ~~19 May 2023 5:00 PM~~ (Local Time) **09 June 2023 5:00 PM** (Local Time)
- Addendum\*: ~~23 May 2023 5:00 PM~~ (Local Time) **13 June 2023 5:00 PM** (Local Time)
- Bids Due: ~~30 May 2023 2:00 PM~~ (Local Time) **15 June 2023 2:00 PM** (Local Time)
- Substantial Completion: **200** Calendar Days from the Notice of Award
- Final Completion: **320** Calendar Days from the Notice of Award

\*Latest targeted date of Addendum release. Owner may release Addendum prior or later if required.

### Project Cost Estimate

- General Trades Contract (G): **\$1,000,000 - \$1,500,000**  
*In Words: **One Million to One Million, Five Hundred Thousand Dollars***
- Plumbing Contract (P): **\$50,000 - \$100,000**  
*In Words: **Fifty Thousand to One Hundred Thousand Dollars***
- Electrical Contract (E): **\$100,000 - \$200,000**  
*In Words: **One Hundred Thousand to Two Hundred Thousand Dollars***
- HVAC Contract (H): **\$100,000 - \$200,000**  
*In Words: **One Hundred Thousand to Two Hundred Thousand Dollars***

### Bidding Documents and Registered Bidders

Only Registered Bidders will be allowed to submit a Bid. To become a Registered Bidder and to obtain Bidding Documents, the following information shall be submitted: Organizational Name and Mailing Address, Primary and Secondary Contact Names, Phone Numbers and Email Addresses. Designation of a Secondary Contact is **MANDATORY**.

### Requests shall be sent in writing to:

Olympic Regional Development Authority  
Office of Environmental, Planning and Construction  
***BEL.21.006 Admin Building Renovation and Gondola Maintenance Building Construction Project***  
37 Church Street, Lake Placid, NY 12946  
or email\* to [projects@orda.org](mailto:projects@orda.org)

***\*ORDA cannot be held responsible for email requests that are not received.***

Bidding documents will be distributed electronically.

### Designated Contacts

In compliance with the Procurement Lobbying Law (State Finance Law § 139-j), Designated Contacts have been assigned by ORDA for this procurement solicitation and may be reached by email for all inquiries regarding this solicitation.

Matt Lynch  
Olympic Regional Development Authority  
37 Church Street  
Lake Placid, NY 12946

E-Mail: [Projects@orda.org](mailto:Projects@orda.org)

In the event that the designated contact is not available, the ALTERNATE designated contact(s) are:

Kirk Bassarab  
Olympic Regional Development Authority  
37 Church Street  
Lake Placid, NY 12946  
E-Mail: [Projects@orda.org](mailto:Projects@orda.org)

ORDA reserves the right to cancel the Bidding Process and to not accept any and all Bids received in response to this Request for Bids without explanation.

Bidding Documents may be examined at the following locations:

The New York State Contract Reporter  
<https://www.nyscr.ny.gov>

ORDA Website  
<https://orda.org/do-business/environmental-planning-construction/>

Bidding Contract Documents have been shared with the following organizations:

CMD (formerly Reed)  
(subscribers only) view: [www.cmdgroup.com](http://www.cmdgroup.com)

Dodge Reports  
[www.dodgeprojects.construction.com](http://www.dodgeprojects.construction.com)

iSqFt  
[www.isqft.com](http://www.isqft.com)

Bid Clerk  
[www.bidlcerk.com](http://www.bidlcerk.com)

Construction Journals  
[www.constructionjournals.com](http://www.constructionjournals.com)

Southern Tier Builders Association, Inc.  
65 East Main Street, Falconer, NY 14733-1397

Construction Contractors Association of the Hudson Valley, Inc.  
330 Meadow Avenue, Newburgh, NY 12550

Syracuse Builders Exchange  
6563 Ridings Road, Syracuse NY 13206

Minority Contractors Association of Central NY  
2610 South Salina Street, Suite 7, Syracuse, NY 13205  
Email: [stevenecoker@rocketmail.com](mailto:stevenecoker@rocketmail.com)

Northern NY Builders Exchange [www.nnybe.com](http://www.nnybe.com)

Mohawk Valley Builders Exchange  
10 Main Street, Suite 202, Whitesboro, NY 13492

Associated Bldg. Contractors of the Triple Cities, Inc.  
15 Belden Street, Binghamton NY 13903-2159

Eastern Contractors Association  
6 Airline Drive, Albany NY 12205

NYS Association of Minority Contractors  
Brooklyn Navy Yard Bldg. 280, 4<sup>th</sup> Fl, Brooklyn NY 11205

**By Order of the Olympic Regional Development Authority**



NEW YORK STATE  
**OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY**

## Project Manual

**PIN: BEL.21.006**

**Project Name: Admin Building Renovation and Gondola Maintenance  
Building Construction Project**

**CIN: BEL.21.006.100**

**Contract Name: General Trades Contract**

**CIN: BEL.21.006.101**

**Contract Name: Plumbing Contract**

**CIN: BEL.21.006.102**

**Contract Name: Electrical Contract**

**CIN: BEL.21.006.103**

**Contract Name: HVAC Contract**

**Olympic Regional Development Authority  
37 Church Street  
Lake Placid, New York 12946**

**Date 08 May 2023**

**Presented By:**

Olympic Regional Development Authority  
Office of Environmental, Planning & Construction  
37 Church Street, Lake Placid New York 12946

**Prepared By:**

QPK Design, LLP  
450 South Salina Street  
Syracuse, NY 13201

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PLANROOM COPY NOT FOR BIDDING

**PROJECT NO. BEL.21.006**

**GENERAL WORK**

**PREPARED BY**  
QPK Design, LLP  
450 South Salina Street  
Syracuse, NY 13219

**USOPCTC Renovation Project  
Belleayre Administration Building, Remote  
Restroom, Gondola and Storage Building**

**Olympic Regional Development Authority  
Olympic Center, Lake Placid, New York, 12946**

**February 14, 2022**

**PREPARED FOR**  
New York State  
Olympic Regional Development Authority  
2634 Main Street  
Lake Placid, NY 12946



**TABLE OF CONTENTS**

**DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

00 01 01	Title Page (Cover)
00 01 05	Certification Page
00 01 10	Table of Contents
00 11 14	Notice to Bidders
00 21 00	Bid Forms <ul style="list-style-type: none"><li>• Dormitory Renovation General Trades Contract (G) CIN: BEL.21.006.101.</li><li>• Dormitory Renovation Electrical Contract (E) CIN: BEL.21.006.102</li><li>• Dormitory Renovation Heating, Ventilation and Air Conditioning Contract (H) CIN: BEL.21.006.103.</li><li>• Dormitory Renovation Plumbing Contract (P) CIN: BEL.21.006.104.</li></ul>
00 21 11	Addendum Acknowledgement
00 21 12	Procurement Requirements & Certifications
00 21 13	Instructions to Bidders
00 22 13	Supplemental Information and Instructions to Multi-Prime Bidders
00 22 13.1	MWBE EEO & SDVOB
00 22 14	Interested Vendors MWBE and SDVOB (Non editable)
00 31 13	Reference Summary Project Schedule
00 31 26	Existing Hazardous Material Information
00 43 13	Forms: Bid Bond
00 43 14	Form of Labor and Material Payment Bond
00 43 15	Form of Performance Bond (Non editable)
00 52 01	Site Access Agreement – Sub-Contractor
00 54 01	Conditional Waiver and Release for Progress Payment
00 54 02	Waiver and Release Upon Progress Payment
00 65 10	Affidavit – Worker’s Compensation (Non editable)
00 66 00	Form W9 – Request for Taxpayer ID and Certification (Non editable)
00 72 01	Standard Form of Agreement
00 72 13	General conditions
00 72 14	ORDA Standard Contract Terms
00 72 15	Standard Clauses for Contractor Default and Surety Takeover (Non editable)
00 73 01	Supplementary Conditions – Contractor’s Supervision (Non editable)
00 73 02	Insurance Requirements
00 73 23	NYS Vendor Responsibility Questionnaire For-Profit Construction

**DIVISION 01 – GENERAL REQUIREMENTS**

01 10 02	Summary of Work – Multi Prime Contract
01 10 03	Supplementary Conditions Summary of Work – Multiple Prime Contract Coordination
01 10 04	Digital Data Licensing Agreement
01 20 00	Cost Computations
01 21 02	Allowances Multi Prime
01 30 00	Administrative Requirements
01 31 13	Project Schedule
01 31 19	Project Meetings
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 41 10	Special Inspections and Testing
01 50 00	Change Orders and Field Orders
01 50 01	Change Order
01 50 02	Field Order
01 50 03	Work Change Directive
01 51 21	Construction Facilities & Temporary Controls
01 51 23	Construction Heat and Temporary Heat
01 52 13	ORDA Field Office
01 57 20	Temporary Maintenance of Sewer Flows and Sewer Service
01 60 00	Product Requirements
01 71 23	Field Engineering
01 73 29	Removals Cutting and Patching
01 74 23	Pre-Occupancy Cleaning
01 77 16	Contract Closeout
01 91 13	General Commissioning Requirements

**DIVISION 02 - EXISTING CONDITIONS**

02 41 19	Selective Demolition
02 82 13	Asbestos Abatement

**DIVISION 03 - CONCRETE**

03 10 00	Concrete Forming and Accessories
03 20 00	Concrete Reinforcing
03 30 00	Cast-in-Place Concrete

**DIVISION 05 - METALS**

05 12 00	Structural Steel Framing
----------	--------------------------

**DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

06 10 00	Rough Carpentry
06 15 33	Wood Patio Decking
06 16 00	Sheathing
06 16 13	Insulating Sheathing
06 17 53	Shop Fabricated Wood Trusses
06 20 23	Interior Finish Carpentry



06 41 16 Plastic-Laminate-Clad Architectural Cabinets

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

07 13 26 Self-Adhering Sheet Waterproofing  
07 21 00 Thermal Insulation  
07 26 00 Vapor Retarders  
07 31 13 Asphalt Shingles  
07 41 13 Standing-Seam Metal Roof Panels  
07 41 16 Insulated Metal Roof Panels  
07 42 13 Insulated Metal Wall Panels  
07 46 46 Fiber Cement Siding  
07 62 00 Sheet Metal Flashing and Trim  
07 92 00 Joint Sealants

**DIVISION 08 - OPENINGS**

08 11 13 Hollow Metal Doors and Frames  
08 14 16 Flush Wood Doors  
08 14 35 Wood Terrace Doors  
08 33 23 Overhead Coiling Door  
08 54 13 Fiberglass Windows  
08 71 00 Door Hardware  
08 80 00 Glazing

**DIVISION 09 – FINISHES**

09 29 00 Gypsum Board  
09 30 13 Ceramic Tiling  
09 65 13 Resilient Base and Accessories  
09 65 19 Resilient Tile Flooring  
09 68 13 Tile Carpeting  
09 84 33 Sound-Absorbing Wall Panels  
09 91 13 Exterior Painting  
09 91 23 Interior Painting

**DIVISION 10 – SPECIALTIES**

10 28 00 Toilet, Bath and Laundry Accessories

**DIVISION 12 - FURNISHINGS**

12 36 61 Solid Surfacing Countertops

**DIVISION 22 - PLUMBING**

22 00 10 General Requirements for Plumbing  
22 05 18 Escutcheons for Plumbing Piping  
22 05 23.12 Ball Valves for Plumbing Piping  
22 05 29 Hangers and Supports for Plumbing Piping and Equipment  
22 05 53 Identification for Plumbing Piping and Equipment  
22 07 19 Plumbing Piping Insulation

- 22 13 16 Sanitary Waste and Vent Piping
- 22 13 19 Sanitary Waste Piping Specialties
- 22 42 13.13 Commercial Water Closets
- 22 42 16.13 Commercial Lavatories
- 22 41 16.16 Commercial Sinks
- 22 47 16 Pressure Water Coolers

**DIVISION 23 - MECHANICAL**

- 23 00 10 General Requirements for HVAC
- 23 05 13 Common Motor Requirements for HVAC Equipment
- 23 05 17 Sleeves and Sleeve Seals for HVAC Piping
- 23 05 19 Meters and Gages for HVAC Piping
- 23 05 23.12 Ball Valves for HVAC Piping
- 23 05 23.13 Butterfly Valves for HVAC Piping
- 23 05 29 Hangers and Supports for HVAC Piping and Equipment
- 23 05 48.13 Vibration Controls for HVAC
- 23 05 53 Identification for HVAC Piping and Equipment
- 23 05 93 Testing, Adjusting and Balancing for HVAC
- 23 07 13 Duct Insulation
- 23 07 19 HVAC Piping Insulation
- 23 21 13 Hydronic Piping
- 23 21 16 Hydronic Piping Specialties
- 23 23 00 Refrigerant Piping
- 23 31 13 Metal Ducts
- 23 33 00 Air Duct Accessories
- 23 33 46 Flexible Ducts
- 23 37 13 Diffusers, Registers and Grilles
- 23 72 23.19 Packaged, Indoor, Fixed-Plate Energy-Recovery Units
- 23 81 29 Variable-Refrigerant-Flow HVAC Systems
- 23 82 36 Finned-Tube Radiation Heaters
- 23 82 39.19 Wall and Ceiling Unit Heaters

**DIVISION 26 – ELECTRICAL**

- 26 00 10 General Requirements for Electrical
- 26 00 15 Earth Moving for Electrical
- 26 05 00 Common Work Results for Electrical
- 26 05 19 Low-Voltage Electrical Power Conductors and Cables
- 26 05 26 Grounding and Bonding for Electrical Systems
- 26 05 29 Hangers and Supports for Electrical Systems
- 26 05 33 Raceways and Boxes for Electrical Systems
- 26 05 43 Underground Ducts and Raceways for Electrical Systems
- 26 05 53 Identification for Electrical Systems
- 26 09 23 Lighting Control Devices
- 26 20 00 Low-Voltage Electrical Transmissions
- 26 27 26 Wiring Devices
- 26 51 00 Interior Lighting
- 26 56 00 Exterior Lighting
- 26 95 33 Heat Tracing for Roof Gutter System

**DIVISION 27 – COMMUNICATIONS**

27 14 50 Data Network System

**DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

28 13 00 Access Control  
28 31 10 Fire Alarm Systems

**DIVISION 31 - EARTHWORK**

31 10 00 Site Clearing  
31 20 00 Earth Moving  
31 20 10 Stormwater Pollution Prevention (SWPP)

**DIVISION 32 - EXTERIOR IMPROVEMENTS**

32 12 16 Asphalt Paving  
32 13 13 Concrete Paving  
32 13 73 Concrete Paving Joint Sealants  
32 17 23 Pavement markings  
32 17 26 Tactile Warning Surfacing  
32 32 00 Traffic Control Signage  
32 92 00 Turf and Grasses

**DIVISION 33 - UTILITIES**

33 42 00 Stormwater Conveyance

**APPENDIX**

- Prevailing Wage Schedule
- Hazardous Materials Report

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Kirk Bassarab  
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Dodge Reports  
[www.dodgeprojects.construction.com](http://www.dodgeprojects.construction.com)

iSqFt  
[www.isqft.com](http://www.isqft.com)

Bid Clerk  
[www.bidlcerk.com](http://www.bidlcerk.com)

Construction Journals  
[www.constructionjournals.com](http://www.constructionjournals.com)

Southern Tier Builders Association, Inc.  
65 East Main Street, Falconer, NY 14733-1397

Construction Contractors Association of the Hudson Valley, Inc.  
330 Meadow Avenue, Newburgh, NY 12550

Syracuse Builders Exchange  
6563 Ridings Road, Syracuse NY 13206

Minority Contractors Association of Central NY  
2610 South Salina Street, Suite 7, Syracuse, NY 13205  
Email: [stevencoker@rocketmail.com](mailto:stevencoker@rocketmail.com)

Northern NY Builders Exchange [www.nnybe.com](http://www.nnybe.com)

Mohawk Valley Builders Exchange  
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Associated Bldg. Contractors of the Triple Cities, Inc.  
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Eastern Contractors Association  
6 Airline Drive, Albany NY 12205

NYS Association of Minority Contractors  
Brooklyn Navy Yard Bldg. 280, 4<sup>th</sup> Fl, Brooklyn NY 11205

**By Order of the Olympic Regional Development Authority**

**BID FORM**  
DETACH AND USE THIS FORM

**BID FORM FOR:****PIN: BEL.21.006**

**Project Name:** Admin Building Renovation and Gondola Maintenance Office of Environmental, Planning and Construction  
Building Construction Project

**CIN:** ARN.21.006.100**Contract Name:** General Trades Contract*Belleayre Mountain Ski Center**181 Galli Curci Road**Highmount, NY 12441*

New York State  
Olympic Regional Development Authority  
37 Church Street  
Lake Placid, NY 12946

**THIS IS A 3 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.**

THE NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY (ORDA) RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY IN THE AMOUNT STATED IN THE INSTRUCTION TO BIDDER.

The Undersigned agrees to complete the Work within the time stated in Notice to Bidders – Schedule of Important Dates and Times

The Undersigned acknowledges the Undersigned's understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation set forth in the Supplementary Conditions. The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise participation set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided and understands that time is of the essences.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the ORDA and the Undersigned does not submit executed copies of the Agreement **WITHIN 48 HOURS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT**. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of signatory's knowledge and belief:

(1) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his official duties."

(2) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link: <https://ogs.ny.gov/iran-divestment-act-2012>.

(3) In accordance with Section 165(5) of the State Finance Law, the bidder or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

a) have business operations in Northern Ireland Yes ☐ No ☐ and if yes:

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 1 of 3



- Yes ☐ No ☐

☐ ORDA Discrimination and Sexual Harassment Policy  
☐ Certificate of Non-Collusion  
☐ Code of Business Ethics Certification  
☐ Freedom of Information Law Certification  
☐ Offerer's Affirmation of Understanding of, and Agreement Pursuant to,  
     State Finance Law §139-j(3) & §139-j(6)(b) (Procurement Lobbying)  
☐ Offerer's Disclosure of Prior Non-Responsibility Determinations  
☐ State Finance Law § 139-l and Executive Order No. 177 Certifications  
☐ Encouraging Use of New York State Businesses in Contract Performance  
☐ Certification Under Executive Order No. 16  
     (Prohibiting Contracting with Businesses Conducting Business in Russia)

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

1. All Work except Allowance(s) and Add Alternates \$                     .00

2. Allowance – Field Order (As described in Document 01 21 01) \$ 115,000.00  
(in words: *One Hundred Fifteen Thousand Dollars and No Cents*)

**Base Bid Amount (Sum of 1. & 2.)** \$                     .00  
(In words: \_\_\_\_\_)

Yes ☐ No ☐

Yes ☐ No ☐

SDVOB Certification file No.

SIGN BID HERE \_\_\_\_\_

Authorized Signature

PRINT NAME OF SIGNER \_\_\_\_\_

TITLE OF SIGNER \_\_\_\_\_

OFFICIAL COMPANY NAME \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

Street

City

State

Zip Code

TELEPHONE NO. \_\_\_\_\_ FAX NO. \_\_\_\_\_

Area Code

Area Code

E-MAIL ADDRESS \_\_\_\_\_

FEDERAL EMPLOYER I.D. NO. \_\_\_\_\_

\*\*\*\*\*

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 3 of 3

**BID FORM**  
DETACH AND USE THIS FORM

**BID FORM FOR:****PIN: BEL.21.006**

**Project Name:** Admin Building Renovation and Gondola Maintenance Office of Environmental, Planning and Construction  
Building Construction Project

**CIN:** ARN.21.006.101**Contract Name:** Plumbing Contract*Belleayre Mountain Ski Center**181 Galli Curci Road**Highmount, NY 12441*

New York State  
Olympic Regional Development Authority  
37 Church Street  
Lake Placid, NY 12946

**THIS IS A 3 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.**

THE NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY (ORDA) RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY IN THE AMOUNT STATED IN THE INSTRUCTION TO BIDDER.

The Undersigned agrees to complete the Work within the time stated in Notice to Bidders – Schedule of Important Dates and Times

The Undersigned acknowledges the Undersigned's understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation set forth in the Supplementary Conditions. The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise participation set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided and understands that time is of the essences.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the ORDA and the Undersigned does not submit executed copies of the Agreement **WITHIN 48 HOURS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT**. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of signatory's knowledge and belief:

(1) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his official duties."

(2) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link: <https://ogs.ny.gov/iran-divestment-act-2012>.

(3) In accordance with Section 165(5) of the State Finance Law, the bidder or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

a) have business operations in Northern Ireland Yes ☐ No ☐ and if yes:

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 1 of 3

- Yes ☐ No ☐

☐ ORDA Discrimination and Sexual Harassment Policy  
☐ Certificate of Non-Collusion  
☐ Code of Business Ethics Certification  
☐ Freedom of Information Law Certification  
☐ Offerer's Affirmation of Understanding of, and Agreement Pursuant to,  
     State Finance Law §139-j(3) & §139-j(6)(b) (Procurement Lobbying)  
☐ Offerer's Disclosure of Prior Non-Responsibility Determinations  
☐ State Finance Law § 139-l and Executive Order No. 177 Certifications  
☐ Encouraging Use of New York State Businesses in Contract Performance  
☐ Certification Under Executive Order No. 16  
     (Prohibiting Contracting with Businesses Conducting Business in Russia)

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

1.	All Work except Allowance(s) and Add Alternates	\$	<u>                    .00</u>
2.	Allowance – Field Order (As described in Document 01 21 01) <i>(in words: Six Thousand Dollars and No Cents)</i>	\$	<u>          6,000.00</u>
	<b>Base Bid Amount (Sum of 1. &amp; 2.)</b> <i>(in words: )</i>	\$	<u>                    .00</u>

Yes ☐ No ☐

Yes ☐ No ☐

SDVOB Certification file No.

SIGN BID HERE \_\_\_\_\_

Authorized Signature

PRINT NAME OF SIGNER \_\_\_\_\_

TITLE OF SIGNER \_\_\_\_\_

OFFICIAL COMPANY NAME \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

Street

City

State

Zip Code

TELEPHONE NO. \_\_\_\_\_ FAX NO. \_\_\_\_\_

Area Code

Area Code

E-MAIL ADDRESS \_\_\_\_\_

FEDERAL EMPLOYER I.D. NO. \_\_\_\_\_

\*\*\*\*\*

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 3 of 3

**BID FORM**  
DETACH AND USE THIS FORM

**BID FORM FOR:****PIN: BEL.21.006**

**Project Name:** Admin Building Renovation and Gondola Maintenance Office of Environmental, Planning and Construction  
Building Construction Project

**CIN:** ARN.21.006.102**Contract Name:** Electrical Contract*Belleayre Mountain Ski Center**181 Galli Curci Road**Highmount, NY 12441*

New York State

Olympic Regional Development Authority

37 Church Street

Lake Placid, NY 12946

**THIS IS A 3 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.**

THE NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY (ORDA) RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY IN THE AMOUNT STATED IN THE INSTRUCTION TO BIDDER.

The Undersigned agrees to complete the Work within the time stated in Notice to Bidders – Schedule of Important Dates and Times

The Undersigned acknowledges the Undersigned's understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation set forth in the Supplementary Conditions. The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise participation set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided and understands that time is of the essences.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the ORDA and the Undersigned does not submit executed copies of the Agreement **WITHIN 48 HOURS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT**. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of signatory's knowledge and belief:

(1) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his official duties."

(2) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link: <https://ogs.ny.gov/iran-divestment-act-2012>.

(3) In accordance with Section 165(5) of the State Finance Law, the bidder or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

a) have business operations in Northern Ireland Yes ☐ No ☐ and if yes:

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 1 of 3

- b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland and shall permit independent monitoring of compliance with such principles.

Yes ☐ No ☐

(4) The bidder has completed and submits with its bid the following Procurement Requirements/Certifications (Document 00 21 12):

- ☐ ORDA Discrimination and Sexual Harassment Policy  
☐ Certificate of Non-Collusion  
☐ Code of Business Ethics Certification  
☐ Freedom of Information Law Certification  
☐ Offerer's Affirmation of Understanding of, and Agreement Pursuant to,  
State Finance Law §139-j(3) & §139-j(6)(b) (Procurement Lobbying)  
☐ Offerer's Disclosure of Prior Non-Responsibility Determinations  
☐ State Finance Law § 139-l and Executive Order No. 177 Certifications  
☐ Encouraging Use of New York State Businesses in Contract Performance  
☐ Certification Under Executive Order No. 16  
(Prohibiting Contracting with Businesses Conducting Business in Russia)

Addendum to the Contract Documents are available from the Designated Contact. The Undersigned acknowledges receipt and review of all Addenda and has included Document 00 21 11 Addendum Acknowledgment with the Bid.

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

**BASE BID**

1. All Work except Allowance(s) and Add Alternates \$                     .00

2. Allowance – Field Order (As described in Document 01 21 01) \$           18,000.00  
(in words: *Eighteen Thousand Dollars and No Cents*)

**Base Bid Amount (Sum of 1. & 2.)** \$                     .00  
(in words: \_\_\_\_\_)

Is your firm a NYS-Certified Minority/Women-Owned Business Enterprise (MWBE)?

Yes ☐ No ☐

MWBE Certification file No. \_\_\_\_\_

Is your firm a NYS-Certified Service-Disabled Veteran Owned Business (SDVOB)?

Yes ☐ No ☐

SDVOB Certification file No. \_\_\_\_\_

SIGN BID HERE \_\_\_\_\_

Authorized Signature

PRINT NAME OF SIGNER \_\_\_\_\_

TITLE OF SIGNER \_\_\_\_\_

OFFICIAL COMPANY NAME \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

Street

City

State

Zip Code

TELEPHONE NO. \_\_\_\_\_ FAX NO. \_\_\_\_\_

Area Code

Area Code

E-MAIL ADDRESS \_\_\_\_\_

FEDERAL EMPLOYER I.D. NO. \_\_\_\_\_

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Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 3 of 3



**BID FORM**  
DETACH AND USE THIS FORM

**BID FORM FOR:****PIN: BEL.21.006**

**Project Name:** Admin Building Renovation and Gondola Maintenance Office of Environmental, Planning and Construction  
Building Construction Project

**CIN:** ARN.21.006.103**Contract Name:** Heating Ventilation and Air Conditioning Contract*Belleayre Mountain Ski Center**181 Galli Curci Road**Highmount, NY 12441*

New York State  
Olympic Regional Development Authority  
37 Church Street  
Lake Placid, NY 12946

**THIS IS A 3 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.**

THE NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY (ORDA) RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY IN THE AMOUNT STATED IN THE INSTRUCTION TO BIDDER.

The Undersigned agrees to complete the Work within the time stated in Notice to Bidders – Schedule of Important Dates and Times

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The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation set forth in the Supplementary Conditions. The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise participation set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided and understands that time is of the essences.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the ORDA and the Undersigned does not submit executed copies of the Agreement **WITHIN 48 HOURS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT**. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

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(1) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his official duties."

(2) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link: <https://ogs.ny.gov/iran-divestment-act-2012>.

(3) In accordance with Section 165(5) of the State Finance Law, the bidder or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

a) have business operations in Northern Ireland Yes ☐ No ☐ and if yes:

- b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland and shall permit independent monitoring of compliance with such principles.

Yes ☐ No ☐

(4) The bidder has completed and submits with its bid the following Procurement Requirements/Certifications (Document 00 21 12):

- ☐ ORDA Discrimination and Sexual Harassment Policy
- ☐ Certificate of Non-Collusion
- ☐ Code of Business Ethics Certification
- ☐ Freedom of Information Law Certification
- ☐ Offerer's Affirmation of Understanding of, and Agreement Pursuant to,  
State Finance Law §139-j(3) & §139-j(6)(b) (Procurement Lobbying)
- ☐ Offerer's Disclosure of Prior Non-Responsibility Determinations
- ☐ State Finance Law § 139-l and Executive Order No. 177 Certifications
- ☐ Encouraging Use of New York State Businesses in Contract Performance
- ☐ Certification Under Executive Order No. 16  
(Prohibiting Contracting with Businesses Conducting Business in Russia)

Addendum to the Contract Documents are available from the Designated Contact. The Undersigned acknowledges receipt and review of all Addenda and has included Document 00 21 11 Addendum Acknowledgment with the Bid.

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

**BASE BID**

1. All Work except Allowance(s) and Add Alternates \$                     .00

2. Allowance – Field Order (As described in Document 01 21 01) \$           11,000.00  
(in words: *Eleven Thousand Dollars and No Cents*)

**Base Bid Amount (Sum of 1. 2. & 3.)** \$                     .00

(in words: \_\_\_\_\_)

Is your firm a NYS-Certified Minority/Women-Owned Business Enterprise (MWBE)?

Yes ☐ No ☐

MWBE Certification file No. \_\_\_\_\_

Is your firm a NYS-Certified Service-Disabled Veteran Owned Business (SDVOB)?

Yes ☐ No ☐

SDVOB Certification file No. \_\_\_\_\_

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 2 of 3

SIGN BID HERE \_\_\_\_\_

Authorized Signature

PRINT NAME OF SIGNER \_\_\_\_\_

TITLE OF SIGNER \_\_\_\_\_

OFFICIAL COMPANY NAME \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

Street

City

State

Zip Code

TELEPHONE NO. \_\_\_\_\_ FAX NO. \_\_\_\_\_

Area Code

Area Code

E-MAIL ADDRESS \_\_\_\_\_

FEDERAL EMPLOYER I.D. NO. \_\_\_\_\_

\*\*\*\*\*

Olympic Regional Development Authority

Bid Form

01 21 00 (2023V1)

Page 3 of 3

ADDENDUM ACKNOWLEDGEMENT

**PIN:**  
**Project Name:**  
**CIN:**  
**Contract Name:**

I, the undersigned, do hereby affirm that I have received and fully reviewed the information provided in the below Addendum and that these documents are now incorporated into the Project Bid Documents.

Addendum 1 Acknowledgment (as needed) \_\_\_\_\_

Addendum 2 Acknowledgment (as needed) \_\_\_\_\_

Addendum 3 Acknowledgment (as needed) \_\_\_\_\_

Addendum 4 Acknowledgment (as needed) \_\_\_\_\_

Addendum 5 Acknowledgment (as needed) \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

**DOCUMENT 00 21 12**

**Procurement Requirements/Certifications**

- ☐ **ORDA Discrimination and Sexual Harassment Policy**
- ☐ **Certificate of Non-Collusion**
- ☐ **Code of Business Ethics Certification**
- ☐ **Freedom of Information Law Certification**
- ☐ **Offerer's Affirmation of Understanding of, and Agreement Pursuant to, State Finance Law §139-j(3) & §139-j(6)(b) (Procurement Lobbying)**
- ☐ **Offerer's Disclosure of Prior Non-Responsibility Determinations**
- ☐ **State Finance Law § 139-l and Executive Order No. 177 Certifications**
- ☐ **Encouraging Use of New York State Businesses in Contract Performance**
- ☐ **Certification Under Executive Order No. 16 (Prohibiting Contracting with Businesses Conducting Business in Russia)**

## **ORDA Discrimination and Sexual Harassment Policy**

It is the policy of the New York State Olympic Regional Development Authority (ORDA) to provide and maintain a working environment free of sexual and/or any other illegal harassment, discrimination, and/or intimidation of any employee, job applicant, or non-employee. We do not accept or condone illegal discriminatory actions nor actions of sexual harassment by management or any employee of ORDA, or by non-employees.

Discrimination and sexual harassment are illegal under Title VII of the Civil Rights Act of 1964, as amended (Title VII), and the New York State Human Rights Law, as amended (Human Rights Law).

The Human Rights Law applies to all State agencies and employees, and provides very broad anti-discrimination coverage. The Law provides, in section 296.1(a), that it is an unlawful discriminatory practice “[f]or an employer or licensing agency, because of the age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status or domestic violence victim status of any individual, to refuse to hire or employ or to bar or to discharge from employment such individual or to discriminate against such individual in compensation or in terms, conditions or privileges of employment.” The Law further provides, in sections 296.15 and 296.16, protections from employment discrimination for persons with prior conviction records, or prior arrests, youthful offender adjudications or sealed records.

ORDA will not tolerate any discriminatory and/or harassment of its employees which is in violation of either Title VII and/or the Human Rights Law, and will take affirmative steps to stop it. All personnel actions and conditions of employment are administered without regard to race, color, religion, national origin, age, sex, disability, veteran status or sexual preference, and any other protected class under Title VII and/or the Human Rights Law as they may be amended from time to time. Furthermore, Sexual harassment in any form is prohibited and will not be tolerated. Anyone who engages in illegal discrimination/ harassment, or sexual harassment will be subject to discipline up to and including discharge. Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, or other conduct, either verbal or physical, of a sexual nature that is offensive to another individual.

You have the right to make a complaint if you feel you have been discriminated against, harassed, or sexually harassed. A complaint form may be obtained from the Human Resource Department. Directions on how to file a complaint and who to submit it to are contained on the form itself. An immediate investigation of the allegations will be conducted, and corrective action taken where warranted. To the extent possible, this investigation will be conducted in a confidential manner that protects the identity of both the person filing the complaint and the person accused.

If it is determined that an employee is guilty of harassing another employee, or non-employee, appropriate disciplinary action will be taken against the offending person.

ORDA prohibits any form of retaliation against any contractors or employee who files a bona fide complaint or witnesses assisting in an investigation.

You may request further information about the policy and procedure for investigating claims of sexual harassment and/or discrimination from the Human Resource Department.

I have read the foregoing and agree to comply with the ORDA's Discrimination and Sexual Harassment Policy. I further acknowledge that failure to comply shall justify contract termination by ORDA and may result in the rejection of bids or proposals for future work with ORDA.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

### Certificate of Non-Collusion

The undersigned recognizes that all information and material provided with this proposal and all other information and material submitted by the undersigned in connection with its proposal are submitted for the express purpose of inducing the New York State Olympic Regional Development Authority (ORDA) to award a contract to the undersigned; acknowledges that ORDA, the State of New York (State), and the State's agencies and instrumentalities may, each in its sole and absolute discretion, by any means which it may choose, determine the truth and accuracy of all statements made therein; acknowledges that intentional submission of false or misleading information may constitute a felony under Penal Law §210.40 or a misdemeanor under Penal Law §210.35 or §210.45, and may also be punishable by a fine of up to \$10,000 or imprisonment of up to five years under 18 U.S.C. §1001; and states that the information submitted is true, accurate and complete.

By submission of this statement of interest, bidder and each person signing on behalf of bidder certifies, and in the case of a joint proposal each party thereto certifies as to his or her own organization under penalty of perjury, that to the best of his or her knowledge and belief:

- (1) The prices, amounts and material in this proposal have been arrived at independently, without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices, amounts and materials with any other Respondent or with any competitor;
- (2) Unless otherwise required by law, the prices, amounts and material that have been quoted in this statement of interest or subsequent proposal have not been/will not be knowingly disclosed by bidder and will not knowingly be disclosed by bidder prior to award, directly or indirectly, to any other Respondent or to any competitor, and
- (3) No attempt has been made or will be made by bidder to induce any other person, partnership or corporation to submit or not to submit a proposal for the purpose of restricting competition.

Bidder hereby authorizes ORDA and the State and their agents and instrumentalities to contact bidder's bank(s) and credit references and any other persons identified in its submission, including without limiting the foregoing, all persons and entities identified in its Information Regarding Qualifications and Financial Capability form and any financial information, in connection with the proposal, and any and all other persons identified in any investigation conducted by or on behalf of the State, and obtain release of pertinent financial and other information, as well as to obtain verification of information provided by or on behalf of bidder.



By signing, you certify under penalty of perjury your express authority to sign on behalf of yourself, your company or other entity with full knowledge and acceptance of the above certifications and that all information provided is complete, true and accurate.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

PLANROOM COPY NOT FOR BIDDING

## Code of Business Ethics Certification

### A. Ethics Programs

1. The New York State Olympic Regional Development Authority (ORDA), a public-benefit corporation, expects the highest degree of ethical business conduct by its employees and the many contractors, consultants and vendors with whom it interacts on behalf of its clients, bondholders and the people of the State of New York. ORDA, by mandate of its Board of Directors, administers a comprehensive corporate integrity program to ensure that, as public officers, ORDA employees at all levels perform their official duties consistent with the requirements of the New York State Public Officers Law; other applicable laws, rules, and regulations; and policies of ORDA.

2. ORDA encourages and supports a fair, open and honest business relationship with its contractors, consultants and vendors based on quality, service and cost. Moreover, ORDA believes that a “level playing field” in the marketplace can only be achieved through adherence to ethical business practices by all participants involved in the process.

3. To promote a working relationship with ORDA based on ethical business practices, contractors, consultants and vendors are expected to:

- a. furnish all goods, materials and services to ORDA as contractually required and specified;
- b. submit complete and accurate reports to ORDA and its representatives as required;
- c. not seek, solicit, demand or accept any information, verbal or written, from ORDA or its representatives that provides an unfair advantage over a competitor;
- d. not engage in any activity or course of conduct that restricts open and fair competition on ORDA-related projects and transactions;
- e. not engage in any course of conduct with ORDA employees or representatives that constitutes a conflict of interest or creates the appearance of a conflict of interest;
- f. not offer any unlawful gifts or gratuities to ORDA employees or representatives, or engage in bribery or other criminal activity; and
- g. report to ORDA any activity by an ORDA employee or contractor, consultant or vendor of ORDA that is inconsistent with ORDA’s Code of Business Ethics.

4. ORDA encourages its contractors, consultants and vendors to advance and support ethical business conduct and practices among their respective directors, officers and employees, preferably through the adoption of corporate ethics awareness training programs and written codes of conduct. In addition to considering technical competence and financial stability, ORDA will consider the corporate integrity of all contractors, consultants and vendors prior to the awarding of contracts or issuing of purchase orders.

## **B. Conduct of ORDA Employees**

ORDA employees are expected to conduct business with contractors, consultants and vendors in a fair, consistent and professional manner. ORDA's Code of Business Ethics and Employee Conduct entitled Serving Responsibly, and other ORDA policies and procedures, guide the manner in which ORDA employees are required to interact with contractors, consultants and vendors. Additionally, the New York State Public Officers Law sets forth legal parameters within which ORDA employees must perform their official duties with respect to, among other things, conflicts of interest and the acceptance of gifts.

## **C. Limits on Gifts to ORDA Employees**

1. Pursuant to Section 73(5) of the Public Officers Law, no person shall offer any gift having more than a nominal value to an ORDA employee under circumstances in which it:

- a. could be reasonably inferred the gift was intended to influence the employee in the performance of his or her official duties; or
- b. could reasonably be expected to influence the employee in the performance of his or her official duties; or
- c. was intended as a reward for any official action on the part of the employee.

2. A gift is anything more than nominal in value, in any form, given to an ORDA employee. Gifts include, but are not limited to, money, service, loan, travel, lodging, meals, refreshments, entertainment, discount, forbearance or promise. Any firm or its agents, either doing business or seeking to do business with ORDA (contractors, consultants, vendors, etc.), is prohibited from directly or indirectly offering or giving any gifts, even gifts of nominal value, to ORDA employees as such gifts are deemed to be per se improper.

3. As is stated in the Prohibited Interests section of the Construction and Consultant Contract documents, violations of these gift provisions may be grounds for immediate contract termination and/or referral for civil action or criminal prosecution.

## **D. Employing Relatives of ORDA Employees**

Although contractors, consultants and vendors may employ relatives of ORDA employees, ORDA must be made aware of such circumstances as soon as possible, preferably in writing, to ensure a conflict of interest situation does not arise. ORDA reserves the right to request that contractors, consultants and vendors modify the work assignment of an ORDA employee's relative where a conflict of interest, or the appearance thereof, is deemed to exist. Please be advised that ORDA employees are required to disclose information regarding the hiring of relatives by contractors, consultants and vendors and recuse themselves from matters that may present a conflict of interest. For purposes of this document, the term "relatives" refers to spouses, domestic partners, parents, children, sisters, brothers, sisters-in-law, brothers-in-law, parents-in-law, sons/daughters-in-law, stepparents, stepchildren, aunts, uncles, nieces, nephews, first cousins, grandparents by blood relationship or by marriage, or persons residing in the same household.

## **E. Hiring Former ORDA Employees**

Contractors, consultants and vendors may hire former ORDA employees. However, as a general rule, former employees of ORDA may neither appear nor practice before ORDA, nor receive compensation for services rendered on a matter before ORDA, for a period of two years following their separation from

ORDA service. In addition, former ORDA employees are subject to a “lifetime bar” from appearing before ORDA or receiving compensation for services regarding any transaction in which they personally participated or which was under their active consideration during their tenure with ORDA. Violations will be referred to the New York State Commission on Public Integrity for appropriate action.

#### **F. Certification**

I have read the foregoing and agree to comply with ORDA’s Code of Business Ethics. I further acknowledge that failure to comply shall justify contract termination by ORDA and may result in the rejection of bids or proposals for future work with ORDA.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

### Freedom of Information Law Certification

The New York State Olympic Regional Development Authority (ORDA) is subject to the Freedom of Information Law (FOIL), which governs the process for the public disclosure of certain records maintained by ORDA (NY State Public Officers Law, Article 6 and regulations adopted pursuant thereto). In keeping with all submissions to ORDA, proposals and/or subsequent stages are subject to the FOIL process and accessible as public domain unless bidder secures an exemption.

Regarding exemption, bidders that submit materials to ORDA in response to this RFP may request that ORDA exclude all or part of such material from public disclosure pursuant to Section 87(2) (d) of the Public Officers Law, on the grounds that the material contains trade secrets, proprietary information, or that the information, if disclosed, would cause substantial injury to the competitive position of the individual or firm submitting the information. Such exception may extend to information contained in the request itself if public disclosure would defeat the purpose for which the exception is sought. To ensure consideration of an exemption request, the request should be written, placed on the final page of the submitted proposal, and state in detail the specific reasons for the requested exception. It must also clearly specify the specific material submitted, or portions thereof, for which the exception is requested. If ORDA grants the request for exception from disclosure, ORDA shall keep such material or portion thereof in a secure place.

If any bidder submits information which it believes to be a trade secret or otherwise exempt from disclosure under FOIL, it must specifically identify such information and state in writing the reasons why the information should be exempt from disclosure. Notwithstanding the foregoing, the State of New York and ORDA shall not be liable if either releases information, whether or not pursuant to FOIL, which bidder believes to be a trade secret or detrimental to its business.

The undersigned does hereby affirm on behalf of the bidder that it understands and agrees to the foregoing.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

**Offerer's Affirmation of Understanding of, and Agreement  
Pursuant to, State Finance Law §§ 139-j & §139-k  
(Procurement Lobbying)**

A complete copy of the Procurement Lobbying Guidelines of the New York State Olympic Regional Development Authority is available for review at: <https://media.orda.org/?r=18147&k=34f882f7d5>

The undersigned hereby affirms on behalf of the offerer that it has reviewed and understands the Procurement Lobbying Guidelines of the New York State Olympic Regional Development Authority relating to State Finance Law §§ 139-j and 139-k, and agrees to comply with said Guidelines.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

### Offerer's Disclosure of Prior Non-Responsibility Determinations

Name of Individual or Entity Submitting Bid:

\_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Name and Title of Person Submitting this Form: \_\_\_\_\_

1. Has any Governmental Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years? (Please circle):

No Yes

If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law §139-j (Please circle):

No Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity? (Please circle):

No Yes

4. If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below and attach additional pages as necessary.

Governmental Entity: \_\_\_\_\_

Date of Finding of Non-responsibility: \_\_\_\_\_

Basis of Finding of Non-Responsibility: \_\_\_\_\_

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? (Please circle):

No Yes

6. If yes, please provide details below and attach additional pages as necessary.

Governmental Entity: \_\_\_\_\_

Date of Termination or Withholding of Contract: \_\_\_\_\_

Basis of Termination or Withholding: \_\_\_\_\_

Offerer certifies that all information provided to the Governmental Entity with respect to State Finance Law §139-k is complete, true and accurate.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date



**Instructions for Completing  
Offerer's Disclosure of Prior Non-Responsibility Determinations Form**

**Background:**

New York State Finance Law §139-k(2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations with respect to State Finance Law §139-j. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law §163(9). In accordance with State Finance Law §139-k, an Offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity. The terms "Offerer" and "Governmental Entity" are defined in State Finance Law § 139-k(1). State Finance Law §139-j sets forth detailed requirements about the restrictions on Contacts during the procurement process. A violation of State Finance Law §139-j includes, but is not limited to, an impermissible Contact during the restricted period (for example, contacting a person or entity other than the designated contact person, when such contact does not fall within one of the exemptions).

As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether an Offerer fails to timely disclose accurate or complete information regarding the above non-responsibility determination. In accordance with law, no Procurement Contract shall be awarded to any Offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and that the Offerer is the only source capable of supplying the required Article of Procurement within the necessary timeframe. See State Finance Law §§139-j (10)(b) and 139-k(3).

**The above is not intended to replace the need for persons to become familiar with the full requirements of the law. Please refer to the full text of the law to resolve any questions you may have with regard to your conduct under it.**

**Instructions:**

ORDA includes this disclosure request regarding prior non-responsibility determinations in accordance with State Finance Law §139-k in its solicitation of proposals for procurement contracts. The attached form is to be completed and submitted by the individual or entity seeking to enter into an agreement with ORDA. Submission of this document is also required for any contract amendments over \$15,000.

**State Finance Law § 139-I and  
Executive Order No. 177 Certifications**

**N.Y. State Finance Law § 139-I**

By submission of this proposal, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint proposal each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

**Executive Order No. 177 Certification (Prohibiting Contracts with Entities that Fail to Address Discrimination)**

The New York State Human Rights Law, Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

By signing, you certify under penalty of perjury your express authority to sign on behalf of yourself, your company or other entity with full knowledge and acceptance of the above certifications and that all information provided is complete, true and accurate.

---

Printed Name

---

Signature

---

Title

---

Company

---

Date

## Encouraging Use of New York State Businesses in Contract Performance

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and nation. In recognition of their economic activity and leadership in doing business in New York State, bidders/proposers for this contract for commodities, services or technology are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Bidders/proposers need to be aware that all authorized users of this contract will be strongly encouraged to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, bidders/proposers are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the contract, thereby fully benefitting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects bidders/proposers to provide maximum assistance to New York businesses in their use of the contract. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

Bidders/proposers can demonstrate their commitment to the use of New York State businesses by responding to the question below:

Will New York State Businesses be used in the performance of this contract? \_\_\_\_ Yes \_\_\_\_ No  
If yes, identify New York State businesses that will be used and attach identifying information.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

## **Certification Under Executive Order No. 16**

### **Prohibiting ORDA from Contracting with Businesses Conducting Business in Russia**

Executive Order No. 16, issued on March 17, 2022 (“EO 16”), directs all State agencies, including public authorities, to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia. The complete text of EO 16 can be found at [https://www.governor.ny.gov/sites/default/files/2022-03/EO\\_16.pdf](https://www.governor.ny.gov/sites/default/files/2022-03/EO_16.pdf).

EO 16 remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in EO 16, an “entity conducting business operations in Russia” means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or with commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

**Is vendor an entity conducting business operations in Russia, as defined above?** Please answer by checking one of the following:

- ☐ 1. No, vendor does not conduct business operations in Russia within the meaning of EO 16.
- ☐ 2.a. Yes, vendor conducts business operations in Russia within the meaning of EO 16, but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- ☐ 2.a. Yes, vendor conducts business operations in Russia within the meaning of EO 16, but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)
- ☐ 3. Yes, vendor conducts business operations in Russia within the meaning of EO 16.

By signing below, you certify under penalty of perjury that you have the express authority to sign on behalf of the vendor, that you are knowledgeable about the vendor's business and operations, and that the answer provided herein is true to the best of your knowledge and belief.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date

PLANROOM COPY NOT FOR BIDDING

**DOCUMENT 00 21 13**  
**INSTRUCTIONS TO BIDDERS**

**1. EXAMINATION OF DOCUMENTS**

- 1.1. The Project Manual and Drawings will be issued by ORDA's Consultant and/or ORDA's Office of Environmental, Planning and Construction (OEPC) to Registered Bidders as specified in the Notice to Bidders (Document 00 11 14). ORDA reserves the right to release these documents electronically or in hard copy.
- 1.2. Carefully examine and be familiar with the Bidding and Contract Documents.

**2. VISIT TO THE SITE**

- 2.1. Visit the Site of the Work prior to submitting your bid. Refer to the Notice to Bidders Bids for any special instructions.
  - 2.1.1. A pre-bid conference and site visits are typically held with the date, time and location disclosed in the Notice to Bidders. Also, the Notice to Bidders may provide for appointments to be made by the bidder to contact ORDA for a project site visit. No individual or additional site visit will be performed under the pre-bid time period unless there are special circumstance. Failure to attend a site visit shall not be the cause for extra payment.
- 2.2. Become familiar with restrictions and regulations established by the facility. Existing restrictions and regulations will not be considered as grounds for any additional cost over the Contract Price.
- 2.3. Assume the risk of encountering any subsurface or other latent physical condition that can be reasonably anticipated on the basis of documentary information provided by ORDA and from inspection and examination of the Site.
- 2.4. Interpretations of contract documents by facility personnel are not binding.

**3. DESIGNATED, PERMISSIBLE, IMPERMISSIBLE CONTACTS AND QUESTIONS**

- 3.1. The designated contacts during the restricted period for this Project will be:
  - **Project Primary and Alternates:** As presented in Document 00 11 14 Notice to Bidders.
  - **Alternate:** (In the event that the Project Primary and/or Alternates Designated Contact(s) are unavailable, the below Alternate Contracts may be contacted:
    - Robert W. Hammond, Director of Environmental, Planning and Construction, telephone – (518) 302-5332
    - Kirk Bassarab, PE, Assistant Director of Environmental, Planning and Construction, telephone – (518) 302-5374
- 3.2. State Finance Law §139-j recognizes a series of permissible contacts that can go to other than the designated contacts, as follows:
  - 3.2.1. The submission of written proposals in response to a request for proposals, invitation for bids or any other method for soliciting a response from offerers intending to result in a procurement contract.
  - 3.2.2. The submission of written questions to a designated contact set forth in a request for proposals, or invitation for bids, or any other method for soliciting a response from offerers intending to result in a procurement contract, when all written questions and responses are to be disseminated

to all offerers who have expressed an interest in the request for proposals, or invitation for bids, or any other method for soliciting a response from offerers intending to result in a procurement contract.

- 3.2.3. Participation in a conference provided for in a request for proposals, invitation for bids, or any other method for soliciting a response from offerers intending to result in the procurement contract.
  - 3.2.4. Complaints by an offerer regarding the failure of the person or persons designated by the procuring governmental entity pursuant to this section to respond in a timely manner to authorized offerer contacts made in writing to ORDA, provided that any such written complaints shall become a part of the procurement record.
  - 3.2.5. Offerers who have been tentatively awarded a contract and are engaged in communication with a governmental entity solely for the purpose of negotiating the terms of the procurement contract after being notified of tentative award.
  - 3.2.6. Contacts between designated governmental staff of the procuring governmental entity and an offerer to request the review of a procurement contract award.
  - 3.2.7. Contacts by offerers in protests, appeals or other review proceedings (including the apparent successful bidder or proposer and his or her representatives) before the governmental entity conducting the procurement seeking a final administrative determination, or in a subsequent judicial proceeding.
  - 3.2.8. Complaints of alleged improper conduct in a governmental procurement to the attorney general, inspector general, district attorney, or court of competent jurisdiction.
  - 3.2.9. Written protests, appeals or complaints to the New York State Office of the State Comptroller (OSC) during the process of contract approval, where OSC's approval is required by law, and where such communications and any response thereto are made in writing and shall be entered in the procurement record pursuant to §163 of the State Finance Law.
  - 3.2.10. Complaints of alleged improper conduct in a governmental procurement conducted by a municipal agency or local legislative body to OSC's office.
  - 3.2.11. Permissible Contacts are only with the procuring agency unless specifically excepted.
- 3.3. Impermissible contacts include those that a reasonable person would infer are intended to influence a governmental procurement and occur during the restricted period of a governmental procurement between the offerer and any member, officer or employee of any governmental entity; provided, however, that nothing in this section shall be deemed to prohibit an offerer from communicating with a member of the state legislature or legislative staff about a governmental procurement. Contacting a person or entity other than the designated contact person during the restricted period, when such contact does not fall within one of the exemptions, is also an impermissible contact.

Direct all conflicts, errors, discrepancies or questions regarding the intent or meaning of the drawings or specifications to the Olympic Regional Development Authority in writing, by the date identified in the **Schedule of Important Dates and Times**. Such requests shall be sent by email in PDF format with receipt request, or by postal service to:

Olympic Regional Development Authority  
Attn: Office of Environmental, Planning and Construction  
37 Church Street  
Lake Placid, NY 12946  
[Projects@orda.org](mailto:Projects@orda.org)

Olympic Regional Development Authority  
Instructions to Bidders  
00 21 13 (2023V1)  
Page 2 of 17



- 3.3.1. Prospective bidders shall examine the Bidding and Contract Documents carefully and, before bidding, shall make written request for an interpretation or correction of any ambiguity, inconsistency or error therein which should be discovered by a reasonably prudent bidder. Such interpretation or correction as well as any additional Contract provision ORDA shall decide to include will be issued in writing by the Consultant/OEPC as an Addendum.
- 3.3.2. Prospective bidders are responsible for ensuring that all Addendum have been incorporated into the bid. The requirements contained in all Bidding and Contract Documents shall apply to all Addendum.
- 3.4. Only questions answered by formal written Addendum will be binding. Oral and other interpretations or clarification will be without legal effect.
- 3.5. Addendum, if any, will only be issued to Registered Bidders and shall be distributed via E-Mail unless full size plan sheets are required.
- 3.6. Pre-bid inquiries answered by means other than Addendum will not be binding.

#### 4. PREPARATION OF BIDS

- 4.1. Prepare each bid on the official form furnished by ORDA (Document 00 21 00). ***Enter all amounts in numerals in whole dollar amounts.*** Make no erasures, cross-outs, whiteouts, write-overs, obliterations, or changes of any kind in the Bid Form phraseology, in the entry of unit prices, or anywhere on the Bid Form. Fill in all blank spaces legibly. An illegible entry may disqualify the bid in its entirety. If a mistake is made, use a new Bid Form. No post bid meetings will be afforded to any bidder to explain or clarify illegible or changed entries.
- 4.1.1. Any bid may be considered informal which does not contain prices in words and figures in all of the spaces provided or which is not accompanied by a bid security in proper form. In case any price shown in words and its equivalent shown in figures do not agree, the written words shall be binding upon the bidder. In case of a discrepancy in the prices contained in the bid forms submitted in duplicate by the bidder, the bid which contains the lower bid shall be deemed the bid of the bidder; provided, however, ORDA at its election may consider the bid of such bidder informal.
- 4.2. Bids shall be submitted in duplicate in a sealed envelope clearly and distinctly marked with the Project Name, the contract number and the contractor's name; and for multiple prime job include the Trade being bid.
- 4.3. Bids shall not include sales and compensating use taxes on materials incorporated into the work.
- 4.4. Bidders shall be solely responsible for the delivery of their Bids in the manner and time prescribed.
- 4.5. If the Project Manual contains alternates, indicate the amounts to be added to or deducted from the base bid in the spaces provided on the Bid Form. If the Work is to be performed at no change in cost, indicate the word "NONE". Any bid which fails to indicate an amount with the words "ADD" or "DEDUCT" or the word "NONE", for each alternate, will be held to be informal and may be rejected.
- 4.6. Sign the Bid Form in the space provided. An officer or a principal of a corporation or a partnership signing for the bidder shall print or type the legal name of the person, partnership, or corporation on the line provided and place his/her signature after "SIGN BID HERE". The same procedure shall apply to the bid of joint venture by two or more firms, except that the signature and title of an officer or a principal of each member firm of the joint venture shall be required. All signatures must be original. Mechanically reproduced signatures or copies are not acceptable. Submitted Bid Forms that do not conform to these requirements will be disqualified.

- 4.7. Mailing Address: Include street address. Addendum sent by other than US Postal Service cannot be delivered to Post Office Boxes.
- 4.8. Each Bid must be accompanied with the following. Bids received without these items may be rejected:
- 4.8.1. Bid Form – Signed by a duly authorized representative of the bidder,
  - 4.8.2. Acknowledgement of Addendum,
  - 4.8.3. Bid Security per Section 5 below, and
  - 4.8.4. Procurement Requirements/Certifications (Document 00 21 12).

## **5. BID SECURITY INFORMATION**

- 5.1. Bid security is required as a guarantee that the bidder will enter into the Contract and furnish a satisfactory Performance Bond and Labor and Material Bond within the time specified on the Bid Form. Submit bid security in the amount indicated in the Advertisement for Bids in one of the following forms:
- 5.1.1. Certified check or bank check for a sum equal to 5% of the Bid or Bids drawn upon a legally incorporated bank or trust company and payable to the New York State Olympic Regional Development Authority).
  - 5.1.2. Bid Bond (Document 00 43 13) to be issued by a Surety licensed in the State of New York.
- 5.2. Upon submission of Bid Security in the form of a certified check or bank check, the Bid Security of the successful bidder will be returned, without interest, upon acceptance of the required bonds and the execution of Contract. The second low bidder's Bid security will be returned after the successful bidder executes the Contract. The Bid Security of all other bidders with a Bid Security in the form of checks will be returned as soon as possible after the apparent low bidder has been determined.
- 5.3. Bid Bonds, due to their nature, will not be returned.
- 5.4. Sign the Bid Bond in the space provided. An officer or a principal of a corporation or a partnership signing for the bidder shall print or type the legal name of the person, partnership, or corporation on the line provided and place his/her signature above "Principal". The same procedure shall apply to the bid security of a joint venture by two or more firms, except that the signature and title of an officer or a principal of each member firm of the joint venture shall be required. The same procedure shall apply to the signature for the Attorney-in-Fact. All signatures must be original. Electronic, mechanically-reproduced or stamped signatures, or copies, are not acceptable for either signature. Submitted Bid Security that does not conform to these requirements will be disqualified.

## **6. SUBMISSION OF BID**

- 6.1. Submit two (2) copies of the items identified in Section 4.8 in a sealed envelope. Telephone or fax bids will not be accepted.
- 6.2. All bids must be received before the time specified, and at the place designated for the receipt of bids as listed on Document 00 11 14 Notice to Bidders **"Schedule of Important Dates and Times"**.
- 6.3. A late bid will be considered if: (1) its arrival at the place designated after the time specified can be shown by documentary or other proofs to be due to mishandling by ORDA and (2) that absent such mishandling, the bid would have arrived timely. Delays in the mail or any other means of transmittal, including couriers or agents of the State, other than employees of ORDA, will not suffice to excuse late arrival.

- 6.4. A late bid not eligible for consideration will be returned unopened with notification of the reason for its refusal.

## **7. MODIFICATION OF BID**

- 7.1 Bid modifications by amendment will only be considered on condition that: (1) the amendment is received before the time specified, and at the place designated for receipt of bids, (2) the amendment is in writing and executed by a principal of the bidder firm, and (3) the bid, as amended, conforms in all respects with the Contract Documents. Bid modifications may be hand-delivered or mailed to the ORDA Office of Environmental, Planning and Construction at the address in Section 3.3 of these Instructions to Bidders, or faxed to "518-523-4309." Bidders may use a bid modification to acknowledge addendum and/or change the bid amount. Bid modifications received must be on company letterhead and signed by a principal of the bidder firm. DO NOT use the ORDA Bid Form to submit bid modifications. Indicate any amounts to be added to or deducted from any part of the bid amount with the words "ADD" or "DEDUCT" next to the amount. The **only** amounts listed on a bid modification should be the amounts to be added or deducted. **DO NOT** expose the new bid amount on the bid modification. If the bid amount is shown on the bid modification, or otherwise exposed at any time before the bid opening, **the bid will be disqualified.**

## **8. WITHDRAWAL OF BID**

- 8.1. A bid may be withdrawn at any time prior to the time specified for receipt of bids. Should a bidder decide to withdraw its bid before the bid opening, the request must be prepared on company letterhead, signed by a principal of the bidder firm, and faxed to (518) 523-4309, or hand-delivered or mailed to the ORDA Office of Environmental, Planning and Construction at the address in Section 3.3 of these Instructions to Bidders. ORDA will fax and/or e-mail an acknowledgment of the withdrawal request that includes an indication that the unopened bid will be returned. Should the withdrawal request be in error, the bidder must call OEPC at (518) 302-5332 immediately. The unopened bid will be returned by mail to the bidder.
- 8.2. Not more than five (5) business days after the bid opening or a scheduled pre-award meeting, whichever comes later, a low bidder may request the withdrawal of its bid based on a mistake. The request must be submitted via certified or registered mail to the address to which the bid was directed. OEPC may conduct or have conducted on the bidder's behalf a fact-finding proceeding to develop information concerning the request for withdrawal. A request for withdrawal of a bid made after the specified number of days allowed shall result in automatic forfeiture of the bid security.
- 8.3. Following a timely request for withdrawal of a bid, the Bid Security will be returned if the bidder establishes by credible evidence, including original documents when requested, the following:
- 8.3.1. An error, clerical as opposed to judgmental in nature and verifiable by written evidence, occurred in the computation of the bid,
  - 8.3.2. The error constitutes either an unintentional and substantial computational error or an unintentional omission of a substantial quantity of labor and/or material from the final bid computation,
  - 8.3.3. The absence of gross negligence in the preparation of the bid. For the purposes of this subparagraph, gross negligence may include,
    - i. the apparent failure of a bidder to account for two or more categories (divisions) of work,
    - ii. the use of multiple erroneous quotations from subcontractors or suppliers, and/or
    - iii. submission to OEPC of a bid withdrawal request within the preceding six (6) months.

- 8.3.4. If the bidder fails to meet its burden of proof, the request to withdraw without penalty shall be denied and its Bid Security will be forfeited and become the property of the ORDA. The decision of OEPC shall be final and conclusive.
- 8.3.5. Once a request to withdraw is made, the bidder is ineligible for award. OEPC shall continue to progress the award process considering only the remaining bids.
- 8.4. A bidder may withdraw its bid if no award is made within sixty (60) days after the receipt of bids. A written notice must be submitted via certified or registered mail to the address in Section 3.3 of these Instructions to Bidders prior to approval of the contract by ORDA. The notice must clearly state that the withdrawal is based on the fact that the contract was not awarded within sixty (60) days after the receipt of bids.
- 9. DISQUALIFICATION**
- 9.1. Any bid which fails to conform to the requirements of the Bidding and Contract Documents may be rejected.
- 9.2. The Director may waive any informality or afford the bidder an opportunity to remedy any deficiency resulting from a minor informality or irregularity.
- 9.3. ORDA reserves the right to disqualify bidders, before or after bid opening, upon evidence of collusion with third parties or other illegal practices upon the part of the bidder.
- 9.4. ORDA reserves the right to disqualify bidders, before or after bid opening including but not limited to any of the following which may be considered just cause to disqualify a bid:
- 9.4.1. Evidence of collusion, directly or indirectly,
  - 9.4.2. Any attempt to improperly influence any staff,
  - 9.4.3. Bidder's prior work and/or performance on past contracts,
  - 9.4.4. Incomplete or incorrect information submitted as part of the bid,
  - 9.4.5. Evidence of Bidder's inability to successfully complete the responsibilities and obligations of the bid, and/or
  - 9.4.6. Bidder's default under any agreement, which results in termination of the Agreement.
- 9.5. Prohibition of Gifts: ORDA officials are subject to several legal and policy limitations regarding receipt of gifts from persons, firms, or corporations either engaged in business with the ORDA, or proposing to do business with the ORDA. The offering of any illegal gift shall be grounds to disqualify a Bidder. To avoid even the appearance of impropriety, Bidder should not offer any gifts or souvenirs, even of minimal value, to ORDA officers or employees.

**10. GOVERNING LAWS AND REGULATIONS ADMINISTERED BY OTHER DEPARTMENTS**

- 10.1. Taxes: All taxes pertaining to the Work must be paid. Address inquiries regarding taxes to the Tax Collecting Agency. For information regarding sales and use taxes contact the Sales Tax Bureau, Department of Taxation and Finance.
- 10.2. While all applicable laws, rules and regulations of the State of New York are incorporated by reference in this Contract, take special note of the provisions of the Labor Law and Industrial Code Rule 23 relative to the safety of workers and of persons lawfully occupying or using the premises. Address inquiries regarding labor law provisions to the New York State Department of Labor.
- 10.3. Anti-Discrimination Clause: Discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, or marital status is prohibited.

## 11. OPENING OF BIDS

Bids will be publicly opened as announced in Document 00 11 14 Notice to Bidders.

## 12. DETERMINATION OF BIDDER'S/CONTRACTOR'S RESPONSIBILITY

- 12.1. The State Public Buildings Law requires that contracts for public work in the State of New York be awarded to the lowest responsible and reliable bidders as will best promote the public interest.
- 12.2. Each apparent low bidder, and each proposed subcontractor (for subcontract work of \$100,000 or more), will be required to submit form CCA-2 - *New York State Vendor Responsibility Questionnaire For Profit Construction* prior to contract award or subcontractor approval. ORDA reserves the right to request CCA-2 forms from proposed subcontractors for work of less than \$100,000 if it is determined to be in the best interest of the State. Submission of these forms will assist ORDA in determining the responsibility and reliability of the vendor.

ORDA recommends that vendors file the required CCA-2 form online via the New York State VendRep System. Use of this system requires that the vendor have a New York State Vendor Identification Number (Vendor ID). Please note that the Vendor ID is not the Taxpayer ID number.

If bidders do not already have a Vendor ID, they are encouraged to obtain one *in advance of* the bid opening.

**To obtain a Vendor ID, contact the OSC Help Desk at 866-370-4672 or 518-408-4672, or by e-mail at [ITServiceDesk@osc.state.ny.us](mailto:ITServiceDesk@osc.state.ny.us).**

To enroll in and use the VendRep System, see the **VendRep System** page at:

[http://www.osc.state.ny.us/vendrep/info\\_vrsystem.htm](http://www.osc.state.ny.us/vendrep/info_vrsystem.htm)

If you already have a User ID and password, go directly to the VendRep System online at:

<https://portal.osc.state.ny.us>.

For direct VendRep System user assistance, contact the OSC Help Desk. The help desk phone numbers and e-mail address are shown above.

Vendors opting to file a paper questionnaire can obtain the appropriate questionnaire from the VendRep website at [http://www.osc.state.ny.us/vendrep/forms\\_vendor.htm](http://www.osc.state.ny.us/vendrep/forms_vendor.htm) or may telephone the OSC Help Desk.

- 12.3. After the bids are opened, the apparent low bidder shall complete and file the CCA-2 within five (5) business days. Vendors using the online system may certify (or recertify) and file the CCA-2 electronically via the VendRep System (<https://portal.osc.state.ny.us>).
- 12.4. It is recommended that all bidders become familiar *in advance* with all of the requirements of the CCA-2. As mentioned in 12.2, bidders who do not have a Vendor ID are encouraged to obtain one in advance of the bid opening.
- 12.5. All bidders must submit with their Bid Form a completed *Offerer Disclosure of Prior Non-Responsibility Determinations* form (included as part of Document 00 21 12).
- 12.6. The determination of responsibility will include a review to ensure the Contractor has not knowingly and willfully violated the provisions of the Procurement Lobby Law or New York State Finance Law §139-j and §139-k.
- 12.7. New York State Finance Law §139-k (2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law §163(9). In accordance with State



Finance Law §139-k, a Contractor must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity.

- 12.8. As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether a Contractor fails to timely disclose accurate or complete information regarding the above non-responsibility determination. In accordance with law, no procurement contract shall be awarded to any Contractor that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and that the Offerer is the only source capable of supplying the required Article of Procurement within the necessary time frame.

### **13. MANDATORY POST-BID/PRE-AWARD SUBMITTAL REQUIREMENTS**

- 13.1. Within two (2) business days after the opening of bids, each of the apparent ~~three~~ (3) lowest bidders, unless otherwise directed by ORDA or otherwise provided in the Bidding and Contract Documents, shall submit to ORDA:
- 13.1.1. Evidence of Bidder's qualifications to do business in New York State if the bidder is a non-New York State company;
  - 13.1.2. Affidavit of Worker's Compensation (Document 00 65 10); and
  - 13.1.3. W-9 (Document 00 66 00).
- 13.2. In order to demonstrate qualification to perform the Work, the apparent low bidder must submit the required pre-award submittal package outlined below to the Contracting Office within five (5) business days after the bids are opened.

Olympic Regional Development Authority  
Attn: Office of Environmental, Planning and Construction  
37 Church Street  
Lake Placid, NY 12946  
[Projects@orda.org](mailto:Projects@orda.org)

Submissions must be emailed and must include the Project Identification Number (PIN) of this contract in the Subject Line of the Pre-Award submission email (i.e. PIN: EXO.19.001).

#### **13.2.1. References and Experience:**

- a. List of all past contracts with ORDA. Include ORDA PIN and date.
- b. Provide three (3) references (Name, Title, and Phone Number) associated with three (3) different projects (ORDA, public, or private sector) of similar scope and size to the one identified in this contract. "Scope" shall mean the Work required by the Contract Documents and "size" shall mean the Contract Price for this Contract.
- c. Provide the names of two (2) major suppliers and, if used, two (2) major subcontractors, used for each of these three (3) projects. Provide a full description of the project including the year of the work, the final costs, listing of all project elements in CSI format, listing of all subcontractors, the Engineer/Architect of Record, and the Owner's Representative on the site.

d. Provide a copy of recent past experience as required under the filing of the NYS Vendor Responsibility Questionnaire (CCA-2 document) with the Office of the State Comptroller. Provide only Attachment A: Completed Construction Contracts and Attachment B: Uncompleted Construction Contracts. For additional information, see:

[http://www.osc.state.ny.us/vendrep/form\\_cca2.htm](http://www.osc.state.ny.us/vendrep/form_cca2.htm)

13.2.2. Workforce and Work Plan: Provide a detailed written Work Plan which shall demonstrate the contractor's understanding of overall project scope and shall include, but not be limited, to the following:

a. Sequential listing of specific project activities required to successfully complete the Work of the contract.

1. Include Critical Milestones.
2. Include phasing of the Work, if required.
3. Include listing of long lead items.
4. Impact of weather and restricted work period(s).
5. Include a list of site-/project-specific safety hazards, and how such hazards will be considered in performance of the Work.

b. Résumés for Contractor's proposed supervisory staff setting forth established experience in performing the Work required by the Contract Documents together with qualifications for specialized expertise or any certification(s) required to perform the Work.

c. Schedule Preparer qualifications when required by Document 01 32 00.

d. Submittal Coordinator qualifications when required by Document 01 33 00.

e. Names of proposed major sub-contractors (more than 15% of the bid amount or where critical systems of work are identified in the contract) and a listing of the related trade of work and value.

f. Any special coordination requirements with other trades.

g. Any special storage and staging requirements for construction materials.

13.2.3. Detailed Cost Estimate outlined in SCI format.

13.2.4. The names, addresses, and telephone numbers of the subcontractors the Bidder proposes to use on the Project. The Director reserves the right to disapprove the use of any proposed subcontractor. In such an event, the Bidder shall submit the name of another subcontractor in like manner within the time specified by the Director or the Director's Representative. The Bidder shall have and will make no claim for compensation if the Director disapproves any proposed Subcontractor. The Director reserves the right to reject any bid if the proposed subcontractors information, or additional subcontractor information, is not submitted as required.

13.2.5. Any other special requirements at the request of the Director or the Director's Representative.

13.2.6. Financial data, previous experience, present commitments and such other data as requested by ORDA in accordance with the General and Supplemental Conditions, including insurances and bonding.

13.2.7. Determination of Safety of Operating and Experience of Work for Projects that require special skills due to environmental conditions or other conditions that are non-typical.

13.2.8. The information and documentation set forth in Sections 12 above and Section 14 below.

- 13.3. MWBE/SDVOB Plans shall be submitted by the apparent lowest responsible Bidder within five (5) business days after the bid opening. ORDA reserves the right to request MWBE/SDVOB Plans be submitted by the three (3) lowest responsible Bidders within five (5) business days after the bid opening. This right shall be exercised by written notification.
- 13.4. The Bidder's compliance with the Non-Discrimination Requirements and ORDA's Affirmative Action Policy are precondition to entering into a valid and binding Contract with ORDA.
- 13.5. The above information and such other information as ORDA or the Consultant/OEPC may request or obtain will be used by ORDA in determining the reliability and responsibility of the bidder. Each bidder must comply promptly with all requests by ORDA and the Consultant/OEPC for information and must actively cooperate with ORDA and the Consultant/OEPC in their efforts to determine the qualifications of the bidder.

#### **14. QUALIFICATIONS OF BIDDERS / PRE-AWARD MEETING**

- 14.1. The Contracting Officer or their respective representative will conduct an investigation to determine the responsibility of any Bidder, including the ability of any Bidder to perform the Work. Bidders shall furnish to the Contracting Officer all information and data requested, including complete financial data, within the time and in the form and manner requested. The Contracting Officer reserves the right to reject any bid if the evidence required by the Contracting Officer is not submitted as requested, or if the evidence submitted by or the investigation of any Bidder fails to satisfy the Contracting Officer that the Bidder is responsible, or is able and qualified to carry out the obligations of the Contract, or to complete the Work as indicated in the Contract Documents, or able to reasonably perform the Work for the Bid Amount.
- 14.2. The criteria contained in Executive Order No. 170.1 Uniform Guidelines for Determining the Responsibility of Bidders will be applied in the evaluation of Bidders. Special criteria that will be considered in establishing the responsibility of the Bidders shall include, but not be limited to established experience in performing the Work required by the Contract Documents. Experience will be viewed from comparable projects as well as experience and knowledge of construction by the firm's personnel.
- 14.3. All prospective Bidders must be able to prove to the satisfaction of ORDA that they have the skill and experience, as well as the necessary facilities, ample financial resources, organization and general reliability to do the work to be performed under the provisions of the Contract in a satisfactory manner and within the time specified.
- 14.4. Each bidder must be prepared to show to the satisfaction of ORDA that it has working capital available for the Project upon which it is bidding in an amount equal to fifteen percent (15%) of the first \$100,000 of the amount of its Base Bid, plus ten percent (10%) of the next \$900,000, plus five percent (5%) of the remainder of its Base Bid. Working capital is defined as the excess of current assets over current liabilities. ORDA defines current assets as assets which can be reasonably expected to be converted into cash within a year, and current liabilities as debts which will have to be paid within a year.
- 14.5. The Contracting Officer or their representative will schedule a pre-award meeting to consider the bid responsiveness of the bid submitted by the apparent low bidder generally within fifteen (15) working days of the bid opening. Bidders will be notified of the time and place of the meeting. On a case by case basis, ORDA will examine and evaluate the bid as responsive by considering the contractors understanding of: the overall project scope, estimated cost, utilization of proposed sub-contractors, expertise, workmanship, and past performance in completing similar contracts.



## **15. AWARD OF CONTRACT**

- 15.1. The Contract may be awarded to the lowest responsible and reliable bidder as will best promote the public interest.
- 15.2. If alternates are included in the bidding documents, ORDA reserves the right to accept or reject any or all alternates. ORDA shall determine the lowest bid by adding to or deducting, from the Base Bid Amount of the bidders, the additive or deductive alternates, if any, that ORDA elects to accept after the opening of the bids. Alternates will be accepted in the order they are set forth in the contract documents.
- 15.3. ORDA reserves the right to reject any or all bids, and advertise for new bids, if in its opinion the best interest of the State will thereby be promoted. In the event that all bids are rejected, each bidder will be so notified.
  - 15.3.1. A bid may be rejected if the bidder fails to furnish the required bid security or to submit the data required with or after its bid.
  - 15.3.2. A bid may be rejected if the bidder cannot show to the satisfaction of ORDA: (i) that it has the necessary capital, skill and experience; or (ii) that it owns, controls or can procure the necessary plant and equipment to commence the work at the time prescribed in the Contract and thereafter to prosecute and complete the work at the rate, or within the time specified; or (iii) that it is not already obligated by the performance of so much other work as is likely to delay the commencement, prosecution or completion of the work contemplated by the Contract.
  - 15.3.3. A bid will be rejected if it does not provide for the completion of the work by the date of completion specified in the bid.
- 15.4. Pursuant to Public Buildings Law § 8(6), effective 11 January 2020, for any projects where the project design commenced on or after 01 January 2020 and for any contracts over \$5,000 for the work of construction, reconstruction, alteration, repair, or improvement of any State building, a responsible and reliable NYS-certified Minority or Women-Owned Business Enterprise ("MWBE") that submits a bid within ten percent (10%) of the lowest bid will be deemed the apparent low bidder provided that the MWBE bid is \$1,400,000 or less, as adjusted annually for inflation beginning January 1, 2020. If more than one responsible or reliable NYS-certified MWBE firm meets these requirements, the MWBE firm with the lowest bid will be deemed the apparent low bidder. Refer to the Advertisement for Bids for applicability of projects subject to these criteria.

## **16. MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES AND SERVICE-DISABLED VETERAN-OWNED BUSINESSES**

- 16.1. Pursuant to New York State Executive Law Article 15-A and the rules and regulations promulgated thereunder, ORDA is required to promote opportunities for the maximum feasible participation of NYS-certified Minority- and Women-owned Business Enterprises and the employment of minority group members and women in the performance of ORDA contracts.
- 16.2. The Minority / Women Owned Business Sub-Contracting / Supplier Goals and Service-Disabled Veteran-Owned Businesses goals for this solicitation are presented in Document 00 22 13 – Supplemental Information and Instructions to Bidders MWBE EEO & SDVOB

16.3. Information on MWBEs, including a directory of MWBE's, is available from:

NYS Empire State Development  
Minority and Women's Business Development Division  
30 South Pearl Street  
Albany, NY 12245  
Telephone: (518) 292-5252  
Website: <https://esd.ny.gov/doing-business-ny/mwbe>

16.4. Pursuant to New York State Executive Law Article 17-B enacted in 2014, the State acknowledges that Service-Disabled Veteran-Owned Businesses (SDVOBs) strongly contribute to the economies of the State and the nation. As defenders of our nation and in recognition of their economic activity in doing business in New York State, bidders/proposers for this contract for commodities, services or technology are strongly encouraged and expected to consider SDVOBs in the fulfillment of the requirements of the contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles. SDVOBs can be readily identified on the directory of certified businesses at:

[http://ogs.ny.gov/Core/docs/CertifiedNYS\\_SDVOB.pdf](http://ogs.ny.gov/Core/docs/CertifiedNYS_SDVOB.pdf)

16.5. Bidders need to be aware that contractors will be strongly encouraged to the maximum extent practical and consistent with legal requirements of the State Finance Law and the Executive Law to use responsible and responsive SDVOBs in purchasing and utilizing commodities, services and technology that are of equal quality and functionality to those that may be obtained from non-SDVOBs. Furthermore, bidders/proposers are reminded that they must continue to utilize small, minority and women-owned businesses consistent with current State law.

16.6. Utilizing SDVOBs in State contracts will help create more private sector jobs, rebuild New York State's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its SDVOB partners. SDVOBs will promote the contractor's optimal performance under the contract, thereby fully benefiting the public sector programs that are supported by associated public procurements.

16.7. Public procurements can drive and improve the State's economic engine through promotion of the use of SDVOBs by its contractors. The State, therefore, expects bidders/proposers to provide maximum assistance to SDVOBs in their contract performance. The potential participation by all kinds of SDVOBs will deliver great value to the State and its taxpayers.

## **17. SURETY BOND**

17.1. If required, the Contractor shall furnish Performance and Payment Bonds within ten (10) calendar days after the receipt of Notice of Award, in an amount equal to one hundred percent (100%) of the total Contract price as security for the faithful performance of this Contract, and for the payment of all persons performing labor or furnishing materials in connection with this contract. These bonds are to be executed on ORDA's forms (Documents 00 43 14 and 00 43 15) and the surety company must be licensed in the State of New York, have a Best Rating of A- or better and appear on the most recent published Department of the Treasury's Listing of Approved Sureties (Department Circular 570) at the time of filing the bonds.

## **18. POLICY ON TIED BIDS**

18.1. A tie-bid is defined as an instance where bids are received from two or more bidders who are the apparent low responsive and reliable bidders with identical offers, or who are MWBEs with identical offers with bids of \$1,400,000 or less and whose bids are within ten percent of the lowest bid. A tie-bid does not exist when an apparent low bidder has an identical offer to an MWBE, as the MWBE is deemed the apparent low bidder pursuant to Public Buildings Law § 8(6). It is the policy of ORDA to settle the outcome of tie-bids between two contractors where the Bid includes Alternates, to determine the Low

Bid based on the selected Alternates in combination with the Base Bid. For Tie-bids between two contractors, where there are no monetary means to differentiate via Alternates to settle the tie-bids either drawing a name from a hat or flipping a coin within 24 hours of the bid opening. All affected firms will be notified of the tie and the time and place of the resolution of the tie and shall be invited to witness the outcome. Attendance is not mandatory. The drawing/flip will be held at the address in Paragraph 3.3. Two impartial witnesses will be provided and shall be present. All attendees will acknowledge the results of the tiebreaker on the bid tabulation sheet. All firms affected by the tied bids will be notified of the results. The results pursuant to this provision shall be considered final.

## **19. INSURANCE REQUIREMENTS**

- 19.1. Prior to the commencement of work the Successful Bidder will provide, at its sole cost and expense, Certificates of Insurance in accordance with New York State Olympic Regional Development Authority Insurance Requirements (Most Recent Version). Such Certificates of Insurances shall be from an insurance company licensed by the New York State Department of Insurance with a rating of at least "A-" as published with Standard & Poor's, and a liability insurance policy with limits no less than provided for on the above referenced document per claim. If during the term of the policy, the carrier's rating falls below "A-", the liability insurance must be replaced no later than the renewal date of the policy with an insurer acceptable to the State of New York. Such policies shall name the NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY and the STATE OF NEW YORK as additional insured and the other entities as required on the above reference form. The policy shall designate the New York State Olympic Regional Development Authority as the loss payee and shall contain a provision that the New York State Olympic Regional Development Authority shall receive at least thirty (30) days' notice prior to material change, cancellation or expiration of any such policy.

## **20. WORKERS' COMPENSATION INSURANCE AND DISABILITY BENEFITS REQUIREMENTS**

- 20.1. Workers' Compensation Law (WCL) §57 & §220 requires the heads of all municipal and state entities to ensure that businesses applying for permits, licenses or contracts provide proof that they have appropriate workers' compensation and disability benefits insurance coverage. These requirements apply to both original contracts and renewals, whether the governmental agency is having the work done or is simply issuing the permit, license or contract. Failure to provide proof of such coverage or a legal exemption will result in a rejection of the vendor's bid or renewal.
- 20.2. Proof of Compliance with Workers' Compensation Coverage Requirements: In order to provide proof of compliance with the requirements of the Workers' Compensation Law pertaining to workers' compensation coverage, a contractor shall: (1) obtain such coverage from an insurance carrier; or (2) be a Workers' Compensation Board-approved self-insured employer or participate in an authorized self-insurance plan; or (3) be legally exempt from obtaining Workers' Compensation insurance coverage.

An ACORD 25 form is **NOT** acceptable as proof of workers' compensation coverage.

A Contractor seeking to enter into a contract with the State of New York **MUST** provide **ONE** of the following forms to ORDA upon request, prior to award:

20.2.1. CE-200, *Certificate of Attestation of Exemption from NYS Workers' Compensation and/or Disability Benefits Coverage*, which is available on the Workers' Compensation Board's website, [www.wcb.ny.gov](http://www.wcb.ny.gov), under the heading "Forms"; **OR**

20.2.2. C-105.2 – *Certificate of Workers' Compensation Insurance* (the contractor's insurance carrier will send this form to ORDA upon request); contractors insured through the New York State Insurance Fund should use their version of the form, the U-26.3; **OR**

20.2.3. SI-12 – *Certificate of Workers Compensation Self-Insurance* (the contractor should call the Workers' Compensation Board's Self-Insurance Office at 518 402-0247), **OR** GS-105.2 –

***Certificate of Participation in Workers' Compensation Group Self-Insurance*** (the contractor's Group Self-Insurance Administrator will send this form to ORDA upon request).

- 20.3. Proof of Compliance with Disability Benefits Coverage Requirements: In order to provide proof of compliance with the requirements of the Workers' Compensation Law pertaining to disability benefits, a contractor shall: (1) obtain such coverage from an insurance carrier; or (2) be a Board-approved self-insured employer; or (3) be legally exempt from obtaining disability benefits coverage.

An ACORD 25 form is NOT acceptable as proof of disability benefits coverage.

A Contractor seeking to enter into a contract with the State of New York **MUST** provide ONE of the following forms to ORDA upon request, prior to award:

20.3.1. CE-200 – ***Certificate of Attestation of Exemption from NYS Workers' Compensation and/or Disability Benefits Coverage***, which is available on the Workers' Compensation Board's website, [www.wcb.ny.gov](http://www.wcb.ny.gov), under the heading "Forms"; **OR**

20.3.2. DB-120.1 – ***Certificate of Disability Benefits Insurance*** (the contractor's insurance agent, broker or carrier will send this form to ORDA upon request); **OR**

20.3.3. DB-155 – ***Certificate of Disability Benefits Self Insurance*** (the contractor should call the Workers' Compensation Board's Self-Insurance Office at 518 402-0247).

20.3.4. All of the above-referenced forms, except the CE-200, SI-12 and DB-155, must show the following as the Entity Requesting Proof of Coverage (entity being listed as the Certificate Holder). Please refer to 007302 Supplemental Conditions – Insurance for Additional Insureds: Olympic Regional Development Authority, 2634 Main Street, Lake Placid, NY 12946

## **21. GENERAL ADMINISTRATION**

- 21.1. The successful bidder shall be required to comply with all provisions of the Federal Government Equal Employment Opportunity clause issued by the Secretary of Labor on May 21, 1968 and published in the Federal Register (41 CFR Part 60-1, 33 F.2 7804).
- 21.2. All work must be performed in accordance with the rules, regulations and variances set forth by the New York State Department of Labor Industrial Code 56, EPA, OSHA and other regulatory agencies for asbestos removal and disposal.
- 21.3. Prevailing Wage Rates shall be paid to workers on the project. The Olympic Regional Development Authority is exempt from paying sales and compensating use taxes of the State of New York, cities and counties, on materials to be incorporated into the work.
- 21.4. The successful bidder shall provide ORDA a W-9 (Document 00 66 00) within five (5) days of the Notice of Award.
- 21.5. Words of the masculine and feminine genders shall be deemed and construed to include the neuter gender. Unless the context otherwise indicates, the singular number shall include the plural number and vice versa, and words importing persons shall include corporations and associations, including public bodies, as well as natural persons. The terms "hereby," "hereof," "hereto," "herein," "hereunder," and any similar terms, as used in this Request for Bids (RFB), refer to this RFB.

## **22. GENERAL TERMS AND CONDITIONS**

- 22.1. The following items will be incorporated into, and made part of, the Contract Documents: (1) all documents contained in the Project Manual bearing the Project Name and Title; (2) the successful Bidder's Bid; (3) the Standard Form of Agreement; (4) Exhibits to the Agreement; (5) Notice to Proceed;

- (6) all documentation submitted by the successful Bidder prior to issuance of the Notice to Proceed; and  
(7) Sub-Contractor Site Access Agreement(s).
- 22.2. In the event of any inconsistency in or conflict among the document elements comprising the Contract Documents as described above, such inconsistency or conflict shall be resolved by giving precedence to the document elements in the following order: (1) ORDA Standard Contract Terms; (2) Standard Form of Agreement; (3) Supplementary and Special Conditions; (4) General Conditions; (5) Addenda; (6) Drawings and Specifications bearing the Project Name and Title; (5) Exhibits to the Agreement; (6) Notice of Award/Notice to Proceed; and (7) successful Bidder's Bid.

### **23. ADDITIONAL TERMS AND CONDITIONS**

- 23.1. The terms and conditions of ORDA Standard Form of Agreement shall apply and is provided as an attachment to this RFB.
- 23.2. The resulting agreement shall be binding upon its execution by both parties and, if required by New York State law.
- 23.3. The resulting agreement may be revised at any time upon mutual consent of the parties in writing. Such written consent will not be effective until signed by both parties.
- 23.4. The relationship of the Successful Bidder to ORDA shall be that of independent contractor.
- 23.5. Compliance with the post-employment restrictions of the Ethics in Government Act is required.
- 23.6. The submission of a bid constitutes a binding offer to perform and provide said services.
- 23.7. In the event the Successful Bidder uses partners, subcontracts or subcontractors, the Successful Bidder will remain responsible for compliance with all specifications and performance of all obligations under the contract resulting from this RFB. For the resulting agreement, the Successful Bidder will be the prime contractor.
- 23.8. ORDA will not be liable for any costs associated with the preparation, transmittal, or presentation of any Bids or materials submitted in response to this RFB.
- 23.9. Public announcements or news releases regarding this RFB or any subsequent award of a contract must not be made by any Bidder without the prior written approval of ORDA.
- 23.10. The Successful Bidder is responsible for compliance with all applicable rules and regulations pertaining to cities, towns, counties and State where the services are provided, and all other laws applicable to the performance of the resulting contract. The Successful Offerer shall provide all necessary safeguards for safety and protection as set forth by the United States Department of Labor, Occupational Safety and Health Administration.
- 23.11. The Successful Bidder will be responsible for the work, direction and compensation of its employees. Nothing in the resulting agreement or the performance thereof by the Successful Bidder will impose any liability or duty whatsoever on ORDA including, but not limited to, any liability for taxes, compensation, commissions, Workers' Compensation, disability benefits, Social Security, or other employee benefits for any person or entity.
- 23.12. In the event the Successful Bidder is required to be reimbursed for travel (Professional Contracts), Bidder shall be reimbursed at rates not to exceed the current NYS Schedule of Allowable Reimbursable Travel Expenses. Refer to the U.S. Government Administration Rates for Travel at: <http://www.gsa.gov>
- 23.13. In addition, ORDA reserves the right to:
- 23.13.1. Not accept any and all Bids received in response to this RFB.



23.13.2.To terminate any resulting contract for: (1) unavailability of funds; (2) cause; (3) convenience; (4) in the event it is found that the certification filed by the Bidder in accordance with State Finance Law §§139-j and 139-k are found to be intentionally false or intentionally incomplete; and if applicable, the Department of Taxation and Finance Contractor Certification Form ST-220CA was false or incomplete. Upon such finding ORDA may exercise its termination right by providing written notification to the Bidder in accordance with the written notification terms of the contract.

23.13.3.Request certified audited financial statements for the past three (3) completed fiscal years and/or other appropriate supplementation including, but not limited to, interim financial statements and credit reports.

23.13.4.Contact any or all references.

23.13.5.Request clarifications from Bidders for purposes of assuring a full understanding of responsiveness, and further to permit revisions from all Bidders determined to be susceptible to being selected for contract award, prior to award.

23.13.6.Advise Bidder of any objectionable employee(s) and/or subcontractor(s) and request their removal from the project. Such removal shall not be reasonably withheld by the Bidder.

#### **24. BIDDER DEBRIEFING**

24.1. Upon notification of the selection and award of a contract unsuccessful bidders may request in writing a debriefing of the results of their response to this solicitation. Requests for debriefing must be received within a reasonable timeframe, not more than thirty (30) days after notice of award.

#### **25. QUALIFICATION AND BID CONFIDENTIALITY**

25.1. All qualifications and bid information submitted for ORDA's consideration will be held in confidence upon request, in writing. However, all information submitted by a Bidder is subject to the New York State Freedom of Information Law (FOIL). Therefore, if a Bidder believes that any information in its bid constitutes a trade secret or should otherwise be treated as confidential and wishes such information not to be disclosed the Bidder shall submit with its bid a separate letter to the designated contact. The letter shall specifically identify the page number(s), line(s) or other appropriate designation(s) containing such information, explaining in detail why such information is a trade secret and formally requesting that such information be kept confidential. Failure by a Bidder to submit such a letter will constitute a waiver by the Bidder of any rights it may have under Section 89(5) of the Public Officers' Law relating to protection of trade secrets.

25.2. The proprietary nature of the information designated confidential by the Bidder may be subject to disclosure if ordered by a court of competent jurisdiction. A request that an entire bid be kept confidential is not advisable since a bid cannot reasonably consist of all data subject to FOIL proprietary status.

#### **26. HEALTH AND SAFETY REQUIREMENTS AND COVID-19**

26.1. The Bidder agrees it is responsible for complying with any and all health and safety requirements issued by federal, state, county and local entities, including but not limited to ORDA, New York State Governor Office Executive Orders, New York State Department of Health rules, regulations and guidance, and all other laws, rules, regulations or requirements that exist or may be issued and/or amended during the bidding and/or performance of work on this Project. Bidder specifically acknowledges that the foregoing includes all laws, rules, regulations or requirements related to the COVID-19 pandemic.

## **27. IRAN DIVESTMENT ACT**

- 27.1. By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, bidder/Contractor (or any assignee) certifies that it is not on the “Entities Determined To Be Non-Responsive bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012” list (“Prohibited Entities List”) posted on the OGS website at

<http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf>

and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended.

- 27.2. During the term of the Contract, should ORDA receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, ORDA will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then ORDA shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the Contractor in default.

## **28. INFORMATION SECURITY BREACH AND NOTIFICATION ACT**

- 28.1. The Bidder shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Sections 899-aa and 899-bb, and State Technology Law Section 208). The Bidder shall be liable for the costs associated with such breach if caused by its negligent or willful acts or omissions, or the negligent or willful acts or omissions of its agents, officers, employees or subcontractors.
- 28.2. ORDA reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

**END OF DOCUMENT**

**SUPPLEMENTAL INFORMATION AND INSTRUCTIONS TO BIDDERS –  
MWBE, EEO & SDVOB**

**CONTRACTOR REQUIREMENTS AND PROCEDURES FOR PARTICIPATION BY NEW YORK STATE  
CERTIFIED MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES AND EQUAL  
EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN**

**I) REQUIREMENTS FOR UTILIZATION OF MINORITY- AND WOMEN-OWNED BUSINESS  
ENTERPRISES (M/WBEs) AND SERVICE-DISABLED VETERAN BUSINESS OWNED  
ENTERPRISES (SDVOB)**

**A) Participation by Minority Group Members and Women and Service-Disabled Veteran Business Owned  
Enterprises with Respect to State Contracts: Requirements and Procedures: General Provisions:**

- 1) ORDA is required to implement the provisions of New York State Executive Law Article 15-A and 5 NYCRR Parts 140-145 (“M/WBE Regulations”) for all State contracts as defined therein, with a value (1) in excess of \$25,000 for labor, services, equipment, materials, or any combination of the foregoing or (2) in excess of \$100,000 for real property renovations and construction (the “Work”).
- 2) ORDA is required to implement the provisions of New York State Executive Law Article 17-B of the New York State Executive Law provides for more meaningful participation in public procurement by certified Service-Disabled Veteran-Owned Businesses (“SDVOB”), thereby further integrating such businesses into New York State’s economy. ORDA recognizes the need to promote the employment of service-disabled veterans and to ensure that certified service-disabled veteran-owned businesses have opportunities for maximum feasible participation in the performance of ORDA contracts.
- 3) In recognition of the service and sacrifices made by service-disabled veterans and in recognition of their economic activity in doing business in New York State, Bidders are expected to consider SDVOBs in the fulfillment of the requirements of the Contract. Such participation may be as subcontractors or suppliers, as protégés, or in other partnering or supporting roles.
- 4) The Bidder agrees, in addition to any other nondiscrimination provision of the Contract and at no additional cost to ORDA, to fully comply and cooperate with ORDA in the implementation of New York State Executive Law Article 15-A and the regulations promulgated thereunder. These requirements include equal employment opportunities for minority group members and women (“EEO”) and contracting opportunities for M/WBEs. Bidder’s demonstration of “good faith efforts” pursuant to 5 NYCRR §142.8 shall be a part of these requirements. These provisions shall be deemed supplementary to, and not in lieu of, the nondiscrimination provisions required by New York State Executive Law Article 15 (the “Human Rights Law”) or other applicable federal, State or local laws.
- 5) Failure to comply with all of the requirements herein may result in a finding of non-responsiveness, a finding of non-responsibility, a breach of contract, leading to the withholding of funds, liquidated damages pursuant to Section III.11 herein, and/or enforcement proceedings as allowed by the Contract and applicable law.



B) Contract Goals:

- 1) For the purposes of this solicitation ORDA hereby establishes goals of
    - General Contract: 0% for “MBE” participation, 2.5% for “WBE” participation and 6% for SDVOB.
    - Plumbing, Electrical, and HVAC Contracts Estimates are below \$100,000, No Goals Required.
  - a. For purposes of providing meaningful participation by M/WBEs on the Contract and achieving the Contract Goals established in Section I.B.1 hereof, Contractor should reference the directory of NYS Certified M/WBEs found at the following internet address:  
<https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp?TN=ny&XID=2528>.
  - b. For purposes of providing meaningful participation by SDVOBs, the Bidder/Contractor should refer to the List of Certified NYS Service-Disabled Veteran-Owned Businesses, which can be accessed from the OGS website page at the following link:  
<https://ogs.ny.gov/veterans>
  - c. The M/WBE Regulations are located at 5 NYCRR §§ 140 – 145.
- 2) **Bidders are required to submit a M/WBE/SDVOB Utilization Plan on Form A and Form A Supplemental in compliance with Document 00 21 13 Instruction to Bidders, Section 13– Submission of Post-Bid Information.** Any modifications or changes to the M/WBE/SDVOB Utilization Plan after the Contract award and during the term of the Contract must be reported on a revised M/WBE/SDVOB Utilization Plan and submitted to ORDA.
- 3) Staffing Plan (“From C”) shall be submitted by the apparent lowest responsible Bidder(s), of each Prime Contract, withing five (5) business days after the bid opening. The Owner reserves the right to request MWBE/SDVOB Plan(s) be submitted by the three (3) lowest responsible Bidder(s), for each Prime Contract, within five (5) business days after the bid opening. This right shall be exercised by written notification.
  - 4) Pursuant to 5 NYCRR §142.8, Bidder must document “good faith efforts” to provide meaningful participation by M/WBEs as subcontractors or suppliers in the performance of the Contract. Bidder must also document “good faith efforts” to provide meaningful participation by SDVOBs as subcontractors or suppliers in the performance of the Contract
  - 5) In accordance with Executive Law Section 316-a and 5 NYCRR §142.13, the Contractor acknowledges that if it is found to have willfully and intentionally failed to comply with the M/WBE participation goals set forth in the Contract, such a finding constitutes a breach of contract and the Contractor shall be liable to ORDA for liquidated or other appropriate damages, as set forth herein.
  - 6) In accordance with 5 NYCRR § 142.8, Bidders/Contractors must document their good faith efforts toward utilizing M/WBEs on the Contract. In accordance with 9 NYCRR § 252.2(n), Bidders/Contractors must document their good faith efforts toward utilizing SDVOBs on the Contract. Evidence of required good faith efforts shall include, but not be limited to, the following:
    - a. A list of the general circulation, trade, and M/WBE-oriented publications and dates of publications in which the Bidder/Contractor solicited the participation of certified M/WBE/SDVOBs as subcontractors/suppliers, copies of such solicitations, and any responses thereto. Solicitation shall include posting to the New York State Contract Reporter.

- PLANROOM COPY FOR BIDDING
- b. A list of certified M/WBEs appearing in the Empire State Development (“ESD”) M/WBE directory that were solicited for this Contract. Provide proof of dates or copies of the solicitations and copies of the responses made by the certified M/WBEs. Describe specific reasons that responding certified M/WBEs were not selected
  - c. A list of certified SDVOBs appearing in the OGS List of Certified NYS Service-Disabled Veteran-Owned Businesses that were solicited for this Contract. Provide proof of dates or copies of the solicitations and copies of the responses made by the certified SDVOBs. Describe specific reasons that responding SDVOBs were not selected.
  - d. Descriptions of the Contract documents/plans/specifications made available to certified M/WBE/SDVOBs by the Bidder/Contractor when soliciting their participation and steps taken to structure the scope of work for the purpose of subcontracting with, or obtaining supplies from, certified M/WBE/SDVOBs.
  - e. A description of the negotiations between the Bidder/Contractor and certified M/WBE/SDVOBs for the purposes of complying with the M/WBE/SDVOB goals of this Contract.
  - f. Dates of any pre-bid, pre-award, or other meetings attended by Bidder/Contractor, if any, scheduled by ORDA with certified M/WBE/SDVOBs whom ORDA determined were capable of fulfilling the M/WBE/SDVOB goals set in the Contract.
  - g. Other information deemed relevant to the request.
- 7) The goal for participation in the conduct of the Work is expressed as a percentage equal to the dollar value of the Work performed divided by the Contract Sum. Where the cost to the Bidder/Contractor of a single item of equipment exceeds twenty-five percent (25%) of the total contract price and where the Bidder/Contractor has shown good faith efforts to obtain such equipment from M/WBE manufacturers and suppliers, and was unsuccessful in obtaining the equipment from an M/WBE, the cost of such equipment shall be deducted from the contract sum prior to computing the M/WBE participation.
- 8) The M/WBE utilization credit for Work performed by M/WBEs providing a commercially useful function will be determined as follows:
- a. Where an M/WBE is not the Bidder/Contractor – M/WBE utilization credit will vary depending on how the M/WBE performs Work under the Contract, as follows:
    - i. Where the M/WBE performs Work under the Contract as a subcontractor, MBE or WBE utilization credit will be 100% of the dollar value of the Work performed by the MBE or WBE.
    - ii. Where the M/WBE performs Work under the Contract as a manufacturer, MBE or WBE utilization credit will be 100% of the dollar value of the Work performed by the MBE or WBE.
    - iii. Where the M/WBE assists in the performance of the Work under the Contract as a supplier, MBE or WBE utilization credit will be 60% of the dollar value of the Work performed by the MBE or WBE.
    - iv. Where the M/WBE assists in the performance of the Work under the Contract as a broker, MBE or WBE utilization credit will be equal to the percentage of the commission, or the mark-up percentage, of the items brokered, applied to the dollar value of the Work performed by the MBE or WBE.

- b. Where the Bidder/Contractor is a joint venture including one or more M/WBEs as joint venturers, MBE or WBE utilization credit will be the Contract Sum multiplied by the percentage of the joint venture's profits (or losses) that are to accrue to the M/WBE joint venturer(s) under the joint venture agreement.
- c. Where any M/WBE is the Bidder/Contractor or where the Bidder/Contractor is a joint venture consisting entirely of M/WBEs, and the Bidder/Contractor can document good faith efforts to subcontract to M/WBE subcontractors and/or suppliers - the Contract Sum.

## II) EQUAL EMPLOYMENT OPPORTUNITY (EEO)

- 1) The provisions of Article 15-A of the Executive Law and the rules and regulations promulgated thereunder pertaining to equal employment opportunities for minority group members and women shall apply to all Bidder/Contractors, and any subcontractors, awarded a subcontract over \$25,000 for labor, services, including legal, financial and other professional services, travel, supplies, equipment, materials, or any combination of the foregoing, to be performed, or rendered or furnished to, the contracting State agency ("the Work") except where the Work is for the beneficial use of the Bidder/Contractor.
  - a. Bidder/Contractor and Subcontractors shall undertake or continue existing EEO programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability, or marital status. For these purposes, EEO shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, and rates of pay or other forms of compensation. This requirement does not apply to: (i) the performance of work or the provision of services or any other activity that is unrelated, separate, or distinct from the Contract; or (ii) employment outside New York State.
  - b. By entering into this Contract, Bidder/Contractor certifies that the text set forth in Form #4, attached hereto and made a part hereof, is Bidder's/Contractor's equal employment opportunity policy. In addition, Bidders/Contractor agrees to comply with the Non-Discrimination Requirements set forth.

The Bidder/Contractor will include the provisions of Section II.1.a and Section II.1.b which provides for relevant provisions of the Human Rights Law, in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the Contract.

- 2) Form EEO -101 Workforce Utilization Reporting Form (Construction) ("Form EEO-101-Construction")

The Contractor shall submit, and shall require each of its subcontractors to submit, a Form EEO-101-Construction throughout the term of this Contract, by the 10<sup>th</sup> day of each month to report the actual workforce utilized during the previous month in the performance of the Contract by the specified categories listed including ethnic background, gender, and Federal occupational categories. Contractor shall coordinate with its subcontractors to ensure that all workers associated with this Contract are properly counted and reported.

The Form EEO-101-Construction must be submitted with your payment application to ORDA. Separate forms shall be completed by Contractor and all subcontractors. In limited instances, the Contractor or subcontractor may not be able to separate out the workforce utilized in the performance of the Contract from

Olympic Regional Development Authority  
Supplemental Information and Instructions to Bidders - MWBE, EEO & SDVOB

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Page 4 of 8

its total workforce. When a separation can be made, the Contractor or subcontractor shall submit the Form EEO-101-Construction and indicate that the information provided relates to the actual workforce utilized on the Contract. When the workforce to be utilized on the Contract cannot be separated out from the Contractor's or subcontractor's total workforce, the Contractor or subcontractor shall submit the Form EEO-101-Construction and indicate that the information provided is the Contractor's or subcontractor's total workforce during the subject time frame, not limited to work specifically performed under the Contract.

- 3) Contractor shall comply with the provisions of the Human Rights Law and all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

### **III) M/WBE/SDVOB COMPLIANCE**

- 1) By entering into a Contract with ORDA, Bidder certifies that it has submitted a completed M/WBE/SDVOB Utilization Plan ("Form A and Form A Supplemental") prior to contract award and will follow such Plan for the performance of M/WBE/SDVOBs on the Contract pursuant to the prescribed M/WBE/SDVOB goals set forth in Section I.B.1 of this Supplement. The Utilization Plan shall list the M/WBE/SDVOBs the Bidder intends to use to perform the Contract, a description of the Contract scope of work the Bidder intends the M/WBE/SDVOB to perform to meet the goals on the Contract, and the estimated, or if known, actual dollar amounts to be paid to an M/WBE/SDVOB. Changes to the agreed participation by M/WBE/SDVOBs after the Contract award and during the term of the contract must be reported on a revised M/WBE/SDVOB Utilization Plan submitted to ORDA.
- 2) By entering into the Contract, Bidder understands that only sums paid to M/WBEs for the performance of a commercially useful function, as that term is defined in 5 NYCRR § 140.1, may be applied towards the achievement of the applicable M/WBE participation goal. When an M/WBE is serving as a broker on the Contract, only 25 percent of all sums paid to a broker shall be deemed to represent the commercially useful function performed by the M/WBE.
- 3) ORDA will review the submitted M/WBE/SDVOB Utilization Plan and advise the Bidder of ORDA's acceptance or issue a notice of deficiency within thirty (30) calendar days of receipt. Bidder understands that making false representations or including information evidencing a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments.
- 4) Bidder/Contractor further agrees that a failure to submit and/or use such M/WBE/SDVOB Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, ORDA shall be entitled to any remedy provided herein, including but not limited to, a finding of Bidder/Contractor non-responsiveness.
- 5) If the Bidder/Contractor, after making good faith efforts, is unable to comply with M/WBE/SDVOB goals, the Bidder/Contractor may submit an Application for M/WBE/SDVOB Waiver form ("Form B") documenting good faith efforts by the Bidder/Contractor to meet such goals. If the documentation included with the waiver request is complete, ORDA shall evaluate the request and issue a written notice of acceptance or denial within twenty (20) business days of receipt.

- 6) If ORDA, upon review of the M/WBE/SDVOB Utilization Plan and updated Bidders list of Subcontractors and Suppliers determines that the Bidder is failing or refusing to comply with the Contract goals and no waiver has been issued in regards to such non-compliance, ORDA may issue a notice of deficiency to the Bidder. The Bidder must respond to the notice of deficiency within five (5) business days of receipt by submitting to ORDA:

ORDA Compliance  
New York State Olympic Regional Development Authority  
37 Church Street  
Lake Placid, NY 12946

Such response may include a request for partial or total waiver of M/WBE/SDVOB Contract Goals.

Bidder/Contractor must submit a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by ORDA to be inadequate, ORDA shall notify the Bidder and direct the Bidder to submit, within five (5) business days, a request for a partial or total waiver of M/WBE/SDVOB participation goals on Form B. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or proposal.

- 7) ORDA may disqualify a Bidder's bid or proposal as being non-responsive under the following circumstance:

- a. If a Bidder fails to submit an M/WBE/SDVOB Utilization Plan in compliance with Document 00 21 13 Instruction to Bidders, Section 13 – Submission of Post-Bid Information;
- b. If a Bidder fails to submit a written remedy to a notice of deficiency;
- c. If a Bidder fails to submit a request for waiver; or
- d. If ORDA determines that the Bidder has failed to document good faith efforts.

- 8) Contractors shall attempt to utilize, in good faith, any MBE, WBE, and SDVOB identified within its M/WBE/SDVOB Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to Contract Award may be made at any time during the term of the Contract to ORDA, but must be made no later than prior to the submission of a request for final payment on the Contract.

9) **Monthly/Quarterly M/WBE/SDVOB Contractor Compliance Report**

- a. In accordance with 5 NYCRR § 142.10, and 9 NYCRR § 252.2(q), Contractor is required to report Monthly and Quarterly M/WBE / SDVOB Contractor Compliance to ORDA during the term of the Contract for the preceding month's/quarter's activity, documenting progress made towards achievement of the Contract M/WBE/SDVOB goals.
- b. When a Contractor receives a payment from ORDA under an ORDA contract, it is the Contractor's responsibility to pay its subcontractors and suppliers in a timely manner.
- c. Contractor must submit to ORDA the Contractor's Monthly M/WBE / SDVOB Compliance Report on Form M/WBE 102 by the 10<sup>th</sup> day of each month during the term of the Contract for the preceding month's activity with their payment application.
- d. Contractor must submit to ORDA the Contractor's Quarterly M/WBE / SDVOB Compliance Report on Form M/WBE 102 by the 10<sup>th</sup> day of the month following the end of a quarter for the preceding month's activity with their payment application.



10) Access to the Contractor's Books: The Contractor shall permit access to its books, records and accounts by the State for purposes of investigation to ascertain compliance with the provisions of these supplemental conditions. The contractor shall include this provision in every subcontract so that such provision will be binding upon each subcontractor.

11) Liquidated Damages – MWBE Participation

- a. Where ORDA determines that Contractor is not in compliance with the requirements of the Contract and Contractor refuses to comply with such requirements, or if Contractor is found to have willfully and intentionally failed to comply with the MWBE participation goals, Contractor shall be obligated to pay liquidated damages to ORDA.
- b. Such liquidated damages shall be calculated as an amount equaling the difference between:
  - i. All sums identified for payment to MWBEs had the Contractor achieved the contractual MWBE goals; and
  - ii. All sums actually paid to MWBE/s for work performed or materials supplied under the Contract.
- c. In addition, failure to comply with the foregoing requirements may result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract, leading to the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as allowed by the Contract.
- d. After the Contractor has been afforded the process it is due, if ORDA determines that Contractor is liable for liquidated damages and such identified sums have not been withheld by ORDA, Contractor shall pay such liquidated damages to ORDA within sixty (60) days after they are assessed. Provided, however, that if the Contractor has filed a complaint with the Director of the Division of Minority and Women's Business Development pursuant to 5 NYCRR § 142.12, liquidated damages shall be payable only in the event of a determination adverse to the Contractor following the complaint process.

12) Damages – SDVOB Participation

- a. Where ORDA determines that Contractor is not in compliance with the requirements of the Contract and Contractor refuses to comply with such requirements, or if Contractor is found to have willfully and intentionally failed to comply with the SDVOB participation goals, Contractor shall be obligated to pay damages to ORDA pursuant to 9 NYCRR § 252.2(s).

Damages shall be calculated based on the actual cost incurred by the State agency related to the State agency's expenses for personnel, supplies and overhead related to establishing, monitoring, and reviewing certified service-disabled veteran-owned business enterprise programmatic goals.

- b. In addition, failure to comply with the foregoing requirements may result in a finding of non-responsiveness, non-responsibility and/or a breach of the Contract, leading to the withholding of funds, suspension or termination of the Contract or such other actions or enforcement proceedings as allowed by the Contract.

- c. After the Contractor has been afforded the process it is due, if ORDA determines that Contractor is liable for damages and such identified sums have not been withheld by ORDA, Contractor shall pay such liquidated damages to ORDA within sixty (60) days after they are assessed.

13) Any suspicion of fraud, waste, or abuse involving the contracting or certification of MWBEs shall be immediately reported to ESD's Division of Minority and Women's Business Development at (855) 373-4692.

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**DOCUMENT 00 22 13.1**  
**MWBE, EEO & SDVOB FORMS**

FORM A – M/WBE/SDVOB UTILIZATION PLAN

FORM A SUPPLEMENTAL - M/WBE/SDVOB UTILIZATION PLAN SUMMARY

FORM B – REQUEST FOR WAIVER

FORM C – STAFFING PLAN

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISE – EQUAL EMPLOYMENT  
OPPORTUNITY POLICY STATEMENT

MONTHLY M/WBE/SDVOB COMPLIANCE REPORT

EEO-101 WORKFORCE UTILIZATION REPORTING FORM (CONSTRUCTION)





## FORM A

### M/WBE/SDVOB UTILIZATION PLAN

**INSTRUCTIONS:** This form must be submitted in compliance with Section 002113 Instruction to Bidders, Section 12 – Submission of Post-Bid Information. This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each certified Minority and Women-owned Business Enterprise (M/WBE) and Service-Disabled Veteran Owned businesses under the contract. Attach additional sheets if necessary.

Offeror's Name:  
Address:  
City, State, Zip Code:  
Telephone No.:

Federal Identification No.:  
Project/Contract No.:

M/WBE/SDVOB Goals in the Contract:  
MBE 0 % WBE 0 % SDVOB 0 %  
(Refer to Document #00 22 13 Supplemental Information MWBE-SDV for Goal Determination)

Region/Location of Work:

1. Certified M/WBE Subcontractors/Suppliers Name, Address, Email Address, Telephone No.	2. Classification	3. Federal ID No.	4. Detailed Description of Work (Attach additional sheets, if necessary)	5. Dollar Value of Subcontracts/ Supplies/Services and intended performance dates of each component of the contract.
A.	NYS ESD CERTIFIED <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB			
B.	NYS ESD CERTIFIED <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB			

6. IF UNABLE TO FULLY MEET THE MBE AND WBE GOALS SET FORTH IN THE CONTRACT, OFFEROR MUST SUBMIT A REQUEST FOR WAIVER FORM C.

<b>PREPARED BY (Signature):</b> <b>DATE:</b>  <b>NAME AND TITLE OF PREPARER (Print or Type):</b> SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR'S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A, 5 NYCRR PART 143, AND THE ABOVE-REFERENCED SOLICITATION. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND POSSIBLE TERMINATION OF YOUR CONTRACT.	<b>TELEPHONE NO.:</b>		<b>EMAIL ADDRESS:</b>
	<b>FOR M/WBE USE ONLY</b>		
	<b>REVIEWED BY:</b>		<b>DATE:</b>
	<b>UTILIZATION PLAN APPROVED:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO Date: _____ <b>Contract No.:</b> _____ <b>Project No. (if applicable):</b> _____  <b>Contract Award Date:</b> _____ <b>Estimated Date of Completion:</b> _____ <b>Amount Obligated Under the Contract:</b> _____ <b>Description of Work:</b> _____ <b>NOTICE OF DEFICIENCY ISSUED:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO Date: _____  <b>NOTICE OF ACCEPTANCE ISSUED:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO Date: _____		

<p align="center"><b>FORM A SUPPLEMENTAL</b>  <b>M/WBE/SDVOB Utilization Plan Summary</b></p>	

INSTRUCTIONS: This form must be submitted with any bid, proposal, or proposed negotiated contract or within a reasonable time thereafter, but prior to contract award. This Goal Setting Form must contain the sum in dollars of each Minority and Women-Owned Business Enterprise and Service-Disabled Veteran Owned Business category.

<b>CIN:</b>	<b>Contractor:</b>
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Offeror's Name:		Telephone Number:	
Address:		Region/Location of Work:	
City, State, Zip Code:		Federal Identification No.:	

Contract Base Bid				Utilization Plan Summary			
		Contract Goals (%)	Dollar Value		Goal (%)	Dollar Value	Over/Under/As Set
	M			M			
	W			W			
	S			S			

[illegible]

PREPARED BY (Signature): \_\_\_\_\_

Date: \_\_\_\_\_

SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR/CONTRACTOR'S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A AND 5 NYCRR PART 143. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND/OR TERMINATION OF THE CONTRACT.

Name and Title of Preparer (Printed or Typed):

Telephone Number: \_\_\_\_\_ Email Address: \_\_\_\_\_



## FORM B REQUEST FOR WAIVER

**INSTRUCTIONS: SEE PAGE 2 OF THIS ATTACHMENT FOR REQUIREMENTS AND DOCUMENT SUBMISSION INSTRUCTIONS.**

Offeror/Contractor Name:		Federal Identification No.:	
Address:		Solicitation/Contract No.:	
City, State, Zip Code:		M/WBE – SDVOB Goals: MBE      %    WBE      %    SDVOB      %	
By submitting this form and the required information, the offeror/contractor certifies that every Good Faith Effort has been taken to promote M/WBE participation pursuant to the M/WBE requirements set forth under the contract.			
Contractor is requesting a:  1. <input type="checkbox"/> MBE Waiver – A waiver of the MBE Goal for this procurement is requested. <input type="checkbox"/> Total <input checked="" type="checkbox"/> Partial  2. <input type="checkbox"/> WBE Waiver – A waiver of the WBE Goal for this procurement is requested. <input type="checkbox"/> Total <input type="checkbox"/> Partial  3. <input type="checkbox"/> SDVOB Waiver- A waiver of the SDVOB Goal for this procurement is requested. <input type="checkbox"/> Total <input type="checkbox"/> Partial  4. <input type="checkbox"/> Waiver Pending ESD Certification – (Check here if subcontractors or suppliers of Contractor are not certified M/WBE, but an application for certification has been filed with Empire State Development.)      Date of such filing with Empire State Development: _____			
PREPARED BY (Signature):   SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR/CONTRACTOR'S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A AND 5 NYCRR PART 143. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND/OR TERMINATION OF THE CONTRACT.		Date:	
Name and Title of Preparer (Printed or Typed):		Telephone Number:	Email Address:
Submit with the bid or proposal or if submitting after award submit to:  New York State Olympic Regional Development Authority		***** FOR M/WBE USE ONLY *****	
		REVIEWED BY:	
		DATE:	
		Waiver Granted: <input type="checkbox"/> YES      MBE: <input type="checkbox"/> WBE: <input type="checkbox"/>	
		<input type="checkbox"/> Total Waiver <input type="checkbox"/> Partial Waiver <input type="checkbox"/> ESD Certification Waiver <input type="checkbox"/> *Conditional <input type="checkbox"/> Notice of Deficiency Issued _____	
		*Comments:	



## REQUIREMENTS AND DOCUMENT SUBMISSION INSTRUCTIONS

When completing the Request for Waiver Form please check all boxes that apply. To be considered, the Request for Waiver Form must be accompanied by documentation for items 1 – 11, as listed below. If box # 3 has been checked above, please see item 11. Copies of the following information and all relevant supporting documentation must be submitted along with the request:

1. A statement setting forth your basis for requesting a partial or total waiver.
2. The names of general circulation, trade association, and M/WBE-SDVOB oriented publications in which you solicited certified M/WBEs for the purposes of complying with your participation goals. **Solicitation shall include posting on the New York State Contract Reporter.**
3. A list identifying the date(s) that all solicitations for certified M/WBE participation were published in any of the above publications.
4. A list of all certified M/WBEs or SDVOBs appearing in the NYS Directories of Certified Firms that were solicited for purposes of complying with your certified M/WBE and SDVOB participation levels.
5. Copies of notices, dates of contact, letters, and other correspondence as proof that solicitations were made in writing and copies of such solicitations, or a sample copy of the solicitation if an identical solicitation was made to all certified M/WBE and SDVOBs.
6. Provide copies of responses made by certified M/WBEs and SDVOBs to your solicitations.
7. Provide a description of any contract documents, plans, or specifications made available to certified M/WBEs/SDVOBs for purposes of soliciting their bids and the date and manner in which these documents were made available.
8. Provide documentation of any negotiations between you, the Offeror/Contractor, and the M/WBEs-SDVOBs have undertaken for purposes of complying with the certified M/WBE and SDVOB participation goals.
9. Provide any other information you deem relevant which may help us in evaluating your request for a waiver.
10. Provide the name, title, address, telephone number, and email address of offeror/contractor's representative authorized to discuss and negotiate this waiver request.
11. Copy of notice of MWBE or SDVOB application receipt issued by Empire State Development (ESD) or the Office of General Services (OGS).

Note:

**Unless a Total Waiver has been granted, Offeror/Contractor will be required to submit all reports and documents pursuant to the provisions set forth in the Contract, as deemed appropriate ORDA, to determine M/WBE and SDVOB compliance.**



## FORM C STAFFING PLAN

**Submit with Bid or Proposal – Instructions on page 2**

<b>Solicitation No.:</b>	<b>Reporting Entity:</b>	<b>Report includes Contractor's/Subcontractor's:</b> <input type="checkbox"/> Work force to be utilized on this contract <input type="checkbox"/> Total work force
<b>Offeror's Name:</b>		<input type="checkbox"/> Offeror <input type="checkbox"/> Subcontractor <b>Subcontractor's name</b> _____

Enter the total number of employees for each classification in each of the EEO-Job Categories identified

EEO-Job Category	Total Work force	Work force by Gender		Work force by Race/Ethnic Identification													
		Total Male (M)	Total Female (F)	White (M) (F)		Black (M) (F)		Hispanic (M) (F)		Asian (M) (F)		Native American (M) (F)		Disabled (M) (F)		Veteran (M) (F)	
Officials/Administrators																	
Professionals																	
Technicians																	
Sales Workers																	
Office/Clerical																	
Craft Workers																	
Laborers																	
Service Workers																	
Temporary /Apprentices																	
Totals																	

<b>PREPARED BY (Signature):</b>	<b>TELEPHONE NO.:</b> <b>EMAIL ADDRESS:</b>
<b>NAME AND TITLE OF PREPARER (Print or Type):</b>	<b>Submit completed with bid or proposal</b>



**General instructions:** All Offerors and each subcontractor identified in the bid or proposal must complete an EEO Staffing Plan (FORM B) and submit in compliance with Section 002113 Instruction to Bidders, Section 12 – Submission of Post-Bid Information. Where the work force to be utilized in the performance of the State contract can be separated out from the contractor's and/or subcontractor's total work force, the Offeror shall complete this form only for the anticipated work force to be utilized on the State contract. Where the work force to be utilized in the performance of the State contract cannot be separated out from the contractor's and/or subcontractor's total work force, the Offeror shall complete this form for the contractor's and/or subcontractor's total work force.

**Instructions for completing:**

1. Enter the Solicitation number that this report applies to along with the name and address of the Offeror.
2. Check off the appropriate box to indicate if the Offeror completing the report is the contractor or a subcontractor.
3. Check off the appropriate box to indicate work force to be utilized on the contract or the Offerors' total work force.
4. Enter the total work force by EEO job category.
5. Break down the anticipated total work force by gender and enter under the heading 'Work force by Gender'
6. Break down the anticipated total work force by race/ethnic identification and enter under the heading 'Work force by Race/Ethnic Identification'. Contact the ORDA Permissible contact(s) for the solicitation if you have any questions.
7. Enter information on disabled or veterans included in the anticipated work force under the appropriate headings.
8. Enter the name, title, phone number and email address for the person completing the form. Sign and date the form in the designated boxes.

**RACE/ETHNIC IDENTIFICATION**

Race/ethnic designations as used by the Equal Employment Opportunity Commission do not denote scientific definitions of anthropological origins. For the purposes of this form, an employee may be included in the group to which he or she appears to belong, identifies with, or is regarded in the community as belonging. However, no person should be counted in more than one race/ethnic group. The race/ethnic categories for this survey are:

- **WHITE** (Not of Hispanic origin) All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.
- **BLACK** a person, not of Hispanic origin, who has origins in any of the black racial groups of the original peoples of Africa.
- **HISPANIC** a person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.
- **ASIAN & PACIFIC ISLANDER** a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands.

- **NATIVE INDIAN (NATIVE AMERICAN/ ALASKAN NATIVE)** a person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition.

**OTHER CATEGORIES**

- **DISABLED INDIVIDUAL** any person who:
  - has a physical or mental impairment that substantially limits one or more major life activity(ies)
  - has a record of such an impairment; or
  - is regarded as having such an impairment.
- **VIETNAM ERA VETERAN** a veteran who served at any time between and including January 1, 1963 and May 7, 1975.
- **GENDER** Male or Female



**MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES – EQUAL  
EMPLOYMENT OPPORTUNITY POLICY STATEMENT (Form #4)**

**M/WBE AND EEO POLICY STATEMENT**

I, \_\_\_\_\_, the (awardee/contractor) \_\_\_\_\_ agree to adopt the following policies with respect to the project being developed or services rendered at \_\_\_\_\_

**M/WBE**

This organization will and will cause its contractors and subcontractors to take good faith actions to achieve the M/WBE contract participations goals set by the State for that area in which the State-funded project is located, by taking the following steps:

- (1) Actively and affirmatively solicit bids for contracts and subcontracts from qualified State certified MBEs or WBEs, including solicitations to M/WBE contractor associations.
- (2) Request a list of State-certified M/WBEs from the contracting agency and solicit bids from them directly.
- (3) Ensure that plans, specifications, request for proposals and other documents used to secure bids will be made available in sufficient time for review by prospective M/WBEs.
- (4) Where feasible, divide the work into smaller portions to enhanced participations by M/WBEs and encourage the formation of joint venture and other partnerships among M/WBE contractors to enhance their participation.
- (5) Document and maintain records of bid solicitation, including those to M/WBEs and the results thereof. Contractor will also maintain records of actions that its subcontractors have taken toward meeting M/WBE contract participation goals.
- (6) Ensure that progress payments to M/WBEs are made on a timely basis so that undue financial hardship is avoided, and that bonding and other credit requirements are waived or appropriate alternatives developed to encourage M/WBE participation.

**EEO**

(a) This organization will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability or marital status, will undertake or continue existing programs of affirmative action to ensure that minority group members are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on state contracts.

(b) This organization shall state in all solicitation or advertisements for employees that in the performance of the State contract all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex disability or marital status.

(c) At the request of the contracting agency, this organization shall request each employment agency, labor union, or authorized representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of this organization's obligations herein.

(d) Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, pregnancy or pregnancy-related conditions, gender identity, familial status, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

(e) This organization will include the provisions of sections (a) through (d) of this agreement in every subcontract in such a manner that the requirements of the subdivisions will be binding upon each subcontractor as to work in connection with the State contract

Agreed to this \_\_\_\_\_ day of \_\_\_\_\_, 2\_\_\_\_\_

By: \_\_\_\_\_

Print: \_\_\_\_\_ Title: \_\_\_\_\_

Laura Beck is designated as the Minority Business Enterprise Liaison responsible for administering the Minority and Women-Owned Business Enterprises - Equal Employment Opportunity (M/WBE-EEO) program.

# MONTHLY M/WBE / SDVOB COMPLIANCE REPORT

M/WBE 102 (Revised 10/20)

As evidence of the progress made toward achievement of the minority, women and service-disabled veteran owned business enterprise goal(s), **REPORTING PERIOD Month/Year** \_\_\_\_\_ contractor is required to complete and submit the following for each NYS-certified MWBE/SDVOB (please use additional sheets if necessary). Beginning THIRTY (30) days after a contract is awarded Quarterly MWBE Contractor Compliance Reports are due on The 10<sup>th</sup> of each month to report MWBE and SDVOB utilization for the preceding month.

## Contract Overview

Offeror/Contractor Name: \_\_\_\_\_ Telephone: \_\_\_\_\_ M/WBE/SDV NYS Certified Firm? \_\_\_\_\_

Address: \_\_\_\_\_ Federal ID No: \_\_\_\_\_ ☐ Y If Yes, proceed to box A

City, State, Zip: \_\_\_\_\_ Project No: \_\_\_\_\_ ☐ N If No, proceed to box B

Please place the name of your company in Box A only if you are a NYS-Certified M/WBE/SDV and include quarterly contract payments received.

**A** Name: \_\_\_\_\_ Actual ORDA Contract payment(s) received by the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ \_\_\_\_\_

FEIN: \_\_\_\_\_ MBE ☐ DUAL ☐

WBE ☐ SDVOB ☐

Actual total of payments made over the life of this contract: \$ \_\_\_\_\_

In boxes B thru E, please include quarterly expenditures your company made to NYS-certified M/WBE/SDV companies only. Check the DIRECT box for expenditures required to meet ORDA Contract obligations, and INDIRECT box for expenditures not specific to contract obligations.

**B** Name: \_\_\_\_\_ Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ \_\_\_\_\_

FEIN: \_\_\_\_\_

☐ MBE ☐ DUAL ☐ DIRECT

☐ WBE ☐ SDVOB ☐ INDIRECT

Actual total of payments made over the life of this contract: \$ \_\_\_\_\_

Description of Work: \_\_\_\_\_

Dates of Services: \_\_\_\_\_

**C** Name: \_\_\_\_\_ Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ \_\_\_\_\_

FEIN: \_\_\_\_\_

☐ MBE ☐ DUAL ☐ DIRECT

☐ WBE ☐ SDVOB ☐ INDIRECT

Actual total of payments made over the life of this contract: \$ \_\_\_\_\_

Description of Work: \_\_\_\_\_

Dates of Services: \_\_\_\_\_



In boxes B thru E, please include quarterly expenditures your company made to NYS-certified M/WBE/SDV companies only. Check the DIRECT box for expenditures required to meet ORDA Contract obligations, and INDIRECT box for expenditures not specific to contract obligations.

<b>D Name:</b> _____			Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period:	\$ _____
<b>FEIN:</b> _____				
<input type="checkbox"/> MBE	<input type="checkbox"/> DUAL	<input type="checkbox"/> DIRECT	Actual total of payments made over the life of this contract:	\$ _____
<input type="checkbox"/> WBE	<input type="checkbox"/> SDVOB	<input type="checkbox"/> INDIRECT	Description of Work:	_____
			Dates of Services:	_____

<b>E Name:</b> _____			Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period:	\$ _____
<b>FEIN:</b> _____				
<input type="checkbox"/> MBE	<input type="checkbox"/> DUAL	<input type="checkbox"/> DIRECT	Actual total of payments made over the life of this contract:	\$ _____
<input type="checkbox"/> WBE	<input type="checkbox"/> SDVOB	<input type="checkbox"/> INDIRECT	Description of Work:	_____
			Dates of Services:	_____

- ☐ I hereby affirm that the information supplied in this quarterly compliance report is true and correct to the best of my knowledge.
- ☐ I hereby affirm that the information supplied in the previous quarterly report is true and correct. If not, attached is a revised compliance report for the previous quarter.

SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR/CONTRACTOR'S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE and SDVOB REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A, 5 NYCRR PART 142, AND THE ABOVE REFERENCED SOLICITATION. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND/OR TERMINATION OF THE CONTRACT.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Print Name \_\_\_\_\_ Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Title \_\_\_\_\_ Notary Public \_\_\_\_\_

Email \_\_\_\_\_ Telephone \_\_\_\_\_ Seal: \_\_\_\_\_

FOR AUTHORIZED USE ONLY	
Reviewed by:	_____
Date Received:	_____

Use additional sheets as needed.

# Quarterly M/WBE / SDVOB COMPLIANCE REPORT

M/WBE 102 (Revised 10/20)

As evidence of the progress made toward achievement of the minority, women and service-disabled veteran owned business enterprise goal(s), contractor is required to complete and submit the following for each NYS-certified MWBE/SDVOB (please use additional sheets if necessary). Beginning THIRTY (30) days after a contract is awarded Quarterly MWBE Contractor Compliance Reports are due on the 10th of the month following the preceding quarter. January 10, April 10, July 10 and October 10.

## Reporting Period:

April 1- June 30 _____	Oct 1- Dec 31 _____
July 1 – Sept 30 _____	Jan 1- Mar 30 _____

## Contract Overview:

Offeror/Contractor Name \_\_\_\_\_ Telephone: \_\_\_\_\_ M/WBE/SDV NYS Certified Firm? \_\_\_\_\_ Federal ID No: \_\_\_\_\_  
 If Yes, proceed to box A. If No, proceed to box B

City, State, Zip: \_\_\_\_\_ Project No: \_\_\_\_\_

Please place the name of your company in Box A only if you are a NYS-Certified M/WBE/SDV and include quarterly contract payments received.

**A** Name: \_\_\_\_\_ Actual ORDA Contract payment(s) received by the NYS-Certified M/WBE/SD Contractor during the reporting period: \$ \_\_\_\_\_

FEIN: \_\_\_\_\_ MBE ☐ DUAL ☐  
 WBE ☐ SDVOB ☐

Actual total of payments made over the life of this contract: \$ \_\_\_\_\_

In boxes B thru E, please include quarterly expenditures your company made to NYS-certified M/WBE/SDV companies only. Check the DIRECT box for expenditures required to meet ORDA Contract obligations, and INDIRECT box for expenditures not specific to contract obligations.

**B** Name: \_\_\_\_\_ Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ \_\_\_\_\_

FEIN: \_\_\_\_\_

☐ MBE ☐ DUAL ☐ DIRECT  
☐ WBE ☐ SDVOB ☐ INDIRECT

Actual total of payments made over the life of this contract: \$ \_\_\_\_\_

Description of Work: \_\_\_\_\_

Dates of Services: \_\_\_\_\_

**C** Name: \_\_\_\_\_ Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ \_\_\_\_\_

FEIN: \_\_\_\_\_

☐ MBE ☐ DUAL ☐ DIRECT  
☐ WBE ☐ SDVOB ☐ INDIRECT

Actual total of payments made over the life of this contract: \$ \_\_\_\_\_

Description of Work: \_\_\_\_\_

Dates of Services: \_\_\_\_\_

In boxes B thru E, please include quarterly expenditures your company made to NYS-certified M/WBE/SDV companies only. Check the DIRECT box for expenditures required to meet ORDA Contract obligations, and INDIRECT box for expenditures not specific to contract obligations.

<b>D Name:</b> _____			Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ _____
<b>FEIN:</b> _____			
<input type="checkbox"/> MBE	<input type="checkbox"/> DUAL	<input type="checkbox"/> DIRECT	Actual total of payments made over the life of this contract: \$ _____
<input type="checkbox"/> WBE	<input type="checkbox"/> SDVOB	<input type="checkbox"/> INDIRECT	Description of Work: _____
Dates of Services: _____			

<b>E Name:</b> _____			Actual payment(s) made to the NYS-Certified M/WBE/SDV Contractor during the reporting period: \$ _____
<b>FEIN:</b> _____			
<input type="checkbox"/> MBE	<input type="checkbox"/> DUAL	<input type="checkbox"/> DIRECT	Actual total of payments made over the life of this contract: \$ _____
<input type="checkbox"/> WBE	<input type="checkbox"/> SDVOB	<input type="checkbox"/> INDIRECT	Description of Work: _____
Dates of Services: _____			

- ☐ I hereby affirm that the information supplied in this quarterly compliance report is true and correct to the best of my knowledge.
- ☐ I hereby affirm that the information supplied in the previous quarterly report is true and correct. If not, attached is a revised compliance report for the previous quarter.

SUBMISSION OF THIS FORM CONSTITUTES THE OFFEROR/CONTRACTOR'S ACKNOWLEDGEMENT AND AGREEMENT TO COMPLY WITH THE M/WBE REQUIREMENTS SET FORTH UNDER NYS EXECUTIVE LAW, ARTICLE 15-A, 5 NYCRR PART 142, AND THE ABOVE REFERENCED SOLICITATION. FAILURE TO SUBMIT COMPLETE AND ACCURATE INFORMATION MAY RESULT IN A FINDING OF NONCOMPLIANCE AND/OR TERMINATION OF THE CONTRACT.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Print Name \_\_\_\_\_

Title \_\_\_\_\_

Email \_\_\_\_\_ Telephone \_\_\_\_\_

Use additional sheets as needed.

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Notary Public

Seal:

FOR AUTHORIZED USE ONLY

Reviewed by:

Date Received:

## Section A (Contractor/Subcontractor Information)

Section B (Hours Worked by Race/Ethnic Identification)

When the workforce to be utilized on the contract cannot be separated out from the contractor's and/or subcontractor's total workforce, information on the contractor's and/or subcontractor's total workforce must be included in the report.

**When the workforce to be utilized on the contract cannot be separated out from the contractor's and/or subcontractor's total workforce, information on the contractor's and/or subcontractor's total workforce must be included in the report.**

## DOCUMENT 00 22 14

## MWBE &amp; SDVOB LIST

ORDA Interested Vendors					
Contact Name	Service or Supply	Type	Company Name	Phone	Email
Laurie Pollay	Env Services, Maint and Repair	SDVOB	Academy Energy Group	518-222-3697	<a href="mailto:Laurie.Pollay@AcademyEnergyGroup.com">Laurie.Pollay@AcademyEnergyGroup.com</a>
Ammiel Fernandez	Wholesale Trade	WBE	2uTEC, L.L.C	315-410-4649	<a href="mailto:afernandez@2uTEC.com">afernandez@2uTEC.com</a>
Keith Bernard	Construction	MBE	34 Group Inc.	716-430-2217	<a href="mailto:jhart@argentassociates.com">jhart@argentassociates.com</a>
Dory Alport	Plumbing and Heating Supplier	WBE	A. Alport	845-434-8668	<a href="mailto:dory@alport.com">dory@alport.com</a>
Amber Stevenson	Placing and Tying Reinforcing Rod	WBE	AAA Reinforcing	518-828-0359	<a href="mailto:aaareinforcingllc@yahoo.com">aaareinforcingllc@yahoo.com</a>
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Louise Eddy, Vickie Souve	Hardware, Supplies	WBE	Saratoga Quality Hardware	518-584-9180	<a href="mailto:louiseeddy@sqhinc.com">louiseeddy@sqhinc.com</a>
Harrison Kendall	Supplier	SDVOB	SDVOSB Materials, Technology & Supply LLC	914-216-9400	<a href="mailto:harrisonjameskendall@gmail.com">harrisonjameskendall@gmail.com</a>
Zach Herrick	Construction/Engineering Staffing	MBE	Secure Tek Solutions	860-760-0313 x302	<a href="mailto:zach@secureteksolutions.com">zach@secureteksolutions.com</a>

Jesse Palermo	Construction	SDV	Serviam Construction	518-570-5015	<a href="mailto:vduley@aedconline.com">vduley@aedconline.com</a>
Shalini Bhattacharya	Interior Design	MBE	Shiara Design	585-410-2727	<a href="mailto:shiaradesign.mwbe@google.com">shiaradesign.mwbe@google.com</a>
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Susan Kelley	Environmental Consultant	MBE, WBE, DBE	Sienna Environmental Technologies	315-257-0270	<a href="mailto:skelley@siennaet.com">skelley@siennaet.com</a>
Lauren Linakis	SBDC	SBDC	Small Business Develop Ctr	934-420-2891	<a href="mailto:lauren.linakis@farmingtondale.edu">lauren.linakis@farmingtondale.edu</a>
Sean Fitzthum	Photography	SDVOB	SMF Photos	(347) 546-5989	<a href="mailto:sean@smfphotos.com">sean@smfphotos.com</a>
Stephan Perry	Building and Maintenance Ops	SDVOB	Source Energy Infrared	(518) 522-7670	<a href="mailto:sparry@seiinspectio ns.com">sparry@seiinspectio ns.com</a>
Joseph Maltino	Technology	MBE	Spruce Technology	973-476-3157	<a href="mailto:jmaltino@sprucetech.com">jmaltino@sprucetech.com</a>
Ellen Fitzgerald	Architectural Design, Construction	SDVOB/M/WBE	STC Design	(518) 421-7772	<a href="mailto:stc@stcdesignaacc.com">stc@stcdesignaacc.com</a>
Dan Evans	Admin, Tech, IT	SDVOB	Storm King Analytics	(508) 687-0326	<a href="mailto:dan.evans@stormkinganalytics.com">dan.evans@stormkinganalytics.com</a>
Chris Platt	Generators	SDVOB	Storm Power Solutions	315-870-8836	<a href="mailto:cplatt@stormpowersolutions.com">cplatt@stormpowersolutions.com</a>
Kathy Bishop	Legal and Investigative Services	MBE/SDVOB	Sullivan Cove Consultants	(410) 544-4495	<a href="mailto:klbishop@sullivancove.com">klbishop@sullivancove.com</a>
Maria Fallon	Electrical, low/med voltage contractor	WBE/MBE	Swan Contracting	518-675-0904	<a href="mailto:info@swan2b.com">info@swan2b.com</a>
Jim Terhune	Supplier, Materials	SDV	T & T Materials	585-328-9941	<a href="mailto:jterhune@tandt-materials.com">jterhune@tandt-materials.com</a>
Ebby Lewis	Administrative and Technical	SDVOB	TAMD Management	(254) 768-6299	<a href="mailto:jewelentllc@yahoo.com">jewelentllc@yahoo.com</a>
Elizabeth Wall	Engineering, Scheduling	WBE	TechEdge Consulting	518-505-0884	<a href="mailto:bwall@techedgeco.com">bwall@techedgeco.com</a>
Tammy Bowman	CBD Distributor	WBE	The Farm Assist	315-527-7876	<a href="mailto:tamdpm@gmail.com">tamdpm@gmail.com</a>
Darcy Veneziale	Lighting Design	WBE	The Lighting Practice	215-238-1644 x214	<a href="mailto:dveneziale@thelightingpractice.com">dveneziale@thelightingpractice.com</a>
Sung Lee	Market Analysis, Research	MBE, WBE	The Research Associates	212.868.5178	<a href="mailto:swlee@theresearch.com">swlee@theresearch.com</a>
Francisco Cortes	Advertising and Marketing	SDVOB	The Setroc Group, Inc.	(917) 689-7223	<a href="mailto:francisco@thesetrocgroup.com">francisco@thesetrocgroup.com</a>
Darren Ren	Safety and Security	SDVOB/M/WBE	The Starksworld LLC	(315) 262-7710	<a href="mailto:thestarksworldllc@gmail.com">thestarksworldllc@gmail.com</a>

Terrence Fenningham	Construction	SDVOB	Thomas Joseph Solutions, Inc.	(215) 370-5971	<a href="mailto:terrence@thomasjosephsolutions.com">terrence@thomasjosephsolutions.com</a>
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Margo Cargill	Marketing and Communications	M/WBE	Titanium Linx Consulting	917-324-3462	<a href="mailto:mcargill@titaniumlinx.com">mcargill@titaniumlinx.com</a>
Jonathan Bentley	Electronics	SDVOB	Tony Baird Electronics/Grainger	315-422-4430	<a href="mailto:jonathan@tonybairdelectronics.com">jonathan@tonybairdelectronics.com</a>
Joshua Bradley	Scaffolding	WBE	Tri City	518-895-2587	<a href="mailto:jbradley@tricityscaffold.com">jbradley@tricityscaffold.com</a>
Linda Brienza	Electrical Contractor	WBE	Triangle Electric	518-562-5245	<a href="mailto:lbrienza@trianglesystems.com">lbrienza@trianglesystems.com</a>
Catherine Dare	Environmental Consultant	WBE	TRM Environmental Consultants	315-334-3140	<a href="mailto:catherine@trmconsultants.com">catherine@trmconsultants.com</a>
Danny Giardullo	Legal and Investigative Services	SDVOB	TRUVIEW BSI, LLC	(516) 289-0273	<a href="mailto:dgiardullo@trueviewbsi.com">dgiardullo@trueviewbsi.com</a>
Jane Millard	Electrical Supplies and Equipment	WBE	Turtle and Hughes	732-574-3600	<a href="mailto:barbarac@turtle.com">barbarac@turtle.com</a>
Dawn Juneau	IT, Security, Communications	WBE	Twinstat Technologies	518-563-7100	<a href="mailto:support@twinstat.com">support@twinstat.com</a>
Alexa Modero	Materials Manufacturing	SDVOB	United States Manufacturing Company	973-668-9862	<a href="mailto:alexa@usmcppe.com">alexa@usmcppe.com</a>
James Cairns II, CCM	Admin, Construction	SDVOB	Valiant Group LLC	(717) 669-8789	<a href="mailto:jcairns@valiantgroup.com">jcairns@valiantgroup.com</a>
Antonio Figueroa	Medical and Healthcare	SDVOB	Veteran Home Mods	(646) 943-1250	<a href="mailto:Veteranhomemods@gmail.com">Veteranhomemods@gmail.com</a>
Daniel Rider	Deep foundations/ Large format printing	SDVOB	Veteran Materials Co, LLC/Vintage Ski Shop	716-353-6370	<a href="mailto:danriderpe@gmail.com">danriderpe@gmail.com</a>
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Ty Thoeny	Fabrication Piping	SDV	Weld Stream	518-598-8232	<a href="mailto:info@weldstreamfab.com">info@weldstreamfab.com</a>
Lisa Hobba	Electrical, Fiber, Comms	WBE	Weydman Electric	716-692-7667	<a href="mailto:lhobba@weydmanelectric.com">lhobba@weydmanelectric.com</a>
Steven Ovitt	Env Mgmt, Trail Development	WBE	Wilderness Property Mgmt	518-683-2005	<a href="mailto:wpmtrails@gmail.com">wpmtrails@gmail.com</a>
Peter Lewis	Media Streaming Software	MBE	Worldcast Live	917-755-7158	<a href="mailto:Peter.lewis@worldcastlive.com">Peter.lewis@worldcastlive.com</a>
Jamillah Wright	Printing	MWBE	Write It Up	917-204-9334	<a href="mailto:jamillah@writeitupinc.com">jamillah@writeitupinc.com</a>
Richard Hisert	A/E/CM	MBE, WBE, SDV	Yerkes-H2H JV	518-270-1620	<a href="mailto:rhisert@h2hg-e.com">rhisert@h2hg-e.com</a>

<b>Elizabeth Stuckey</b>	<b>Recruiting</b>	<b>MWBE</b>	<b>Zeus Associates</b>	<b>212-634- 7667</b>	<b><u><a href="mailto:liz@zeusstaffing.com">liz@zeusstaffing.com</a></u></b>
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**End of Document**

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## DOCUMENT 00 31 13

### REFERENCE SUMMARY PROJECT SCHEDULE

A Summary Project Schedule has been prepared for this project. Refer to DOCUMENT 01 11 14 - NOTICE TO BIDDERS for the required Critical Milestones of the work as presented on the following pages. This Summary Project Schedule is meant to be used as reference in preparing a bid response for the Work Plan requirement of DOCUMENT 00 22 19 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS - QUALIFICATIONS OF BIDDERS AND MANDATORY PRE-AWARD SUBMITTAL REQUIREMENTS. It is not intended that these examples limit the Contractor in any way in preparation of a bid response.

Bid Milestones are presented on the following pages which encompass the anticipated durations of Work related to the Project. The Summary Project Schedule and Bid Milestones are included as part of this section and will be used to develop the final CPM Baseline Project Schedule preparation in accordance with Document 01 31 13 – Project Schedule.

- A. The prospective bidder expressly understands that his bid for the Work shall be based upon meeting all the established milestone dates, even if to meet such milestone dates requires expedited delivery of material, additional manpower, additional equipment, additional concurrent operations and overtime.
- B. Failure to meet the established Critical Milestone dates may result in assessment of liquidated damages as described in Article 13 of the General Conditions.
- C. The start of work for this contract, which is indicated in the Notice to Bidders, shall be adjusted to reflect the actual date of the Notice of Award. If Activity's are delayed through no fault of the Contractor, then the remaining milestone dates will be adjusted by adding the corresponding period of delay to the milestone dates.



**DOCUMENT 00 31 26****EXISTING HAZARDOUS MATERIAL INFORMATION****1.01 ASBESTOS SURVEY REPORT**

Samples listed in the report were collected at the Project Site and tested for Asbestos Containing Materials (ACM). The report was compiled for New York State Office of General Services, Design and Construction Group by an ELAP certified laboratory. In order to determine the Asbestos content, samples were analyzed by polarized light microscopy (PLM) and/or transmission electron microscopy (TEM). The report is intended for the State design and estimate purposes only, and is included to provide bidders with that same information available to the State. The Bulk Samples are representative of Homogeneous Area (HA) and is defined as a suspect material of similar age, appearance, function and texture. All field information was organized in accordance with 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA). See the report included in the Appendix for type, condition, location and approximate quantity of ACM.

**END OF DOCUMENT**



BID BOND

KNOWN ALL PERSONS BY THESE PRESENTS, that

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

(hereinafter called the "Principal") and

Surety: \_\_\_\_\_

Principal Office: \_\_\_\_\_

a corporation created and existing under the Laws of the State of \_\_\_\_\_, and duly licensed as an insurance company in the State of New York (hereinafter called the "Surety"), are held and firmly bound unto the New York State Regional Development Corporation (hereinafter called "ORDA"), in the full and just sum **equal to five percent (5%) of the Bid Amount**, good and lawful money of the United States of America, for the payment of which said sum of money, well and truly to be made and done, the Principal binds itself and its heirs, executors and administrators, and successors and assigns, and the Surety binds itself, its successors and/or assigns, jointly and severally, firmly by these presents:

Signed, sealed and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**WHEREAS**, the Principal has submitted to ORDA a proposal for \_\_\_\_\_;  
and \_\_\_\_\_ (ORDA Contract Number and Name)

**WHEREAS**, the Principal has filed or intends to file this bond to guarantee that the Principal will execute all contract proposal documents and furnish such faithful performance bond, labor and material bond, and other bonds as may be required by law in accordance with the terms of Principal's said proposal;

**NOW, THEREFORE**, the condition of the foregoing obligation is such, that if the Principal shall promptly execute and submit all required contract proposal documents including such faithful performance bond, labor and material payment bond, and other bonds as may be required by law in accordance with the terms of Principal's said proposal, then this obligation shall be null and void, otherwise to remain in full force and virtue.

**IN TESTIMONY WHEREOF**, the Principal has hereunto set its hand and the Surety has caused this instrument to be signed by its authorized officer.

Principal: \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Surety: \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Witness: \_\_\_\_\_

Name and Title: \_\_\_\_\_

**(Acknowledgment of Principal, unless it be a corporation or limited liability company)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that they  
executed the same.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Principal, if a corporation)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the \_\_\_\_\_  
of \_\_\_\_\_, the corporation described in and which executed the  
foregoing instrument; and that they signed their name thereto by order of the Board of Directors of said corporation.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Principal, if a limited liability company)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the duly authorized member of the limited liability  
company described in and which executed the foregoing instrument; and that they executed the foregoing instrument on behalf of the  
limited liability company for the purposes set forth therein as the act and deed of said limited liability company.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Surety Company)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the \_\_\_\_\_  
of \_\_\_\_\_, the corporation described in and which executed the  
foregoing instrument; and that they signed their name thereto by order of the Board of Directors of said corporation.

\_\_\_\_\_  
Notary Public

LABOR AND MATERIAL PAYMENT BOND

KNOWN ALL PERSONS BY THESE PRESENTS, that

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

(hereinafter called the "Principal") and

Surety: \_\_\_\_\_

Principal Office: \_\_\_\_\_

a corporation created and existing under the Laws of the State of \_\_\_\_\_, and duly licensed as an insurance company in the State of New York (hereinafter called the "Surety"), are held and firmly bound unto the New York State Olympic Regional Development Authority (hereinafter called "ORDA"), in the full and just sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) good and lawful money of the United States of America, for the payment of which said sum of money, well and truly to be made and done, the Principal binds itself and its heirs, executors and administrators, and successors and assigns, and the Surety binds itself, its successors and/or assigns, jointly and severally, firmly by these presents:

Signed, sealed and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**WHEREAS**, the Principal has entered into a certain written contract with ORDA known as

\_\_\_\_\_, dated \_\_\_\_\_, 20\_\_\_\_;

(ORDA Contract Number and Name)

**NOW, THEREFORE, THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH**, that if the Principal shall promptly pay all moneys due to all persons furnishing labor or materials to Principal or Principal's subcontractors in the prosecution of the work provided for in said contract, then this obligation shall be void, otherwise to remain in full force and effect;

Provided, however, that ORDA having required the Principal to furnish this bond in order to comply with the provisions of Section 137 of the New York State Finance Law, all rights and remedies on this bond shall inure solely to such persons and shall be determined in accordance with the provisions, conditions and limitations of said Section to the same extent as if they were copied at length herein; and

Further, provided, that the place of trial of any action on this bond shall be in the county in which the said contract was to be performed, or if said contract was to be performed in more than one county, then in any such county, and not elsewhere.

**IN TESTIMONY WHEREOF**, the Principal has hereunto set its hand and the Surety has caused this instrument to be signed by its authorized officer.

Principal: \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Surety: \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Witness: \_\_\_\_\_

Name and Title: \_\_\_\_\_

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**(Acknowledgment of Principal, unless it be a corporation or limited liability company)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that  
they executed the same.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Principal, if a corporation)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the \_\_\_\_\_  
of \_\_\_\_\_, the corporation described in and which executed the  
foregoing instrument; and that they signed their name thereto by order of the Board of Directors of said corporation.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Principal, if a limited liability company)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the duly authorized member of the limited  
liability company described in and which executed the foregoing instrument; and that they executed the foregoing instrument on  
behalf of the limited liability company for the purposes set forth therein as the act and deed of said limited liability company.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Surety Company)**

STATE OF NEW YORK )ss.:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the \_\_\_\_\_  
of \_\_\_\_\_, the  
corporation described in and which executed the foregoing instrument; and that they signed their name thereto by order of the  
Board of Directors of said corporation.

\_\_\_\_\_  
Notary Public

**DOCUMENT 00 43 15**  
**PERFORMANCE BOND**

**KNOWN ALL PERSONS BY THESE PRESENTS, that**

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

(hereinafter called the "Principal") and

Surety: \_\_\_\_\_

Principal Office: \_\_\_\_\_

a corporation created and existing under the Laws of the State of \_\_\_\_\_, and duly licensed as an insurance company in the State of New York (hereinafter called the "Surety"), are held and firmly bound unto the New York State Olympic Regional Development Authority (hereinafter called "ORDA"), in the full and just sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) good and lawful money of the United States of America, for the payment of which said sum of money, well and truly to be made and done, the Principal binds itself and its heirs, executors and administrators, and successors and assigns, and the Surety binds itself, its successors and/or assigns, jointly and severally, firmly by these presents:

Signed, sealed and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**WHEREAS**, the Principal has entered into a certain written contract with ORDA known as

\_\_\_\_\_, dated \_\_\_\_\_, 20\_\_\_\_\_;

(ORDA Contract Number and Name)

**NOW, THEREFORE, THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH**, that if the said Principal shall well, truly and faithfully comply with and perform all the terms, covenants and conditions of said contract on its part to be kept and performed, according to the true intent and meaning of said contract, and shall protect ORDA against, and pay any and all amounts, damages, costs and judgments which may or shall be recovered against ORDA or its officers or agents or which ORDA may be called upon to pay to any person, corporation or other entity by reason of any damages arising or growing out of the doing of said work, or the repair or maintenance thereof, or the manner of doing the same, or the neglect of the Principal, or its agents or servants, or the improper performance of the said work by the Principal, or its agents or servants, or the infringement of any patent or patent rights by reason of the use of any materials furnished or work done as aforesaid or otherwise, then this obligation shall be null and void, otherwise to remain in full force and virtue; and

The Surety, for value received, hereby stipulates and agrees, if requested to do so by ORDA, to fully perform and complete the work mentioned and described in said contract and specifications, pursuant to the terms, conditions and covenants thereof, if for any cause the principal fails or neglects to so fully perform and complete said work; and the Surety further agrees to commence said work of completion within forty five (45) days after notice thereof from ORDA and to complete the same with all due diligence; and

The Surety, for value received, hereby stipulates and agrees that no change, extension, alteration or addition to the terms of the said contract or specifications accompanying the same, shall in any way affect its obligation of this bond, and it does hereby waive notice of any such change, extension, alteration or addition.

**IN TESTIMONY WHEREOF**, the Principal has hereunto set its hand and the Surety has caused this instrument to be signed by its authorized officer.

Principal: \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Surety: \_\_\_\_\_  
(Company Name)

By: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Witness: \_\_\_\_\_

Name and Title: \_\_\_\_\_

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**(Acknowledgment of Principal, unless it be a corporation or limited liability company)**

STATE OF NEW YORK )ss.:

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that  
they executed the same.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Principal, if a corporation)**

STATE OF NEW YORK )ss.:

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the \_\_\_\_\_  
of \_\_\_\_\_, the corporation described in and which executed the  
foregoing instrument; and that they signed their name thereto by order of the Board of Directors of said corporation.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Principal, if a limited liability company)**

STATE OF NEW YORK )ss.:

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the duly authorized member of the limited  
liability company described in and which executed the foregoing instrument; and that they executed the foregoing instrument on  
behalf of the limited liability company for the purposes set forth therein as the act and deed of said limited liability company.

\_\_\_\_\_  
Notary Public

**(Acknowledgment of Surety Company)**

STATE OF NEW YORK )ss.:

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_, before me personally came \_\_\_\_\_,  
to me known and known to me to be the person, who being by me duly sworn, did depose and say that they reside in  
\_\_\_\_\_; that they are the \_\_\_\_\_  
of \_\_\_\_\_, the  
corporation described in and which executed the foregoing instrument; and that they signed their name thereto by order of the  
Board of Directors of said corporation.

\_\_\_\_\_  
Notary Public



**SITE ACCESS AGREEMENT  
SUB-CONTRACTOR**

The Prime Contractor's \_\_\_\_\_,  
[Enter Name and Address of Prime Contractor]  
hereinafter referred to as the "Prime Contractor", and the

Sub-Contractor, \_\_\_\_\_,  
[Enter Name and Address of Sub-Contractor],  
hereinafter referred to as the "Sub-Contractor".

**W I T N E S S E T H:**

NOW, THEREFORE, in consideration of the promises and covenants contained within the Project Contract between the Owner and the Prime Contractor, the Sub-Contractor agrees as follows:

The Sub-Contractor agrees to be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Work. The Sub-Contractor shall comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss. The Sub-Contractor shall provide reasonable protection to prevent damage, injury or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. All work shall be completed according to all federal, state and local laws and with required licenses. Sub-Contractor specifically acknowledges and agrees that the foregoing includes all laws, ordinances, rules, regulations and lawful orders related to the COVID-19 pandemic.

The Sub-Contractor shall be responsible for bodily injury (including exposure to toxic substances), sickness, disease or death sustained by any person, or to injury to or destruction of tangible property (including loss of use), arising out of or resulting from the performance of the Work or negligent or otherwise tortious acts, errors or omissions and/or willful misconduct of the Sub-Contractor and its agents, consultants, sub-subcontractors, guests, invitees, employees, servants, lessees and/or concessionaries and anyone directly or indirectly employed by any of them or anyone for whose acts any may be liable (each a "Responsible Party"), regardless of whether or not a claim arises under Labor Law Sections 200, 240 and/or 241, Industrial Code Rule 23 and/or common law negligence, or by reason of liability imposed by operation of law.

To the fullest extent permitted by law, the Sub-Contractor shall defend, indemnify, hold harmless and release the Owner, the State of New York, the record owner of the real property on which the Work is being performed, any public benefit corporation, railroad or public utility whose property or facilities are affected by the work, and/or their respective affiliates, members, partners, directors, officers, employees, consultants, contractors and/or agents (individually, an "Indemnified Party" and collectively, the "Indemnified Parties"), from and against any and all suits, claims, liabilities, fines, damages and/or any types of action whatsoever, including attorneys' fees, defense costs and legal costs, for bodily injury (including exposure to toxic substances), sickness, disease or death sustained by any person, or to injury to or destruction of tangible property (including loss of use), arising out of or resulting from the performance of the Work or negligent or otherwise tortious acts, errors or omissions and/or willful misconduct of any Responsible Party, or by reason of liability imposed by operation of law.

The obligation of the Sub-Contractor to indemnify the Indemnified Parties (1) shall not be limited in any manner by any limitation of the amount of insurance coverage or benefits, including workers' compensation or other employee benefit acts, provided by the Sub-Contractor, and (2) shall not be deemed limited or discharged by

the enumeration or procurement of any insurance for liability for damages imposed by law upon the Indemnified Parties.

The Sub-Contractor has the obligation, at its own expense, for the defense of any action or proceeding which may be brought against the Indemnified Parties. This obligation shall include the cost of attorneys' fees, disbursements, costs and other expenses incurred in connection with such action or proceeding. Notwithstanding the foregoing, the Owner reserves the right to join such action or proceeding, at its sole expense, when it determines there is an issue involving a significant public interest.

The obligation of the Sub-Contractor to indemnify does not extend to those suits, claims, liabilities, fines, damages and types of action which arise out of the sole negligence of an Indemnified Party. The provisions of this Agreement shall survive the expiration or termination of the agreement between the Prime Contractor and the Sub-Contractor.

The Sub-Contractor shall procure and maintain all of the insurance required under this provision until all work, including punch list items, is complete. The Sub-Contractor every tier shall provide insurance as required by the Contract Documents between the Owner and the Prime Contractor.

The Sub-Contractor shall enforce strict discipline and good order among its employees and other persons carrying out the Work at the Owner's sites.

This Agreement may not be amended or modified except in writing by the parties hereto nor may any obligations hereunder be waived orally.

This Agreement shall be governed by the laws of the State of New York.

It is mutually agreed between the parties that an Independent Contractor relationship is hereby established under the terms and conditions of the Contract Documents between the Owner and the Prime Contractor.

**IN WITNESS WHEREOF**, the parties hereto have executed this agreement as of the day and year first written below.

\_\_\_\_\_  
Print Name of Authorized Person of Sub-Contractor

Date: \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature of Sub-Contractor

\_\_\_\_\_  
Title

\_\_\_\_\_  
Print Name of Authorized Person of Contractor

Date: \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature of Prime Contractor

\_\_\_\_\_  
Title

**DOCUMENT 00 54 01**

**CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT**

Upon receipt by the undersigned Contractor ("Contractor") of payment from the Olympic Regional Development Authority ("ORDA") in the sum of \$\_\_\_\_\_ (the "Payment"), this document shall become effective as to the following:

1. The Contractor hereby certifies that all bills and claims of every nature incurred by it for the period ending \_\_\_\_\_ ("Period End Date"), in connection with the Project have been paid and satisfied and/or will be fully paid and satisfied from the Payment.

2. The Contractor, for and in consideration and on receipt of the Payment, as payment less retainage for all labor, equipment, materials, services, fixtures, apparatus or machinery furnished or work performed for the Project by the Contractor through the Period End Date, does hereby waive and release any and all lien or claim or right of lien under the statutes of the State of New York relating to liens and the Project, and on the monies or other considerations due or to become due from ORDA, on account of all labor, equipment, materials, services, fixtures, apparatus or machinery furnished or work performed for the Project by the Contractor through the Period End Date.

3. The Contractor agrees to indemnify and hold ORDA harmless from all costs and damages including, but not limited to, reasonable attorneys' fees, concerning or relating to claims, actions and/or liens filed by subcontractors, sub-subcontractors, suppliers and/or laborers on account of labor, equipment, materials, services, fixtures, apparatus or machinery furnished or work performed by them for the Project directly or indirectly to the Contractor through the Period End Date, and to defend all actions arising therefrom, paying any costs, expenses and fees incident thereto, including reasonable attorneys' fees, costs and expenses.

IN WITNESS WHEREOF, the Contractor has caused this Conditional Waiver and Release Upon Progress Payment to be executed by one of its duly authorized officers.

Print Name of Company: \_\_\_\_\_

Signature of Officer: \_\_\_\_\_

Print Name of Officer: \_\_\_\_\_

Print Title: \_\_\_\_\_

Date: \_\_\_\_\_

[Acknowledgment on following page]

UNIFORM FORM OF CERTIFICATE OF ACKNOWLEDGMENT

STATE OF NEW YORK                    )  
  )ss.:  
COUNTY OF \_\_\_\_\_ )

On the \_\_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_, before me, the undersigned personally appeared, \_\_\_\_\_ personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that the undersigned executed the same in the undersigned's capacity(ies), and that by signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

\_\_\_\_\_  
Signature and Office of individual  
taking Acknowledgment

**DOCUMENT 00 54 02**

**WAIVER AND RELEASE UPON FINAL PAYMENT**

Upon receipt by the undersigned Contractor ("Contractor") of payment from the Olympic Regional Development Authority ("ORDA") in the sum of \$\_\_\_\_\_ (the "Payment"), this document shall become effective as to the following:

1. The Contractor hereby certifies that all bills and claims of every nature incurred by it in connection with the Project have been paid and satisfied and/or will be fully paid and satisfied from the Payment.
2. The Contractor hereby certifies that the Contract Price for the Project is in the total amount of \$\_\_\_\_\_, including change orders.
3. The Contractor, for and in consideration of the amounts and sums previously received, and the Payment, as full and final payment for all labor, equipment, materials, services, fixtures, apparatus or machinery furnished or work performed for the Project by the Contractor, does hereby (a) waive and release any and all lien or claim or right of lien under the statutes of the State of New York relating to liens and the Project, and on the monies or other considerations due or to become due from ORDA, on account of all labor, equipment, materials, services, fixtures, apparatus or machinery furnished or work performed for the Project by the Contractor, and (b) release and discharge ORDA from all actions, causes of action, suits, debts, dues, sums of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, controversies, agreements, promises, variances, trespasses, damages, judgments, extents, executions, claims and demands whatsoever, in law, admiralty or equity, which, against ORDA the Contractor and its successors and/or assigns ever had, now have or hereafter can, shall or may have for, upon, or by reason of any matter, cause or thing whatsoever from the beginning of the world to the day of the date of this Waiver and Release Upon Final Payment.
4. The Contractor agrees to indemnify and hold ORDA harmless from all costs and damages including, but not limited to, reasonable attorneys' fees, concerning or relating to claims, actions and/or liens filed by subcontractors, sub-subcontractors, suppliers and/or laborers on account of labor, equipment, materials, services, fixtures, apparatus or machinery furnished or work performed by them for the Project directly or indirectly to the Contractor, and to defend all actions arising therefrom, paying any costs, expenses and fees incident thereto, including reasonable attorneys' fees, costs and expenses.

[Signature and acknowledgment on following page]

IN WITNESS WHEREOF, the Contractor has caused this Waiver and Release Upon Final Payment to be executed by one of its duly authorized officers.

Print Name of Company: \_\_\_\_\_

Signature of Officer: \_\_\_\_\_

Print Name of Officer: \_\_\_\_\_

Print Title: \_\_\_\_\_

Date: \_\_\_\_\_

UNIFORM FORM OF CERTIFICATE OF ACKNOWLEDGMENT

STATE OF NEW YORK            )  
  )ss.:  
COUNTY OF \_\_\_\_\_ )

On the \_\_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_, before me, the undersigned personally appeared, \_\_\_\_\_ personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that the undersigned executed the same in the undersigned's capacity(ies) and that by signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

\_\_\_\_\_  
Signature and Office of individual  
taking Acknowledgment

**DOCUMENT 00 65 10**  
**AFFIDAVIT - WORKER'S COMPENSATION**

Legal Name and address of Bidder:

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The undersigned, being duly sworn, deposes and says that the Bidder now carries or has applied for a Worker's Compensation Policy to cover the operations, as set forth in the Contract Documents, and agrees to comply with the provisions thereof.

Printed Name

---

Signature

---

Title

---

Company

---

Date

---

STATE OF \_\_\_\_\_ )

)ss.:

COUNTY OF \_\_\_\_\_ )

On the \_\_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_\_, before me, the undersigned, personally appeared, \_\_\_\_\_, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that they executed the same in their capacity, and that by their signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

\_\_\_\_\_  
Notary Public

# Request for Taxpayer Identification Number and Certification

Give Form to the  
requester. Do not  
send to the IRS.

► Go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9) for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only <b>one</b> of the following seven boxes.  <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► <b>Note:</b> Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is <b>not</b> disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner. <input type="checkbox"/> Other (see instructions) ►	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):  Exempt payee code (if any) _____  Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>
	5 Address (number, street, and apt. or suite no.) See instructions.	Requester's name and address (optional)
	6 City, state, and ZIP code	
	7 List account number(s) here (optional)	

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number									
				-				-	
or									
Employer identification number									
				-					

## Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ►	Date ►
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## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9).

## Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.



DOCUMENT 00 72 01

**STANDARD FORM OF AGREEMENT  
BETWEEN OWNER AND CONTRACTOR  
ON THE BASIS OF A STIPULATED PRICE**

THIS AGREEMENT is dated as of the \_\_\_ of MONTH in the year 20\_\_\_\_, by and between the New York State Olympic Regional Development Authority (Olympic Authority), 37 Church Street, Lake Placid, New York 12946, and Contractor Name (Contractor), Contractor Address.

The Olympic Authority and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

**Article 1 WORK**

Contractor shall complete all work as specified or indicated in the Contract Documents. The Work is generally described as follows:

All supervision, labor, tools, equipment, materials and temporary facilities necessary to complete \_\_\_\_\_

**Article 2 PRESENTED**

The Project has been presented by: New York State Olympic Regional Development Authority.  
The Project had been prepared by:

**Article 3 CONTRACT TIMES**

3.1 The work shall be complete in a timeline set forth in the Schedule of Important Dates and Times.

- Substantial Completion: \_\_\_\_\_ Calendars Days from the Notice of Award
- Physical Completion: \_\_\_\_\_ Calendar Days from the Notice of Award

**Article 4 CONTRACT PRICE**

The Olympic Authority shall pay Contractor for completion of the Work, in accordance with the Contract Documents, an amount in current funds not to exceed the sum of the amounts determined pursuant to paragraph 4.1 below:

4.1 For all:

BASE BID: \$

*In words*

FIELD ORDER ALLOWANCE: \$

*In words:*

TOTAL CONTRACT PRICE: \$

*In words:*

**Article 5 PAYMENT PROCEDURES**

Contractor shall submit Application for Payment using the AIA Billing Forms G702 and G703, or equivalent.

5.1 *Progress Payments; Retainage.* The Olympic Authority shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment, one a month during construction as provided in paragraphs 5.1.1 and 5.1.2 below.

5.1.1 For Bonded Projects, prior to Substantial Completion payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as the Olympic Authority shall determine, or the Olympic Authority may withhold, in accordance with Document 00 72 13 General Conditions for Construction Contracts (General Conditions). Each and every progress payment is subject to a 5% retainage, such that Contractor is only paid 95% of the approved amount in each application for payment.

5.1.2 For Bonded Projects, upon Substantial Completion, in an amount sufficient to increase total payments to Contractor to 95% of the Contract Price (with the balance being retainage), less such amounts as the Olympic Authority shall determine, or the Olympic Authority may withhold, in accordance with the General Conditions.

5.1.3 For non-Bonded Projects, prior to Substantial Completion payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as the Olympic Authority shall determine, or the Olympic Authority may withhold, in accordance with the General Conditions. Each and every progress payment is subject to a 10% retainage, such that Contractor is only paid 90% of the approved amount in each application for payment.

5.1.4 For non-Bonded Projects, upon Substantial Completion, in an amount sufficient to increase total payments to Contractor to 90% of the Contract Price (with the balance being retainage), less such amounts as the Olympic Authority shall determine, or the Olympic Authority may withhold, in accordance with the General Conditions.

5.2 *Final Payment.* Upon final completion and acceptance of the Work in accordance with the General Conditions, the Olympic Authority shall pay the remainder of the Contract Price.

## **Article 6 CONTRACTOR'S REPRESENTATIONS**

In order to induce the Olympic Authority to enter into this Agreement, Contractor makes the following representations:

6.1 Contractor has examined and carefully studied the Contract Documents (including the Addendum listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

6.2 Contractor has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance or furnishing of the Work.

6.3 Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

6.4 Contractor is aware of the general nature of work to be performed by the Olympic Authority and others at the site that relates to the Work as indicated in the Contract Documents.

6.5 Contractor has correlated the information known to Contractor, information and observation obtained from visits to the site, reports, and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

6.6 Contractor has given the Olympic Authority written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by the Olympic Authority is acceptable to Contractor, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

6.7 Contractor agrees to be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of this Agreement. Contractor shall comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss. Contractor shall provide reasonable protection to prevent damage, injury or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. Contractor specifically acknowledges and agrees that the foregoing includes all laws, ordinances, rules, regulations and lawful orders related to the COVID-19 pandemic and that the cost thereof is included in Contract Price.

## **Article 7 CONTRACT DOCUMENTS**

The rights and obligations of the parties to this Agreement shall be subject to and governed by the Contract Documents identified as follows which comprise the entire agreement between the Olympic Authority and Contractor concerning the Work.

7.1 This Agreement

7.2 Exhibits to this Agreement

7.3 ORDA Standard Contract Terms (00 72 14)

7.4 Notice to Proceed - issued upon execution of this Agreement and receipt of proof of insurances and required bonds

7.5 General Conditions (00 72 13)

7.6 Supplementary or Special Conditions.

7.7 Drawings and Specifications bearing the title:

**Project Manual** bearing the title:

PIN:

Project Name:

CIN:

Contract Name:

Dated:

Prepared by:

**Contract Drawings** bearing the title:

Dated:

Prepared By:

7.8 Addenda: # \_\_, \_\_\_\_

7.9 Documentation submitted by Contractor prior to Notice of Award.

- 1) Bid Form (00 21 00)
- 2) Procurement Requirements/Certifications (00 21 12)
- 3) Addendum Acknowledgement (00 21 11)
- 4) Affidavit – Workers’ Compensation (00 65 10)
- 5) Bid Bond (00 43 13)
- 6) W-9 (00 66 00)
- 7) Form CCA-2 – New York State Vendor Responsibility Questionnaire For-Profit Construction
- 8) M/WBE/SDVOB Utilization Plan (00 22 13.1)
- 9) **Contractor Staffing Plan**

7.10 The following which may be delivered or issued after the Effective Date of this Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to the General Conditions.

The documents listed in paragraph 7.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are not Contract Documents other than those listed above in this Article 7. The Contract Documents may only be amended, modified or supplemented as provided in the General Conditions.

In the case of any ambiguity in the Contract Documents or between any of the various parts of the Contract Documents, Contractor must immediately submit the matter to the Olympic Authority Director’s Representative, who shall modify the Contract to eliminate the ambiguity or otherwise provide guidance to resolve the ambiguity, and the decision of the Olympic Authority Director’s Representative in relation thereto shall be final, conclusive, and binding on the parties. Failure of Contractor to immediately submit the matter to the Olympic Authority Director’s Representative shall be deemed a waiver by Contractor of any and all claims relating thereto.

## **Article 8 INDEMNIFICATION**

8.1 Contractor shall be responsible for bodily injury (including exposure to toxic substances), sickness, disease or death sustained by any person, or to injury to or destruction of tangible property (including loss of use), arising out of or resulting from the performance of this Agreement or negligent or otherwise tortious acts, errors or omissions and/or willful misconduct of Contractor and its agents, consultants, subcontractors, guests, invitees, employees, servants, lessees and/or concessionaries and anyone directly or indirectly employed by any of them or

anyone for whose acts any may be liable (each a “Responsible Party”), regardless of whether or not a claim arises under Labor Law Sections 200, 240 and/or 241, Industrial Code Rule 23 and/or common law negligence, or by reason of liability imposed by operation of law.

8.2 To the fullest extent permitted by law, Contractor shall defend, indemnify, hold harmless and release the Olympic Authority, the State of New York, the record owner of the real property on which the Work is being performed, any public benefit corporation, railroad or public utility whose property or facilities are affected by the Work, and/or their respective affiliates, members, partners, directors, officers, employees, consultants, contractors and/or agents (individually, an “Indemnified Party” and collectively, the “Indemnified Parties”), from and against any and all suits, claims, liabilities, fines, damages and/or any types of action whatsoever, including attorneys’ fees, defense costs and legal costs, for bodily injury (including exposure to toxic substances), sickness, disease or death sustained by any person, or to injury to or destruction of tangible property (including loss of use), arising out of or resulting from the performance of this Agreement or negligent or otherwise tortious acts, errors or omissions and/or willful misconduct of any Responsible Party, or by reason of liability imposed by operation of law.

8.3 The Olympic Authority may retain such monies from the amount due Contractor as may be necessary to satisfy any claim for damages recovered against the Indemnified Parties. Contractor’s obligation under this paragraph shall not be deemed waived by the failure of the Olympic Authority to retain the whole or any part of such monies due Contractor, or where such suit, action, damages, and/or costs have not been resolved or determined prior to release of any monies to Contractor under this Agreement.

8.4 The obligation of Contractor to indemnify the Indemnified Parties (a) shall not be limited in any manner by any limitation of the amount of insurance coverage or benefits, including workers' compensation or other employee benefit acts, provided by Contractor, and (b) shall not be deemed limited or discharged by the enumeration or procurement of any insurance for liability for damages imposed by law upon the Indemnified Parties.

8.5 Contractor has the obligation, at its own expense, for the defense of any action or proceeding which may be brought against the Indemnified Parties. This obligation shall include the cost of attorneys’ fees, disbursements, costs and other expenses incurred in connection with such action or proceeding. Notwithstanding the foregoing, the Olympic Authority reserves the right to join such action or proceeding, at its sole expense, when it determines there is an issue involving a significant public interest.

8.6 The obligation of Contractor to indemnify does not extend to those suits, claims, liabilities, fines, damages and types of action which arise out of the sole negligence of an Indemnified Party.

8.7 The provisions of this Article shall survive the expiration or termination of this Agreement.

## **Article 9 GUARANTEE**

9.1 Contractor unconditionally guarantees (a) that the Work will be completed in accordance with the requirements of the Contract Documents, and (b) that the Work will remain free of defects in workmanship and materials for a period of one (1) year from the date of Substantial Completion, unless a longer guarantee period is specifically called for in the Contract Documents.

Contractor, without any expense whatsoever to the Olympic Authority, shall repair or replace any and all Work, together with any adjacent Work that may have been damaged or displaced, (a) which was not completed in accordance with the requirements of the Contract Documents, and/or (b) that may be defective in its workmanship or material within the guarantee period specified in the Contract Documents, excepting therefrom failure to maintain, ordinary wear and tear, and abuse.

9.2 Contractor agrees that within seven (7) calendar days, or as such shorter period as may be designated for emergency repairs, after being notified by the Olympic Authority of any Work not in accordance the requirements of the Contract Documents and/or any defects in the Work, Contractor shall commence and execute, with due diligence, all work necessary to bring the work into compliance with the requirements of the Contract Documents and/or remedy the defects. Should Contractor fail to commence and execute, with due diligence, such work, the Olympic Authority may elect to have such work completed by others at Contractor's expense and Contractor will pay the Olympic Authority all costs of such work, including consultants' fees, upon demand. Contractor shall be liable to the Olympic Authority for all costs, including reasonable attorneys' fees, necessarily incurred upon Contractor's failure to pay the Olympic Authority all said costs of such work.

#### **Article 10 MISCELLANEOUS**

10.1 Terms used in this Agreement which are defined in Article I of the General Conditions will have the meanings indicated in the General Conditions.

10.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.3 The Olympic Authority and Contractor each bind itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.4 Any provisions or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon the Olympic Authority and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, the Olympic Authority and Contractor (an officer or principal of the corporation, partnership or sole proprietorship) have signed this Agreement in triplicate. One counterpart each has been delivered to the Olympic Authority and Contractor. All portions of the Contract Documents have been signed, initialed or identified by the Olympic Authority and Contractor, or identified by Engineer on their behalf. This Agreement will be effective on \_\_\_ of MONTH in the year 20XX (which is the Effective Date of this Agreement).

Olympic Authority:

\_\_\_\_\_  
Michael Pratt, President & CEO

\_\_\_\_\_  
Date

Contractor:

\_\_\_\_\_  
Printed Name of Contractor

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
License number (if applicable):

STATE OF NEW YORK       )  
  ): ss.:  
COUNTY OF ESSEX       )

On the \_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_, before me, the undersigned, personally appeared, Michael Pratt, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

\_\_\_\_\_  
Notary Public

STATE OF NEW YORK       )  
  ): ss.:  
COUNTY OF \_\_\_\_\_)

On the \_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_, before me, the undersigned, personally appeared, \_\_\_\_\_, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that they executed the same in their capacity, and that by their signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

\_\_\_\_\_  
Notary Public



# DOCUMENT 00 72 13

## GENERAL CONDITIONS

### TABLE OF ARTICLES

Article	Page Range
1. THE CONTRACT DOCUMENTS and ITEMS PRECEDENT TO AWARD	2-3
2. DEFINITIONS	3-4
3. INTERPRETATION OF CONTRACT DOCUMENTS	4-5
4. SUBMITTALS	5
5. MATERIALS AND LABOR	5-6
6. CONTRACTOR'S SUPERVISION	6-8
7. USE OF PREMISES	8
8. LAWS, PERMITS AND COMPLIANCE	8
9. INSPECTION AND ACCEPTANCE	8-9
10. CHANGE ORDERS	9-11
11. SITE CONDITIONS	11
12. SUSPENSION OF WORK	11
13. TIME OF COMPLETION AND TERMINATION FOR CAUSE	11-14
14. TERMINATION OF CONTRACTOR'S EMPLOYMENT FOR THE CONVENIENCE OF ORDA	14
15. DISPUTES	14-15
16. STATUTORY REQUIREMENTS FOR UTILIZATION OF MINORITY AND WOMEN OWNED BUSINESS ENTERPRISES	15
17. COORDINATION OF SEPARATE CONTRACTS	15-16
17A. DELAYS	16-18
18. RESPONSIBILITY FOR DAMAGE	18-19
19. BONDS, INSURANCE - BUILDER'S RISK, LIABILITY AND WORKERS' COMPENSATION	19-21
20. OCCUPANCY PRIOR TO COMPLETION AND ACCEPTANCE	21
21. PAYMENT	21-23
22. AUDITS AND RECORDS	23
23. LABOR LAW PROVISIONS	23-24
24. STATUTORY REQUIREMENTS FOR RESTRICTIONS ON CONTACTS DURING THE PROCUREMENT PROCESS AND DISCLOSURE OF CONTACTS AND RESPONSIBILITY OF OFFERERS MISCELLANEOUS PROVISIONS	24-25
25. MISCELLANEOUS PROVISIONS	25-27

## GENERAL CONDITIONS

### ARTICLE 1 - THE CONTRACT DOCUMENTS and ITEMS PRECEDENT TO AWARD

- 1.1 The Contract Documents consist of: (1) all documents contained in the Project Manual bearing the Project Name and Title; (2) the successful Bidder's Bid; (3) the Standard Form of Agreement; (4) Exhibits to the Agreement; (5) ORDA Standard Contract Terms; (6) Notice to Proceed; (7) all documentation submitted by the successful Bidder prior to issuance of the Notice to Proceed; (8) Sub-Contractor Site Access Agreement(s); and (9) all subsequent modifications and changes issued pursuant to these General Conditions. In the event of any inconsistency in or conflict among the document elements comprising the Contract Documents, as described above, such inconsistency or conflict shall be resolved by giving precedence to the document elements in the following order: (1) ORDA Standard Contract Terms; (2) Standard Form of Agreement; (3) Supplementary and Special Conditions; (4) General Conditions; (5) Addenda; (6) Drawings; (7) Specifications; (8) Exhibits to the Agreement; (9) Notice of Award/Notice to Proceed; and (10) successful Bidder's Bid.
- 1.2 The Contract Documents form the Contract. The Contract represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations and agreements, either written or oral including the bidding documents.
- 1.3 The Contract may not be modified except in accordance with these General Conditions.
- 1.4 The project is designed in accordance with the Building Codes of New York State and its reference standards. In no instance shall the Contractor deviate from the Contract Documents except as provided for in the Contract. The Contractor shall notify the State of any deviations or conflicts observed that may violate the Building Codes.
- 1.5 The following documents shall be distributed as required:
- 1.5.1 When the Contractor delivers the executed Agreements to ORDA, the Contractor shall also deliver to ORDA such Bonds as the Contractor may be required to furnish in accordance with these General Conditions.
- 1.5.1 ORDA shall furnish to the Contractor one (1) hard copy of the Contract Documents. Any other copies as are reasonably necessary for the execution of the Work will be the responsibility of the Contractor to reproduce.
- 1.5.2 Within ten (10) days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements) the Contractor shall submit to Owner for review:
- 1.5.2.1 a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
- 1.5.2.2 a preliminary Schedule of Submittals, includes Shop Drawings and Sample which will list each required submittal and the times for submitting, reviewing and processing such submittal;
- 1.5.2.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.
- 1.5.3 Within twenty (20) days after the Contract Times start to run, but before any Work at the site is started, a conference attended by the Contractor, ORDA and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 1.5.2.3, procedures for handling Shop Drawings, and other submittals, processing Applications for Payment and maintaining required records.

1.5.4 Before any Work at the site is started, the Contractor and ORDA shall each deliver to the other, with copies to each Additional Insured identified in Division 0 and Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which the Contractor and ORDA respectively are required to purchase and maintain in accordance with Division 0 and Supplementary Conditions.

1.6 Reuse of Documents: The Contractor and any subcontractor or supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with ORDA (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of the Consultant or the Consultant's consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies on extensions of the Project or any other project without written consent of ORDA and the Consultant and specific written verification or adaptation by the Consultant.

## ARTICLE 2 - DEFINITIONS

2.1 The following terms shall have the meanings ascribed to them in this Article, wherever they appear in the Contract Documents.

2.2 The term "Agency" means the New York State Olympic Regional Development Authority.

2.3 The term "Commissioner" means the Commissioner of the New York State Office of General Services.

2.4 The term "Comptroller" means the Comptroller of the State of New York.

2.5 The term "Contracting Officer" means the President/CEO for the Olympic Regional Development Authority, or his representative designated in writing.

2.5.1 The term "Contracting Agency" means the New York State Olympic Regional Development Authority.

2.6 The term "Contractor" means the person, firm,

corporation, or other entity executing the Agreement or the successor or assignee of the Contractor approved in writing by the Contracting Officer. If the text requires, the term includes the person, firm, corporation, or other entity executing any Agreement in furtherance of the Project or the successors or assigns approved in writing by the Contracting Officer.

2.7 The term "Consultant" means the design professional responsible for the design of the Project.

2.8 The term "days" means calendar days.

2.9 The term "Director" means ORDA's Director of Environmental, Planning and Construction, who will have general direction and supervision of the Work.

2.10 The term "Director's Representative" means the employee or agent of ORDA's Office of Environmental, Planning and Construction designated in writing by the Director as such. Under the general supervision of the Director, the Director's Representative shall have complete charge of the Work and shall exercise full supervision and direction of the Work. Where the Contract Documents specifically designate a person to perform a function or duty, that person shall be the Director's Representative but only for the performance of that function or duty. Where the word "directed" appears in the Contract Documents, the words "by the Director's Representative" shall be deemed inserted thereafter in each case, except where it is obviously inappropriate in context.

2.11 The term "Director's Project Manager" means the employee of ORDA's Office of Environmental, Planning and Construction who has been appointed by the Director to manage the day to day tasks of the project team. Under the general supervision of the Director, the Director's Project Manager shall have charge of the project design team and the Director's Representative.

2.12 Work Change Directive – A written directive to the Contractor issued on or after the Effective Date of the Agreement and signed by the Director, ordering an addition, deletion or revision in the Work, or responding to emergencies under paragraph 25.10. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by the Work Change Directive will be incorporated in a subsequently issued Field

- Order or Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in Article 10 of these General Conditions.
- 2.13 The term “liquidated damages” means the amount of money to be assessed against the Contractor for delay in physical completion of the Work.
- 2.14 The term Office of Environmental, Planning and Construction (OEPC) shall mean the Department of ORDA responsible general direction and supervision of the Work.
- 2.15 The term “physical completion” means the date upon which the Director’s Representative certifies that all deficiencies noted on the Final Inspection List have been corrected and is evidenced by issuance of the Physical Completion Report.
- 2.16 The term “premises” means all land, buildings, structures and all other things of any kind located on or adjacent to the Site and owned, occupied or otherwise used by ORDA.
- 2.17 The term “President/CEO” shall mean the President/CEO of the New York State Olympic Regional Development Authority.
- 2.18 The term “product data” means manufacturer’s catalog sheets, brochures, standard diagrams, illustrations, schedules, performance charts, test data, standard schematic drawings, specifications and installation instructions.
- 2.19 The term “Project” means Work at the same Site carried out pursuant to one or more sets of Contract Documents.
- 2.20 The term “provide” means furnish and install complete, in place and ready for operation and use.
- 2.21 The term “sample” means physical examples submitted by the Contractor of materials, equipment or workmanship to establish a standard which the Contractor is required to meet and to show the quality, type, range of color, finish, and texture of the material intended to be furnished for the Work.
- 2.22 The term “shop drawing” means an original drawing prepared by the Contractor or a subcontractor, supplier or distributor which illustrates some portion of the Work showing fabrication, layout, fitting or erection details.
- 2.23 The term “Site” means the area within the contract limit, as indicated by the Contract Documents, including all land, buildings, structures and other things located within those limits.
- 2.24 The term “State” means the State of New York.
- 2.25 The term “substantial completion” means that the Work or major milestones there of as contemplated by the terms of this Contract are sufficiently complete so that the Work can be used for the purpose for which it is intended.
- 2.26 The term “Work” means all that which is required of the Contractor by the Contract Documents including labor, materials, tools and equipment.
- 2.27 The term “offeror” shall mean the individual or entity, or any employee, agent, consultant or person acting on behalf of such individual or entity, that contacts a governmental entity about a governmental procurement during the restricted period of such governmental procurement.
- 2.28 The term “ORDA” shall mean the new York State Olympic Regional Development Authority and the term “Owner” shall mean ORDA.
- 2.29 The terms “Written Notice” shall mean the individual or entity shall either hand deliver the notice to the person identified to receive such notice or shall be sent via US Mail or other applicable methods which shall require a return receipt.
- 2.30 Individually, the term “Indemnified Party” and collectively, the term “Indemnified Parties” shall mean ORDA, the State of New York, each Additional Insured identified in Division 0 and Supplementary Conditions, the record owner of the real property on which the Work is being performed, any public benefit corporation, railroad or public utility whose property or facilities are affected by the Work, and/or their respective affiliates, members, partners, directors, officers, employees, consultants, contractors and/or agents.
- 2.31 The term “Responsible Party” shall mean the Contractor and its agents, consultants, subcontractors, guests, invitees, employees, servants, lessees and/or concessionaries and anyone directly or indirectly employed by any of them or anyone for whose acts any may be liable.

#### ARTICLE 3 - INTERPRETATION OF CONTRACT

## DOCUMENTS

- 3.1 The Contract Documents are complementary, such that what is called for by one shall be as binding as if called for by all. It is not intended to include work not properly inferable from the Contract Documents.
- 3.2 Upon the Contractor's written request, the Director's Representative may issue written interpretation or drawings necessary for the proper execution or progress of the Work which interpretation shall be consistent with and reasonably inferable from the Contract Documents.
- 3.3 The language of the Contract Documents is directed at the Contractor unless specifically stated otherwise.
- 3.4 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.
- 3.5 In the event of conflicting provisions in the Contract Documents, the drawings will take precedence over the specifications.
- 3.6 In the event of conflicting provisions within the drawings, the following order of precedence for resolution of the conflict shall apply: the more specific provision will take precedence over the less specific; if not resolved, the more stringent will take precedence over the less stringent; if not resolved, the more expensive item will take precedence over the less expensive. On all drawings, figures take precedence over scaled dimensions.
- 3.7 In the event of conflicting provisions within the specifications, the following order of precedence for resolution of the conflict shall apply: the more specific provision will take precedence over the less specific; if not resolved, the more stringent will take precedence over the less stringent; if not resolved, the more expensive item will take precedence over the less expensive.
- 3.8 If during the performance of the work, the Contractor identifies a conflict in the Contract Documents, the Contractor shall promptly notify the Director's Representative in writing of the conflict and advise as to the course of action the Contractor proposes to follow. The Director's Representative shall promptly acknowledge the

notification in writing and advise the Contractor, pursuant to Paragraph 3.2 of these General Conditions, as to the interpretation to be followed in the performance of the Work.

## ARTICLE 4 - SUBMITTALS

- 4.1 The Contractor and the Director shall adhere to the submittal and scheduling requirements specified in Division 01 - General Requirements.
- 4.2 The Contractor shall approve all submittals before submitting them. By such approval, the Contractor represents that it has determined and verified field measurements, field construction criteria, materials, catalog numbers, and similar data and that it has checked and coordinated shop drawings, product data and samples with the requirements of the Contract Documents and that it has verified the completeness, correctness, and accuracy of the submittal.
- 4.3 The Director's review of shop drawings, product data and samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has previously informed the Director of any anticipated deviation in accordance with Division 1 at the time of submission. Written approval of the specific deviations as outlined on the request form shall be required. The Director's review process shall not relieve the Contractor from responsibility for errors or omissions in the shop drawings, product data or samples.
- 4.4 Portions of the Work requiring shop drawings, product data, quality assurance information, or sample submittals shall not be commenced until the appropriate submittals have been reviewed by the Director.
- 4.5 The Contractor shall deliver to the Director, in the detail and form and at the time the Director shall require, information concerning the Contractor's operations and proposed operations upon the Project all in accordance with Division 01 - General Requirements.
- 4.6 During the term of this Project, the Director may require any Contractor to modify any schedules which it has submitted either before or after they are approved so that the Work of any contract in furtherance of the Project may be properly progressed and so that changes in the Work or the work of related contracts is properly reflected in the schedules.
- 4.7 Where indicated under the specific submittal



requirements of the specifications, a re-evaluation fee of \$250.00 may be assessed against the Contractor for each re-evaluation required of any submittal package that is deemed incomplete, or lacking appropriate content or required format as required by the individual specification section.

#### ARTICLE 5 - MATERIALS AND LABOR

- 5.1 All materials, equipment and articles used permanently in the Work which become the property of ORDA shall be new unless specifically stated otherwise.
- 5.2 Asbestos Free Materials: All materials used for construction shall be free of asbestos containing materials unless the materials containing the asbestos have been previously approved for use by ORDA. If asbestos is found in installed products not previously approved by ORDA, it will be the responsibility of the Contractor to abate the asbestos containing material and replace the work with new asbestos free materials in compliance with the requirements of the Contract at no cost to ORDA.
- 5.3 Except where specifically provided otherwise, whenever any product is specified by brand name, i.e., manufacturer's or supplier's name or trade name and catalog or model number or name, the intent is not to limit competition but to establish a standard of quality which the Director has determined is necessary. The words "or equal" shall be deemed inserted in each instance. The Contractor may use any product equal to that named in the Contract Documents which is approved by the Director and which meets the requirements of the Contract Documents providing the Contractor gives timely notice of the Contractor's intent in accordance with the submittal and scheduling requirements of Division 01 - General Requirements.
- 5.3.1 The Contractor shall have the burden of proving at the Contractor's own cost and expense, to the satisfaction of the Director, that the proposed product is equal to the named product. The Director may establish criteria for product approval. The Director shall determine with absolute discretion whether a proposed product is to be approved.
- 5.3.2 If the Contractor fails to comply with the provisions of this Article, or if the Director determines that the proposed product is not equal to that named, the

Contractor shall supply the product named.

- 5.3.3 The Contractor shall have and make no claim for the extension of time or for damages because the Director requires a reasonable period of time to consider a product proposed by the Contractor or because the Director disapproves such a product.
- 5.3.4 Where optional materials or methods are specified, or where "or equal" submissions are approved, the Contractor shall make all adjustments to contingent Work, whether the contingent Work be the Work of its contract or the Work of other Contractor's, necessary to accommodate the option or "or equal" product it selects without extra or additional cost.
- 5.4 Royalties and Patents: The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save ORDA harmless from loss on account thereof, except that ORDA shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer is specified.
- 5.5 The Contractor shall develop a schedule to complete the Work at the site during the working hours which are in the best interest of ORDA and avoid overtime work or the performance of Work on Saturday, Sunday or any legal holidays.
- 5.6 This project is exempt from sales and compensating use taxes on materials incorporated into the work. The Contractor is responsible for obtaining the appropriate waivers for use with their suppliers and subcontractors and all other such parties.
- 5.7 The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

#### ARTICLE 6 - CONTRACTOR'S SUPERVISION

- 6.1 The Contractor shall designate in writing competent supervision and/or management representatives as required below to represent the Contractor at all times with authority to act for the Contractor. All Direction given to the

Contractor's Representatives shall be as binding as if given to the Contractor. A Superintendent or Project Manager shall be classified as management representatives included in the Contractor's overhead and shall perform management, supervisory and/or administrative tasks (non-labor) only. Individuals listed under this Article shall have the ability to effectively communicate (verbal and written) with all parties associated with the administration/supervision of this Contract.

- 6.1.1 For contracts valued up to \$500,000, the Contractor shall provide a supervisor for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work.
- 6.1.2 For contracts valued from \$500,000 to \$2,000,000, the Contractor shall provide a Superintendent for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the Contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct and schedule the Work, shall attend all project meetings, shall coordinate the Work of subcontractors, and make purchase and cost decisions on behalf of the Contractor.
- 6.1.3 For contracts valued from \$2,000,001 to \$5,000,000, the Contractor shall provide a Superintendent for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the Contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct the Work, attend all project meetings, and coordinate the Work of subcontractors. The Contractor shall also provide a Project Manager who shall attend project meetings, maintain submittal and approval system, and be responsible for Work Change Directive, Field Order and/or Change Order responses and negotiations. The Contractor shall

provide required information to the Director's Representative for the Project Schedule.

- 6.1.4 For contracts valued from \$5,000,001 to \$10,000,00, the Contractor shall provide a Project Manager and Superintendent for the Contractor's staff that shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the Contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct the Work, and coordinate the Work of subcontractors. The Project Manager shall attend project meetings, maintain the project schedule, maintain submittal and approval system, and be responsible for Work Change Directive, Field Order and/or Change Order responses and negotiations.
- 6.1.5 For contracts valued for more than \$10,000,000, the Contractor shall provide a Project Manager and Superintendent for the Contractor's staff who shall be in attendance at the site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the Contractor shall provide a supervisor who shall be in attendance at the site throughout the active performance of the Work until Physical Completion. The Superintendent shall have the authority to direct the Work, attend all project meetings, and coordinate the Work of subcontractors. The Project Manager shall attend project meetings, maintain the project schedule, maintain submittal and approval system, and be responsible for Work Change Directive, Field Order and/or Change Order responses and negotiations. If at any time there are more than five subcontractors performing work on the site simultaneously an additional Superintendent is required coordinate their Work.
- 6.2 Should the Director deem any employees of the Contractor incompetent or negligent or for any cause unfit for their duty, the Contractor shall dismiss them and they shall not again be

employed on the Work.

- 6.3 Before any part of the Contract shall be sublet or material purchased, the Contractor shall submit to the Director in writing the name of each proposed subcontractor and supplier and obtain the Director's written consent to such subcontractor and supplier. The names shall be submitted in ample time to permit acceptance or rejection of each proposed subcontractor and supplier by the Director or Contracting Officer without causing delay in the work of the Project. The Contractor shall promptly furnish such information as the Director or Contracting Officer may require concerning the proposed subcontractor's and supplier's ability and qualifications, and Minority/Women Owned Business Enterprises Status. Each request for approval of a subcontractor whose subcontract will be valued at \$100,000.00 or more shall also be accompanied by a form CCA-2 – New York State Vendor Responsibility Questionnaire For-Profit Construction properly completed and executed by the proposed subcontractor.
- 6.4 The Contractor's use of subcontractors shall not diminish the Contractor's obligations to complete the Work in accordance with the Contract. The Contractor shall control and coordinate the Work of its subcontractors.
- 6.5 The Contractor shall be responsible for informing its subcontractors and suppliers of all the terms, conditions and requirements of the Contract Documents including, but not limited to these General Conditions, the Supplementary Conditions, the Drawings and Specifications, ORDA Standard Contract Terms, Appendix A, and changes made by Addenda.

#### ARTICLE 7 - USE OF PREMISES

- 7.1 If the Premises are occupied, the Contractor, its subcontractors, and their employees shall comply with the regulations governing access to, operation of, and conduct while in or on the Premises and shall perform the Work in such a manner as not to unreasonably interrupt or interfere with the conduct of business.
- 7.2 Any request received by the Contractor from any source other than the Director or the Director's Representative to change the Work or its sequence shall be referred to the Director's Representative for determination.
- 7.3 The Contractor, its subcontractors and their employees shall not have access to or be

admitted to any area outside the Site except with the written permission of the Director's Representative.

#### ARTICLE 8 – LAWS, PERMITS AND COMPLIANCE

- 8.1 The Contractor shall become fully familiar with all permits, laws, rules and regulations applicable to the Work.
- 8.2 The Contractor shall fully comply with all permits, laws, rules and regulations applicable to the Work at no additional cost to ORDA.
- 8.3 The Contractor shall obtain, pay for, and maintain all permits and licenses legally required for the Work, and shall give all notices required by the conditions of the permits and/or licenses at no additional cost to ORDA. In the event that permits and/or licenses legally required for the Work are secured before the start of Work, the Contractor shall maintain the permits and licenses and shall give all notices required by the conditions of the permits and/or licenses at no additional cost to ORDA.

#### ARTICLE 9 - INSPECTION AND ACCEPTANCE

- 9.1 The Director's Representative will inspect and test the Work at reasonable times at the Site, unless the Director determines to make an inspection or test at a place of production, manufacture, or shipment. Such inspection or test shall be conclusive as to whether the material and workmanship inspected or tested conforms to the requirements of the Contract. Such inspection or test shall not relieve the Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the Director to reject the completed Work.
- 9.2 The Contractor shall, without charge, promptly correct any Work the Director's Representative finds does not conform to the Contract Documents unless in the public interest the Director consents to accept such Work with an appropriate adjustment on the Contract Price and/or to any terms and conditions of the Contract. The Contractor shall promptly remove rejected material from the Premises.
- 9.3 If the Contractor does not promptly, as determined by the Director, correct rejected Work including the work of other contractors destroyed or damaged by removal, replacement, or correction, the Director may (1) correct such Work and charge the cost thereof to the Contractor; or (2) terminate the Contract in



accordance with Article 13 of these General Conditions.

- 9.4 The Contractor shall furnish promptly without additional charge all facilities, labor, material and equipment reasonably needed to perform in a safe and convenient manner such inspections and tests as the Director's Representative requires.
- 9.5 The Contractor shall keep the Director's Representative informed of the progress of the Contractor's Work and particularly, inform in writing, when the Contractor intends to cover Work not yet inspected or tested. All inspection and tests by the Director's Representative shall be performed in such manner as not to unreasonably delay the Work.
- 9.5.1 The Contractor shall be responsible for all required tests and appropriate test schedules, approvals and inspections pursuant to the Contract Documents.
- 9.5.2 The Contractor shall be back-charged with any cost of inspection when the Work is not ready at the time specified by the Director's Representative for inspection, or for deficient work that shall require re-testing and/or inspection.
- 9.5.3 ORDA shall be responsible for the cost of all testing for required Special Inspections. The Contractor shall be responsible for scheduling and access for testing agency. A minimum of forty-eight (48) hours' notice shall be required for all testing required for Special Inspections unless other arrangements have been made with the Director's Representative.
- 9.6 Should the Director's Representative determine at any time before acceptance of the entire Work to examine Work already completed by removing, uncovering or testing the same, the Contractor shall, on request, promptly furnish all necessary facilities, labor, materials and equipment to conduct such inspection, examination or test. If such Work is found to be defective or nonconforming in any material respect, the Contractor shall defray all the expenses of such examination and satisfactory reconstruction. If the Work is found to meet the requirements of the Contract Documents, the Contractor shall be compensated for the additional services involved in such examination and reconstruction by change order and, if completion of the Work has been delayed

thereby, shall receive a suitable extension of time.

- 9.7 No previous inspection or certificates of payment shall relieve the Contractor from the obligation to perform the Work in accordance with the Contract Documents. The final payment shall not relieve the Contractor of the responsibility for failing to comply with the Contract Documents.
- 9.8 The Contractor shall remedy all defects, paying the cost of any damage to other work or property of ORDA resulting there from, which shall appear within a period of one (1) year from the date of physical completion.
- 9.9 The Contractor warrants that Product(s) furnished pursuant to this Contract shall, when used in accordance with the Product documentation, be able to accurately process date/time data (including, but not limited to, calculating, comparing, and sequencing) transitions, including leap year calculations. Where the Contractor proposes, or an acquisition requires, that specific Products must perform as a package or system, this warranty shall apply to the Products as a system.
- 9.9.1 Where the Contractor is providing ongoing services, including but not limited to: i) consulting, integration, code or data conversion, ii) maintenance or support services, iii) data entry or processing, or iv) contract administration services (e.g. billing, invoicing, claim processing), the Contractor warrants that services shall be provided in an accurate and timely manner without interruption, failure or error due to the inaccuracy of Contractor's business operations in processing date/time data (including, but not limited to, calculating, comparing, and sequencing) various date/time transitions, including leap year calculations. The Contractor shall be responsible for damages resulting from any delays, errors or untimely performance resulting therefrom, including but not limited to, the failure or untimely performance of such services.
- 9.9.2 This Date/Time Warranty shall survive beyond termination or expiration of this Contract through: a) ninety (90) days or b) the Contractor's or Product manufacturer/developer's stated

date/time warranty term, whichever is longer. Nothing in this warranty statement shall be construed to limit any rights or remedies otherwise available under this Contract for breach of warranty.

#### ARTICLE 10 - CHANGE ORDERS

10.1 ORDA may make changes by altering, adding to, or deleting from the Work. The issuance of Work Change Directives will be used to communicate these changes. Any change in the Contract Price on account of these changes shall be made by Change Order. All changed work shall be executed in conformity with the terms and conditions of the Contract Documents unless otherwise provided for in a Field Order or Change Order. Any change in the time for completion of the work described in a Work Change Directive shall be contained in a Field Order or a Change Order. Any change in schedule resulting from a Field Order or Change Order will be issued in accordance with the provisions of Paragraphs 4.6 and 13.5 of these General Conditions. The Contractor shall complete a time impact analysis concurrently with the pricing of the Work Change Directive. Potential time adjustments shall be determined based on the time impact analysis with presented costs. If the Work of the Work Change Directive impacts the substantial completion date, the Contractor must notify the Director's Representative prior to the negotiation of the Field Order or Change Order and a time adjustment may be issued. If the Contractor does not develop a time impact analysis during the negotiation of an Field Order or Change Order, the Contractor shall forfeit their right to a time adjustment.

10.2 No written or oral instructions shall be construed as directing a change in the Work unless in the form of a Field Order or Change Order signed by the Contracting Officer. The Field Order or Change Order shall describe or enumerate the work to be performed, state the cost of the work to be performed or omitted, and state the time allowed (if any) for the performance of the changed work. If the extent or cost of the changed work is not determinable until after the changed work is performed, the Work Change Directive shall specify the method for determining the cost and extent of the changed work when completed. If the Contractor disagrees as to any element of the Work Change Directive, the Contractor shall promptly indicate such disagreement in writing by certified mail directed to the Contracting Officer and shall

promptly proceed in accordance with the Work Change Directive. The Contractor's notice of disagreement shall identify by number the Work Change Directive with which the Contractor is disagreeing, the elements with which the Contractor disagrees, and contain a statement as to why there is a disagreement on each element. The notice of disagreement shall be accompanied by documentation of every material element of the Contractor's basis for disagreement. The Contracting Officer shall promptly review the Contractor's letter and supporting documentation and advise the Contractor in writing of any modifications to the Work Change Directive or of the confirmation of the Work Change Directive as issued. The Contracting Officer may, in the exercise of discretion, conduct informal discussions or meetings with the Contractor and/or ORDA employees or agents prior to rendering a decision.

10.3 If the Contractor is required to perform work for which the Contractor believes it is entitled to a Field Order or a Change Order, the Contractor shall give the Director prompt written notice and await instructions before proceeding to execute such work. The Contractor shall thereafter proceed diligently with the performance of the contract in accordance with the Director's instructions. Should the Contractor perform work which the Contractor believes is extra or additional work, the Contractor shall maintain complete cost records including, but not limited to, time and payroll records, material invoices and delivery tickets, equipment rental and purchase invoices for itself and all subcontractors, suppliers and materialmen. Failure to maintain such records shall waive any right to extra and additional costs beyond those costs supported by actual cost records.

10.4 The Director shall determine the value of any Field Order or Change Order by one or more of the methods provided in Division 01 - General Requirements.

10.5 Irrespective of the method used or to be used by ORDA in determining the value of a Work Change Directive, the Contractor shall after receipt of a Work Change Directive, promptly, but no later than fifteen (15) days, submit to ORDA a detailed breakdown of the Contractor's estimate of the value of the changed work. The Contractor shall submit evidence, satisfactory to the Contracting Officer, to substantiate each and every item that constitutes their proposal for the change. ORDA shall promptly respond to such submission.

10.5.1 The Contractor shall submit a responsive cost proposal and a time impact analysis to the Director's Representative in proper form subject to the provisions of this Article. The Contractor shall respond no later than fifteen (15) calendar days from the date of a Work Change Directive with their cost proposal and time impact analysis. If the contractor believes additional time is required to prepare and submit a responsive proposal, a justification and proposed response duration must be submitted to the Director's Representative within ten (10) days from the date of a Work Change Directive. If approved, the 15-day requirement will be extended as the Director or the Director's Representative may deem appropriate, in writing. Should the Contractor fail to respond or fail to submit the required cost proposal and time impact analysis within the 15-day requirement, or such period as extended in writing, ORDA shall determine a fair market value for the work proposed and will issue a Field Order or Change Order. The Contractor, by failing to respond to a Work Change Directive or provide an acceptable and responsive cost proposal and time impact analysis, waives any claim or rights to any extra and or additional costs and/or time as may be determined by the Contracting Officer, and the overrides resulting from this action will be limited to the values as set forth in Section 01 20 00 Cost Computations.

10.6 Unless otherwise specifically provided for in a Field Order of Change Order, the compensation specified therein for extra work includes full payment for both the extra work covered thereby and for any damage or expense caused the Contractor by any delays to other work to be done under the Contract resulting from or on account of said extra work, and the Contractor waives all rights to any other compensation for said extra work, damage or expense.

10.7 No Field Order or Change Order which creates a liability on ORDA shall be binding unless approved by the Contracting Officer.

#### ARTICLE 11 - SITE CONDITIONS

11.1 If the Contractor encounters subsurface or other latent physical conditions at the Site which differ

substantially from those shown, described or indicated in such information provided by ORDA in the Contract Documents, or from any information which is a public record and which subsurface or other latent physical condition could not have been reasonably anticipated from that information or from the Contractor's own inspection and examination of the Site, the Contractor shall give immediate written notice to the Director before any such condition is disturbed. The Director shall promptly investigate and, if it is determined that the conditions substantially differ from those which should have been reasonably anticipated, shall make such changes in the Drawings and Specifications as may be required. If necessary, the Contract Price and completion date shall be adjusted, to reflect any increase or decrease in the cost of, or time required for, performance of the Contract.

#### ARTICLE 12 - SUSPENSION OF WORK

12.1 The Director may order the Contractor in writing to suspend, delay, or interrupt performance of all or any part of the Work for a reasonable period of time as the Director may determine.

12.2 Upon receipt of a suspension order, the Contractor shall, as soon as practicable, cease performance of the Work as ordered and take immediate affirmative measures to protect such Work from loss or damage.

12.3 The Contractor specifically agrees that a suspension, interruption or delay of the performance of the Work pursuant to this Article for a period or periods not exceeding thirty (30) days in total shall not increase the cost of performance of the Work of this Contract other than costs directly related to demobilization and remobilization for the Work, temporary services costs, equipment rental which cannot be practically suspended and temporary protection measures which are unusual but necessary.

#### ARTICLE 13 - TIME OF COMPLETION AND TERMINATION FOR CAUSE

13.1 All time limits stated in the Contract are of the essence of the Contract.

13.1.1 The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the Effective Date of the Agreement. In no

event will the Contract Time commence to run later than the sixtieth (16<sup>th</sup>) day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

13.1.2 Starting the Work: The Contractor shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the Site prior to the date on which the Contract Times commence to run.

13.1.3 Time is of the essence for the Contractor's obligation in this Contract. The Contractor shall carry on said Work promptly, efficiently and in a manner that will not cause delay in the progress of the Work or the work of other contractors. If, in the opinion of ORDA, the Contractor falls behind in the progress of the Work, ORDA may direct the Contractor to take such steps as ORDA deems necessary to improve the rate of progress, including, without limitation, requiring the Contractor to increase the number of shifts, personnel, plants, or proceed with other remedies and to submit to ORDA for ORDA's approval a schedule demonstrating the manner in which the required rate of progress will be attained, without additional cost to ORDA. ORDA may require the Contractor to perform portions of the Work, in what would appear to be out of sequence, in order to conform to the Project Schedule.

## 13.2 Termination for Cause.

13.2.1 If in the judgment of the Director, the Contractor fails or refuses to prosecute the Work in accordance with the Contract, or is failing to complete the Work within the time provided by the Contract, the Contracting Officer may terminate the Contract by written notice. In such event, the Director shall order the surety to complete the Work.

13.2.2 If it is determined after the award of the Contract that there exists any cause of so serious or compelling a nature, including but not limited to, submission

to a contracting agency of a false or misleading statement on a NYS Vendor Responsibility Questionnaire, or in some other form in connection with a bid for or award of this or any other contract or a request for approval of a subcontractor, that it raises questions about the present responsibility of a contractor or subcontractor, the Director may terminate the Contract by written notice. In such event, the Director may or may not in his sole discretion, order the surety to complete the Work.

13.2.3 The Director will notify the Contractor and Surety that ORDA is considering declaring the Contractor in default and will arrange a hearing with the Contractor and the Surety to discuss methods of performing and completing the contract work.

13.2.4 If ORDA formally declares the Contractor in default, ORDA will demand upon the Surety to complete any and all remaining Work pursuant to the terms of the Contract and the Surety Takeover Guidelines incorporated as Appendix B. The Surety may undertake to perform and complete the Work itself, through its agents or through independent contractors approved by ORDA. ORDA will agree to pay the balance of the Contract price to the Surety in accordance with the terms and conditions of the Contract or to the designee authorized in writing by the surety upon acceptance of the Surety's completion plan pursuant to Appendix B.

13.2.5 The surety agrees to complete any investigation into the default of the Contractor and advise the Director as to its intended course of action within ten (10) days of receipt of the written notice of default. That notice will detail the underlying reasons for the default and provide pertinent documentation including the surety takeover guidelines of the Contracting Officer. Any request by a surety for execution of a takeover agreement, shall be delivered to the Contracting Officer for consideration, within the same ten day period. No changes in the terms and conditions of the Contract will be considered. All rights remedies and defenses of the parties are reserved and no rights,



- remedies or defenses of the parties are waived, by virtue of the Surety's agreement to assume contract performance under the bond
- 13.2.6 The Surety may elect to forfeit the remaining penal sum of the Performance Bond within twenty (20) days of notification of default by ORDA, with no additional penalties imposed, upon the execution of a release prepared by ORDA. ORDA will determine the value of the remaining Work based upon its investigation of the Work in place against payments previously authorized. As soon as practical the Surety will tender payment therefore to ORDA.
- 13.2.7 If the surety fails or refuses to complete the Work within twenty-five (25) days of the notification of the Contractor's default, or if the Surety fails or refuses to complete the work within the time frames allotted by ORDA, ORDA may take over the Work and prosecute it to completion by contract publicly let or otherwise, and may take possession of and utilize in completing the Work, such of the Contractor's materials, equipment and plant as may be on the Site. Whether or not the right to terminate is exercised, the Contractor and the Surety shall be liable for any damage to ORDA resulting from the failure or refusal to complete the Work in accordance with the Contract or the failure to complete the Work within the time provided by the Contract.
- 13.2.8 Should the Surety fail to commence the work, the Director will notify the Surety that ORDA is considering declaring the Surety in default and will arrange a hearing with the Surety to discuss methods of performing and completing the contract work. It is the policy of ORDA to let a Contract for the remaining Work after the 21<sup>st</sup> day of the demand upon the Surety to complete the Work pursuant to the terms and conditions of the Contract and the Performance Bond filed with the ORDA.
- 13.2.9 Upon termination, ORDA shall have the right to exclude the Contractor from the Site and take possession of the Work and of all the Contractor's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the Contractor (without liability to the Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which ORDA has paid the Contractor but which are stored elsewhere, and finish the Work as ORDA may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by ORDA arising out of or resulting from completing the Work, such excess will be paid to the Contractor. If such claims, costs, losses and damages exceed such unpaid balance, the Contractor shall pay the difference to ORDA. Such claims, costs, losses and damages incurred by ORDA shall be reasonable provided that when exercising any rights or remedies under this section ORDA shall not be required to obtain the lowest price for the Work performed. ORDA's rights under this section shall not be in contravention of, but shall be in addition to, any and all rights ORDA has as against the Surety.
- 13.3 The amount of Liquidated Damages shall be the product of \$1,000.00 times the number of days of delay in physical completion of the Work. Upon the assessment of such damages, ORDA may withhold the sum of the damages contemplated from payments to avoid an overpayment to any firm where damages would apply.
- 13.3.1 If the Director terminates the Contract, damages shall consist of liquidated damages, if any, until the Work is physically completed, plus any and all costs incurred by ORDA in completing the Work.
- 13.3.2 If the Director does not terminate the Contract, the damages shall consist of liquidated damages, if any, until the Work is physically completed.
- 13.4 The Contract shall not be so terminated nor the Contractor charged with resulting damage if:
- 13.4.1 The delay in the completion of the Work arises from unforeseeable causes

beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, acts of the public enemy, acts of ORDA in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with ORDA, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers, and

13.4.2 The Contractor notifies the Director in writing of the causes of delay within ten (10) days from when the Contractor knew or ought to have known of any such delay.

13.5 The Director will ascertain the facts and the extent of the delay and extend the time for completing the Work when, in the Director's judgment, the findings of fact justify such an extension, and the Director's findings of fact shall be final and conclusive on the parties.

13.6 If after notice of termination of the Contract, it is determined for any reason the Contractor was not in default or that the delay was excusable, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to Article 14.

13.7 The rights and remedies of ORDA provided in this Article are in addition to any other rights and remedies provided by law or under this Contract.

13.8 ORDA reserves the right to terminate this Contract in the event it is found that the certification filed by the offerer in accordance with New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, ORDA may exercise its termination right by providing written notification to the offerer in accordance with the written notification terms of the Contract.

#### ARTICLE 14 - TERMINATION OF THE CONTRACTOR FOR THE CONVENIENCE OF ORDA

14.1 The Contracting Officer may terminate this Contract whenever the public interest so requires by delivering to the Contractor a notice of termination specifying the extent to which performance of Work under the Contract is

terminated and the date upon which such termination becomes effective. Upon receipt of the notice of termination, the Contractor shall act promptly to minimize the expenses resulting from such termination. ORDA shall pay the Contractor the sum of:

14.1.1 The costs actually incurred by the Contractor, subcontractors, and sub-subcontractors or their suppliers up to the effective date of such termination, and

14.1.2 The cost of settling and paying claims, provided the concurrence of the Contracting Officer is obtained prior to agreeing to any such settlement, arising out of the termination of Work under subcontracts or orders exclusive of the amounts paid or payable on account of supplies or materials delivered or services furnished by the subcontractor prior to the effective date of the notice of termination of Work under this Contract, which amounts shall be included in the cost on account of which payment is made under 14.1.1 above, and

14.1.3 An amount determined by adding to the amount of the costs under 14.1.1 above a sum equal to 20% (comprised of 10% overhead and 10% profit) thereof, provided, however, that if it appears that the Contractor would have sustained a documentable loss on the entire Contract had it been completed, an appropriate adjustment shall be made reducing the amount to be paid under this Article to reflect the indicated rate of loss.

14.2 In no event shall the Contractor's compensation exceed the total Contract amount.

14.3 The detailed estimate or amount of progress payments made to the Contractor prior to the day termination was effective shall not be conclusive evidence of costs incurred but progress payments shall be offset against any payment which ORDA makes to the Contractor as a result of such termination.

#### ARTICLE 15 - DISPUTES

15.1 The Contractor specifically agrees to submit, in the first instance, any dispute or disagreement relating to the performance of this Contract to the Director, who shall render a decision in

writing and furnish a copy thereof to the Contractor. The Contractor agrees that this clause does not apply to any dispute or disagreement which involves delay, acceleration, interference or any other act or omission constituting a breach of contract; any matter relating to extensions of time, bonuses or liquidated damages; to the value of any Change Order or Field Order (issued pursuant to Division 01 - General Requirements); any termination for cause or convenience; or to termination costs allowable pursuant to Contract.

- 15.2 The Contractor must request such decision in writing by certified mail no more than fifteen (15) days after the Contractor knew or ought to have known of the facts which are the basis of the dispute or disagreement. Such writing shall identify the nature of the dispute or disagreement; identify the person who rendered the decision or interpretation involved and the date of the decision or interpretation with which the Contractor disputes or disagrees, attaching a copy of such decision or interpretation; contain a statement of the contractual basis for the dispute or disagreement; and identify the relief sought.
- 15.3 The Director may cause an investigation to be made of the circumstances involving the dispute or disagreement and may cause a fact-finding proceeding to be conducted before rendering the decision.
- 15.4 The Contractor agrees that the decision of the Director shall be final and conclusive. Nothing in this Contract shall be construed as making final the decision of any administrative official upon a question of law.

#### ARTICLE 16 - STATUTORY REQUIREMENTS FOR UTILIZATION OF MINORITY AND WOMEN OWNED BUSINESS ENTERPRISES

- 16.1 Pursuant to § 313 of Article 15-A of the Executive Law of the State of New York, the Director of the Division of Minority and Women's Business Development has promulgated rules and regulations (Parts 140 through 145 of Subtitle N of Title 9 New York Code of Rules and Regulations) (the "Regulations") for the purposes of ensuring that certified Minority and Women Owned Business Enterprises shall be given the opportunity for meaningful participation in the performance of State contracts and to facilitate the award of a fair share of State contracts and subcontracts to such business enterprises.

16.1.1. The Contractor is directed to the MWBE

#### Requirements Section of Division 0 Bidding and Contract Requirements.

- 16.2 The Contractor shall make a good faith effort to solicit active participation in the Work by enterprises identified in the directory of certified businesses obtainable from the Division of Minority and Women's Business Development, New York State Department of Economic Development.
- 16.3 The Contractor agrees, as a material condition of this Contract, to be bound by the provisions of § 316 of Article 15-A of the Executive Law of the State of New York which relates to the resolution of disputes which may arise under this Article.
- 16.4 The Contractor agrees to include the provisions of Paragraphs 16.2 and 16.3 of these General Conditions in every subcontract it enters into as to Work in connection with this Contract in such a manner that the provisions will be binding upon such subcontractor. However, the provisions of this paragraph shall not be binding upon the Contractor or its subcontractors in the performance of work or the provision of services that are unrelated, separate or distinct from this Contract as expressed by its terms.
- 16.5 The Regulations referred to in Paragraph 16.1 of these General Conditions require, among other things, that a bidder or proposer for a State contract submit a utilization plan which shall identify certified Minority or Women Owned Business Enterprises which the bidder/proposer intends to use in connection with the performance of the proposed State contract. Such a utilization plan shall be submitted after bids are opened but prior to contract award.
- 16.5.1 Pursuant to the Regulations: (1) the Commissioner may require the submission by the Contractor of compliance reports relating to the implementation of and adherence to the utilization plan in performing the Contract; (2) the Commissioner shall allow the Contractor to apply for a partial or total waiver of the Minority and Women Owned Business participation requirements; (3) the Contractor may file a complaint with the Executive Director of the Division of Minority and Women's Business Development regarding a denial of a request for waiver of Minority and Women Owned Business participation requirements; (4) the Commissioner

may file a complaint with the Executive Director of the Division of Minority and Women's Business Development in the event the Contractor fails to comply with the Minority and Women Owned Business participation requirements set forth in this Contract; and (5) the Commissioner may disqualify the Contractor's bid or proposal as being non-responsive for failure to remedy notified deficiencies contained in the Contractor's utilization plan after an administrative hearing on the record, reviewing all grounds for disqualification stated by the Commissioner and taking into consideration all the criteria set forth in § 313 of the Executive Law.

- 16.5.2 The Contractor is referred to the entirety of the provisions of § 316 of Article 15-A of the Executive Law of the State of New York and of the Regulations for the Contractor's full familiarization with their applicable provisions as terms of this Contract.

#### ARTICLE 17 - COORDINATION OF SEPARATE CONTRACTS

- 17.1 ORDA may award other contracts which affect the Work of this Contract. In that event, the Contractor shall coordinate the Work with the work of other contractors in such manner as ORDA may direct. Each contractor shall control and coordinate the work of its subcontractors, if any. ORDA shall approve or require the modification of the work schedules of all contractors to the end that the Project may be progressed as expeditiously as the case permits.
- 17.1.1. ORDA may self-perform work related to the Project at the Site by its own forces, or let other direct contracts therefore which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then; (i) written notice thereof will be given to the Contractor prior to starting any such other work, and (ii) the Contractor may make a claim therefore as provided in Articles 11 and 12 if the Contractor believes that such performance will involve additional expense to the Contractor or requires additional time and the parties are unable to agree as to the amount or

extent thereof.

- 17.2 If any part of the Work depends for proper execution or results upon the work of any other contractor, the Contractor shall inspect and promptly report in writing to the Director's Representative any defects in such work. The Contractor's failure to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the Contractor's Work.
- 17.3 The Director's Representative shall issue appropriate directions and take such other measures to coordinate and progress the Work as may be reserved to ORDA in the Contract, and which an ordinarily reasonable project owner in similar circumstances would be expected to take.
- 17.4 The award of more than one contract for the Project requires sequential or otherwise interrelated contractor operations, and will involve inherent delays in the progress of any individual contractor's work. Accordingly, ORDA does not guarantee the unimpeded operations of any contractor. The Contractor acknowledges these conditions, and understands that the Contractor shall bear the risk of all delays caused by the presence or operations of other contractors engaged by ORDA and delays attendant upon any ORDA-approved construction schedule.
- 17.5 ORDA shall not be liable for delays which occur by reason of any contractor's failure to comply with directions of ORDA or because of the neglect, failure or inability of any contractor to perform its work efficiently.
- 17.6 The Contractor shall defend, indemnify and hold the Indemnified Parties harmless from any and all claims or judgments of damages and from costs and expenses to which the Indemnified Parties may be subjected or which it may suffer or incur by reason of or based upon an allegation of the Contractor's failure to promptly comply with the directions of the Director's Representatives.
- 17.7 Should the Contractor sustain any damage through any act or omission of any other contractor having a contract with ORDA for the performance of work upon the Site which may be necessary to be performed for the proper prosecution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such contractor, the Contractor shall have no claim against ORDA for such damage, but shall have a right to recover such



damage from the other contractor under the provision similar to the following provision which has been or will be inserted in the contract with such other contractors.

- 17.8 Should any other contractor having or who shall hereafter have a contract with ORDA for the performance of work upon the Site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any subcontractor of the Contractor, the Contractor agrees to reimburse such other contractor for all such damages and to indemnify and hold ORDA harmless from all such claims.

#### ARTICLE 17A - DELAYS

- 17A.1 For the purposes of this Contract, the term delay includes delay, disruption, interference, inefficiencies, impedance, hindrance and acceleration.

- 17A.2 The Contractor agrees to make claim only for additional costs as defined in Document 01 20 00, Section 1.01, paragraph L, from causes listed below, attributable to delay in the performance of this Contract, occasioned by any act or omission to act by ORDA or any of its representatives. The Contractor also agrees that delay from any other cause shall be compensated for solely by an extension of time to complete the performance of the Work.

- 17A.2.1 The failure of ORDA to take reasonable measures to coordinate and progress the Work unless coordination is assigned to the Contractor or another contractor to whom a contract was awarded which affects the Work of this Contract

- 17A.2.2 Extended delays attributable to ORDA in the review or issuance of Work Change Directives, Field Orders, or Change Orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple orders on contract, which constitute a qualitative change to the Work and which have a verifiable impact on Project costs.

- 17A.2.3 The unavailability of the Site for such an extended period of time which the Director determines to significantly affect the scheduled completion of the contract.

- 17A.2.4 The issuance by the Director of a stop work order relative to a substantial

portion of the Work for a period exceeding thirty (30) days.

- 17A.3 The Contractor shall provide "notice of claim" of an anticipated claim for delay to the Contracting Officer by personal service or certified mail no more than fifteen (15) days after the Contractor knew or ought to have known of the facts which form the basis of the claim. The Contracting Officer shall acknowledge receipt of the Contractor's notice, in writing, within five (5) days. The Contractor agrees that ORDA shall have no liability for any damages which accrue more than fifteen (15) days prior to the delivery or mailing of the required notice. The notice shall at a minimum provide a description of any operations that were, are being, or will be delayed, the date(s) and reasons for the delay, and, to the extent known, the information required by Paragraph 17A.6 of these General Conditions. In no case, shall oral notice constitute notice under this provision or be deemed to constitute a waiver of the written notice requirement. In no case, shall written notice to the Director's Representative or any other individual other than the Contracting Officer constitute notice under this provision or be deemed to constitute a waiver of the written notice requirement. The Contracting Officer is located at the following location:

Olympic Regional Development Authority  
Olympic Center  
2634 Main Street  
Lake Placid, NY 12946

- 17A.4 Failure by the Contractor to adequately progress the completion of the Work will be considered in determining the causes of delay. For any claim asserted under this Article, the Contractor shall keep detailed written records of the costs and shall make them available to the Contracting Officer at any time for the purposes of audit and review. Failure by the Contractor to provide the required written notice to the Contracting Officer, or to maintain and furnish records of the costs of such claims to the Contracting Officer, shall constitute a waiver of the claim.

- 17A.5 The provisions of this Article apply only to claims for extra or additional costs attributable to delay and do not preclude determinations by the Director allowing reimbursement for additional costs for extra work pursuant to Article 10 of these General Conditions.

- 17A.6 REQUIRED CONTENT OF CLAIM SUBMISSION.

17A.6.1 As noted in Paragraph 17.A.3 of these General Conditions, all claims for delay shall be submitted in writing to the Contracting Officer and must be in sufficient detail to enable the Contracting Officer to ascertain the basis and the amount of each claim. The following information shall be provided by the Contractor upon request of the Contracting Officer if not previously supplied:

- a. A description of the operations that were delayed, the reasons for the delay and an explanation of how they were delayed.
- b. A detailed factual statement of the claim providing all necessary dates, locations and items of work affected by the claim.
- c. An as-built chart, "Critical Path Method" scheme or other diagram or chart depicting in graphic form how the operations were or are claimed to be adversely affected including the report and conclusions of all engineering and scheduling experts or other consultants, if any.
- d. The date on which actions resulting in the claim occurred or conditions resulting in the claim became evident.
- e. A copy of the approved project schedule and a copy of the "notice of claim" required for the specific claim by Paragraph 17A.3 of these General Conditions.
- f. To the extent known, the name, function, and activity of each ORDA official, employee or agent, involved in, or knowledgeable about facts that gave rise to such claim.
- g. The name, function, and activity of each contractor or subcontractor officer, or employee, involved in, or knowledgeable about facts that gave rise to such claim.
- h. The identification of any pertinent documents, and the substance of any material oral communication relating to such claim.

- i. The amount of additional compensation sought and a breakdown of that amount into the categories specified in Division 01 - General Requirements.
- j. If an extension of time is also requested, the specific number of days for which it is sought and the basis for such request as determined by an analysis of the construction progress schedule.

#### 17A.7 REQUIRED CERTIFICATION OF CLAIMS.

17A.7.1 When submitting any notice of claim or claim data, the Contractor must certify in writing and under oath:

- a. That supporting data is accurate and complete to the Contractor's best knowledge and belief; and
- b. That the amount of the claim and the claim itself accurately reflects what the Contractor in good faith believes to be ORDA' liability.

17A.7.2 If the Contractor is an individual, the certification shall be executed by that individual. If the Contractor is not an individual, the certification shall be executed by a company official in charge of the Contractor's operations pertaining to this Contract or an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.

17A.7.3 Failure to timely comply with any of the requirements of Article 17A for the submission of any claim for delay may constitute grounds for denial of such claim.

#### ARTICLE 18 - RESPONSIBILITY FOR DAMAGE

18.1 The Contractor shall faithfully perform and complete all of the Work required by the Contract, and shall be responsible for bodily injury (including exposure to toxic substances), sickness, disease or death sustained by any person, or to injury to or destruction of tangible property (including loss of use), arising out of or resulting from the performance of the Contract or negligent or otherwise tortious acts, errors or omissions and/or willful misconduct of any Responsible Party, regardless of whether or not a

claim arises under Labor Law Sections 200, 240 and/or 241, Industrial Code Rule 23 and/or common law negligence, or by reason of liability imposed by operation of law.

- 18.2 To the fullest extent permitted by law, the Contractor shall defend, indemnify, hold harmless and release the Indemnified Parties from and against any and all suits, claims, liabilities, fines, damages and/or any types of action whatsoever, including attorneys' fees, defense costs and legal costs, for bodily injury (including exposure to toxic substances), sickness, disease or death sustained by any person, or to injury to or destruction of tangible property (including loss of use), arising out of or resulting from the performance of the Contract or negligent or otherwise tortious acts, errors or omissions and/or willful misconduct of any Responsible Party, or by reason of liability imposed by operation of law.
- 18.3 ORDA may retain such monies from the amount due the Contractor as may be necessary to satisfy any claim for damages recovered against the Indemnified Parties. The Contractor's obligation under this paragraph shall not be deemed waived by the failure of ORDA to retain the whole or any part of such monies due the Contractor, or where such suit, action, damages, and/or costs have not been resolved or determined prior to release of any monies to the Contractor under the Contract.
- 18.4 The obligation of the Contractor to indemnify the Indemnified Parties (1) shall not be limited in any manner by any limitation of the amount of insurance coverage or benefits, including workers' compensation or other employee benefit acts, provided by the Contractor, and (2) shall not be deemed limited or discharged by the enumeration or procurement of any insurance for liability for damages imposed by law upon the Indemnified Parties.
- 18.5 The Contractor has the obligation, at its own expense, for the defense of any action or proceeding which may be brought against the Indemnified Parties. This obligation shall include the cost of attorneys' fees, disbursements, costs and other expenses incurred in connection with such action or proceeding. Notwithstanding the foregoing, ORDA reserves the right to join such action or proceeding, at its sole expense, when it determines there is an issue involving a significant public interest.
- 18.6 The obligation of the Contractor to indemnify does not extend to those suits, claims, liabilities,

fines, damages and types of action which arise out of the sole negligence of an Indemnified Party.

- 18.7 The provisions of this Article shall survive the expiration or termination of the Contract.

#### ARTICLE 19 – BONDS, INSURANCE - BUILDER'S RISK, LIABILITY AND WORKERS' COMPENSATION

- 19.1 Performance and Payment Bond:  
The Contractor shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. These Bonds shall remain in effect at least until one (1) year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act. ORDA shall receive revised Bonds or other evidence from the Surety when the value of the Project is increased by Change Order and ORDA is charged for an increase in the rate of the Bond(s). If the Surety on any Bond furnished by the Contractor for the Project is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of this paragraph 19.1, the Contractor shall within ten (10) days thereafter substitute another bond and surety, both of which must be acceptable to ORDA.
- 19.2 Insurance:  
Before commencing the Work and until the established Physical Completion date, all insurance required by the Contract shall be obtained at the sole cost and expense of the Contractor, and the Contractor shall furnish to the Director a Certificate of Insurance in a form satisfactory to the Director showing that the Contractor has complied with this Article. Insurance shall be maintained with insurance carriers licensed to do business in New York

State and acceptable to the Director; shall be primary and non-contributing to any insurance or self-insurance maintained by ORDA; and shall be endorsed to provide written notice be given to the Director Officer at least thirty (30) days prior to the cancellation, non-renewal, or material alteration of such policies, which notice, evidenced by return receipt of United States Certified Mail, shall be addressed to:

Olympic Regional Development Authority  
Office of Environmental, Planning and Construction  
Olympic Center  
2634 Main Street  
Lake Placid, NY 12946

19.2.1 The endorsement shall name the New York State Olympic Regional Development Authority / the People of the State of New York, their officers, agents, employees and the assigned construction manager as additional insureds there under. This additional insured shall be primary and non-contributory. (General Liability Additional Insured Endorsement shall be on Insurance Service Office's (ISO) form number CG 20 10 11 85 and a copy of which shall be furnished along with the Certificate of Insurance.) The Contracting Officer may modify the provisions of this Article when deemed in the best interest of ORDA/the State by Change Order or Work Change Field Directive.

19.2.2 The Contractor, throughout the term of this Contract, or as otherwise required by this Contract, shall obtain and maintain in full force and effect on an occurrence form, the following insurance with limits not less than those described in this article, and as required by the terms of this Contract, or as required by law, whichever is greater. If such insurance contains an aggregate limit, it shall apply separately on a per job, per location basis.

19.2.3 The Contractor shall be solely responsible for the payment of all deductibles and Self-Insured Retentions.

19.2.4 Not less than thirty (30) days prior to the expiration date or renewal date of any insurance policies reflected on such certificates, the Contractor shall supply

updated replacement Certificates of Insurance, and amendatory endorsements.

19.3 The kinds and amount of insurance is as follows and is applicable to all subcontractors and sub-subcontractors, suppliers and all others directly or indirectly employed by the Contractor: Insurance Limits shall be provided in accordance with Division 0 Contract Requirements - ORDA's Insurance Requirements and Additional Insured.

19.3.1 Workers' Compensation Insurance and Disability Benefits Law. A policy covering the obligations of the Contractor in accordance with the Workers' Compensation Law and the Disability Benefits Law covering all operations under the Contract, whether performed by the Contractor or by its subcontractor.

19.3.2 Commercial General Liability, and if necessary, Commercial Umbrella Liability Insurance with a limit of not less than required by "ORDA's Insurance Requirements and Additional Insured." Such liability shall be written on the ISO occurrence form CG 00 01, or a substitute form providing equivalent coverages and shall cover liability resulting in Bodily Injury, Property Damage, Personal Injury or loss of use arising from premises operations, independent contractors, products-completed operations, broad form property damage, personal & advertising injury, cross liability coverage, liability assumed in a contract (including the tort liability of another assumed in a contract) and explosion, collapse & underground coverage. If such insurance contains an aggregate limit, it shall apply separately on a per job, per location basis.

19.3.3 Comprehensive Business Automobile Liability, and if necessary, Commercial Umbrella Liability Insurance with a limit of not less than required by "ORDA's Insurance Requirements and Additional Insured for Construction Contracts". Such insurance shall cover liability arising out of any automobile including owned, leased, hired and non-owned automobiles.

19.3.4 Builder's Risk: The Contractor shall be

liable for any and all damages and losses to the Project prior to ORDA's acceptance of the Project as fully completed except that the Contractor shall not be liable for:

19.3.4.1 Losses covered by the Builder's Risk property insurance provided by ORDA; except that the Contractor shall be liable for the applicable deductible.

19.3.4.2 All policies shall be issued by insurance companies licensed to conduct such business under the laws of the State of New York, shall be written for the benefit of ORDA/State of New York and for the Contractor as their interests may appear, and shall run until the contract physical completion date. ORDA must be listed as loss payee pursuant to this policy. Policies expiring on a fixed date before physical completion must be renewed and re-filed not less than thirty (30) days before such expiration date.

19.3.5 If the work involves abatement, removal, repair, replacement, enclosure, encapsulation and/or disposal of any petroleum, petroleum product, hazardous material or substance including asbestos, lead or mold, and those as defined by applicable State and federal laws and regulations, the Contractor shall procure, or otherwise obtain through an approved subcontractor, and maintain in full force and effect throughout the term of the contract, and for two years after completion hereof, pollution legal liability insurance with limits of not less than required by "ORDA's Insurance Requirements and Additional Insured for Construction Contracts", providing coverage for bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured. Such policy shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants, including any loss, cost or expense incurred as a result of

any cleanup of pollutants or in the investigation, settlement or defense of any claim, suit, or proceedings against ORDA or the State arising from the Contractor's work. ORDA and the State of New York shall be named as additional insured and this shall be primary.

19.3.5.1 Other additional insured shall be named as required by "ORDA's Insurance Requirements and Additional Insured for Construction Contracts."

19.3.5.2 If automobiles are to be used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered autos (endorsement CA 99 48) as well as proof of MCS 90.

19.4 The Contractor may provide the required proof of insurance on industry forms provided that no other endorsements exclude, delete or restrict those coverages provided for by this article. It is required that companies affording coverage list the company name in full as filed with the New York State Insurance Department. The contract number and project location must be provided in order to approve the certificate.

19.5 Should the Contractor fail to provide or maintain any insurance required by law, the Contract will be considered null and void. Further, no contractor is permitted to access the Project Site without providing proof of proper insurance to the Director or the Director's designated representative. No payments will be authorized by the Contracting Officer to any firm who fails to comply with the provisions of this Article.

## ARTICLE 20 - OCCUPANCY PRIOR TO COMPLETION AND ACCEPTANCE

20.1 ORDA shall have the right to take possession of or use any completed or partially completed portion of the Work. Written notice of such possession shall be given to the Contractor by the Director. The notice shall identify the date when such possession shall commence and the area, equipment or system involved. Written notice shall also be given the Contractor for any cessation of such possession by ORDA. Such possession or use shall not be deemed an acceptance of any Work. While ORDA is in such



possession, the Contractor, notwithstanding the provisions of Article 18 of the Contract, shall be relieved of the responsibility for loss or damage to the Work except for that resulting from the Contractor's fault or negligence. If such possession or use by ORDA delays the progress of the Work or causes additional expense to the Contractor, an adjustment in the Contract price and/or the time of completion shall be made and the Contract modified in writing accordingly. The provisions relating to an adjustment in the Contract Price or the time of completion contained in this paragraph shall not apply to occupancy or possession after Substantial Completion.

- 20.2 All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work, and termination or completion of the Agreement.

#### ARTICLE 21 - PAYMENT

- 21.1 The Contractor shall submit monthly, or at more frequent intervals if permitted in writing by the Contracting Officer, a requisition for a progress payment to the designated payment office for Work performed and materials furnished up to the date of the requisition, less any amount previously paid to the Contractor. Except as otherwise provided by this Contract, the Contracting Officer shall approve and cause to be paid the requisition for the progress payment less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged and less any amount authorized by law to be retained. The requisition shall be in such form and supported by such evidence as the Contracting Officer may reasonably require. The designated payment office is listed as follows:

Olympic Regional Development Authority  
Office of Environmental, Planning and Construction  
Olympic Center  
2634 Main Street  
Lake Placid, NY. 12946

- 21.1.1 For those contracts designated as Labor and Material reimbursement or similar type contracts, the Contractor shall submit no later than sixty (60) days from the period of when the work occurred, acceptable proof of labor and material costs specific to the approved scope of work as verified by the

Directors Representative, to the Contracting Officer for audit, verification and approval prior to the submission of any payment. The Contracting Officer is located at the following location:

Olympic Regional Development Authority  
Office of Environmental, Planning and Construction  
Olympic Center, 2634 Main Street  
Lake Placid, NY 12946

- 21.1.2 The submittal of cost for reimbursement to the Contractor shall be in such form and supported by such evidence as the Contracting Officer may reasonably require.
- 21.2 The Director or the Contracting Officer may refuse to approve the requisition or a portion of it if the Contractor is failing or refusing to prosecute the Work in accordance with the Contract.
- 21.3 Payment will be made for approved materials not yet incorporated in the Work which are in short and/or critical supply and for materials determined to be specifically fabricated for the project. Requisitions which require payment for materials shall be accompanied by a notarized statement certifying that the materials for which payment is requisitioned are the Contractor's property and have been suitably stored and insured. The Contractor shall provide such evidence of the value of the material stored as the Contracting Officer may reasonably require. The Contractor shall have full continuing responsibility to insure and protect such materials and maintain them in proper condition to fulfill Contract requirements when installed.
- 21.4 When the Work or major milestones thereof as contemplated by the terms of this Contract are substantially completed, the Contractor shall submit to the Contracting Officer a requisition for payment of the remaining amount of the Contract Price. Upon receipt of such requisition the Contracting Officer shall, except as otherwise provided by this Contract, approve and cause to be paid the remaining amount of the Contract Price less two times the value of any remaining items to be completed and an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. As the remaining items of Work are satisfactorily completed or corrected, the Contracting Officer shall cause to be paid, upon receipt of a requisition, for these remaining items less an amount necessary to satisfy any claims,

liens or judgments against the Contractor which have not been suitably discharged.

- 21.5 No more than sixty (60) days after the issuance of the Physical Completion Report, the Contractor shall submit to the Contracting Officer or the Contracting Officer's designated representative a requisition for payment of the remaining Contract balance. Upon receipt of this requisition, the Contracting Officer shall, except as otherwise provided by this Contract, approve and cause such requisition to be paid less any amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. The Contractor waives any claim or right to payment of any contract balance which has not been requisitioned for payment within sixty (60) days of the issuance of the Physical Completion Report.
- 21.6 The final certificate letter will not be issued until all the labor and material required by the Contract has been furnished and completed, all disputes and claims relating to the performance of the Contract considered and disposed of and all accounts for extra work and materials and allowances for omissions have been rendered and considered. The Contractor waives any claim or right to additional compensation which has not been submitted in writing via certified or registered mail to the Contracting Officer pursuant to Article 17A, within thirty (30) days of the issuance of the Physical Completion Report.
- 21.7 The final certificate letter will constitute the acceptance of the Work by ORDA, except as to Work thereafter found to be defective. The date of such certificate shall be regarded as the date of acceptance of the Work.
- 21.8 No payment will be made to a foreign contractor until it furnishes satisfactory proof that it has paid all taxes required of foreign contractors under the provisions of the New York State Tax Law. A foreign contractor as used in this paragraph shall mean a contractor denominated "foreign" by the New York State Tax Law.
- 21.9 The Contractor is advised that consistent with Subdivision 3-a of § 220 of the Labor Law, the filing of certified payroll records is a condition precedent to payment of any sums due and owing to any person performing work on this project. The failure to file pursuant to this section will result in a payment delay until such time as the filing occurs.

#### ARTICLE 22 - AUDITS AND RECORDS

- 22.1 The Director, the Comptroller or their representatives shall have the right to examine all books, records, documents, and other data of the Contractor, subcontractors, material-men or suppliers relating to the bidding, pricing or performance of this Contract or any change or modification thereto for the purpose of evaluating the accuracy, completeness, and currency of the cost or pricing data submitted. This right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted along with the computations and projections used therein.
- 22.2 The above materials shall be made available at the respective offices of the Contractor, subcontractors, material-person or suppliers at all reasonable times for inspection, audit or reproduction until the expiration of six years from the date of the final certificate for the Contract.
- 22.3 If this Contract is completely or partially terminated, the records relating to the Work terminated shall be made available for a period of six years from the date of any resulting final settlement.
- 22.4 Records which relate to the Disputes Clause of this Contract or litigation or the settlement of claims arising out of the performance of this Contract shall be made available until such appeals, litigation or claims have been disposed of.
- 22.5 The Contractor shall insert a clause containing all of the provisions of Paragraphs 22.1 to 22.4 of these General Conditions in all subcontracts or purchase orders issued hereunder.
- 22.6 The Contractor shall make available to the Contracting Officer, upon written request, all records required to be kept by this Contract or by Article 3-A of the Lien Law. The failure to provide said records upon the receipt of the written request shall bar any recovery for claimed extra or additional costs under this Contract.

#### ARTICLE 23 – LABOR LAW PROVISIONS

- 23.1 The Contractor shall post, in a location designated by ORDA a copy of the New York State Department of Labor schedules of prevailing wages and supplements for this Project, a copy of all re-determinations of such schedules for the Project, the Workers'

Compensation Law § 51 notice, all other notices required by law to be posted at the Site, the Department of Labor notice that this Project is a public work project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which the worker is working, and all other notices which ORDA directs the Contractor to post. The contractor shall provide a surface for such notices which is satisfactory to ORDA. The Contractor shall maintain such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The Contractor shall post such notices before commencing any Work on the Site and shall maintain such notices until all Work on the Site is complete.

23.2 The Contractor shall distribute to each worker for this Contract a notice, in a form provided by ORDA, that this Project is a public work project on which each worker is entitled to receive the prevailing wage and supplements for the occupation at which the worker is working. Worker includes employees of the Contractor and all Subcontractors and all employees of Suppliers entering the Site. Such notice shall be distributed to each worker before the worker starts performing any Work of this Contract. At the time of distribution, the Contractor shall have each worker sign a statement, in a form provided by ORDA, certifying that the worker has received the notice required by this section, which signed statement shall be maintained with the payroll records required by Paragraph 23.3 of these General Conditions.

23.3 The Contractor shall maintain on the Site the original certified payroll or certified transcripts thereof which the Contractor and all of its subcontractors are required to maintain pursuant to New York Labor Law § 220. The Contractor shall maintain with the payrolls or transcripts thereof, the statements signed by each worker pursuant to Paragraph 23.2 of these General Conditions.

23.4 A contractor or subcontractor who is required under New York Labor Law § 220 to maintain transcripts of payroll records must submit to ORDA a transcript of the original payroll record within thirty (30) days of issuance of its first payroll and every thirty (30) days, thereafter. The copy of the payroll record must be subscribed and affirmed as true under penalty of perjury. The copy must include the contract number and should be directed to the Director's Representative at the job site. The Directors Representative is hereby designated as the

individual responsible for the receipt, collection and review for authenticity of payroll records filed for this Contract, consistent with General Conditions Article 23.4, and subparagraphs (iii) and (iv) of New York Labor Law § 220.

23.5 In accordance with New York Labor Law §222-H, the Contractor agrees where the total cost of the Work to be performed under the Contract is at least two hundred fifty thousand dollars; all laborers, workers, and mechanics employed in the performance of this Contract on the public work site, either by the Contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by this Contract, shall be certified prior to performing any work on the project as having successfully completed a course in construction safety and health approved by the United States department of labor's occupational safety and health administration that is at least ten hours in duration.

23.6 In accordance with New York Labor Law § 220 (3) (a), the Contractor and every sub-contractor agrees to notify all laborers, workers or mechanics in their employ in writing of the prevailing rate of wage for their particular job classification. Such notification shall be given to every laborer, worker or mechanic on their first pay stub and with every pay stub thereafter. At the beginning of performance of every public works contract, and with the first paycheck after July first of each year, the Contractor and every sub-contractor shall notify all laborers, workers, and mechanics in their employ in writing, in accordance with such form as is prescribed by the department, of the telephone number and address for the department. The notice shall also inform each laborer, worker, or mechanic of their right to contact the department or some other representative if, at any time while working for the public works contractor or sub-contractor, the worker does not receive the proper prevailing rate of wages or supplements for their particular job classification that the worker is entitled to receive under the Contract.

#### ARTICLE 24 - STATUTORY REQUIREMENTS FOR RESTRICTIONS ON CONTACTS DURING THE PROCUREMENT PROCESS AND DISCLOSURE OF CONTACTS AND RESPONSIBILITY OF OFFERERS MISCELLANEOUS PROVISIONS

24.1 New York State Finance Law §139-k requires that every procurement contract award subject to the provisions of State Finance Law §139-k or §139-j shall contain a certification by the offerer that all information provided to the procuring



governmental agency with respect to State Finance Law §139-k is complete, true and accurate. The Contractor shall provide that certification in his contract or agreement.

## 24.2 New York State Finance Law

24.2.1 New York State Finance Law § 139-k(2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law § 163 (9). In accordance with State Finance Law § 139-k, an offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law § 139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity.

24.2.2 As part of its responsibility determination, State Finance Law § 139-k(3) mandates consideration of whether an offerer fails to timely disclose or complete information regarding the above non-responsibility determination. In accordance with law, no procurement contract shall be awarded to any offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the offerer is necessary to protect public property or public health safety, and that the offerer is the only source capable of supplying the required Article of Procurement within the necessary timeframe. The required forms to be completed by the offerer must be submitted to the Governmental Entity conducting the government procurement. The Governmental Entity will have included the disclosure request in its solicitation of proposals or bid documents or specifications of contract documents, as applicable, for procurement contracts.

## ARTICLE 25 – MISCELLANEOUS PROVISIONS

25.1 STANDARD CONTRACT TERMS: Appendix A, Standard Contract Terms, is attached hereto and is made a part of this

Contract as if set forth herein. The terms and provisions contained in the Standard Contract Terms shall supersede all other Contract terms.

25.2 If, in carrying out this Work, a harmful dust hazard is created for which appliances or methods for the elimination of harmful dust have been approved by the Board of Standards and Appeals, then the Contractor shall install, maintain and effectively operate such appliances and methods during the life of this Contract; and in case of Contractor's failure to comply, as provided by Section 222-a of the Labor Law, the Contract shall be void.

25.3 RETAINED PERCENTAGES: The Contractor agrees that, if the Contract Documents for this Contract includes Performance and Payment Bonds, ORDA shall retain five percent of the amount of each progress payment in accordance with Section 139-f of the State Finance Law. The Contractor further agrees that, if the Contract Documents for this Contract do not include Performance and Payment Bonds, ORDA shall retain ten percent of the amount of each progress payment in accordance with Section 139-f of the State Finance Law.

25.4 DOMESTIC STEEL: The Contractor agrees, that if the value of this Contract exceeds \$100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

25.5 COMMENCEMENT OF ACTIONS: The time, as prescribed by law, within which an action on the contract against the Contractor must be commenced shall be computed from the completion of physical work. The Contractor may notify ORDA in writing that the physical work of the contract has been completed by specifying a completion date, which date shall be no more than thirty (30) days previous to the date of such notice. The completion date set forth in such notice shall be deemed the date of completion of the physical work unless ORDA, within thirty (30) days of receipt of such notice, notifies the Contractor in writing of its disagreement. Any notice pursuant to this paragraph shall be sent by the Contractor by Certified Mail and addressed to:

Olympic Regional Development Authority  
Director of Environmental, Planning and Construction  
2634 Main Street  
Lake Placid, NY 12946

- 25.5.1 In the event that the Contractor fails to send the notice provided for herein or ORDA disagrees in the manner provided for herein, the date of completion of the physical work shall be determined in any other manner provided by law.
- 25.6 **WORKER'S COMPENSATION LAW:** In accordance with New York State Worker's Compensation Law (WCL) §141-b (Suspension and Debarment), any person subject to a final assessment of civil fines or penalties or a stop-work order, or that has been convicted of a misdemeanor for a violation of WCL §§ 26 (Enforcement of Payment in Default), 52 (Effect of Failure to Secure Compensation) or 131 (Payroll Records), and any substantially-owned affiliated entity of such person, shall be ineligible to submit a bid on or be awarded any such public work contract or subcontract with ORDA for a period of one (1) year from the final determination or conviction. Any person convicted of a felony under Article 8 (Administration) of the WCL, or a misdemeanor under WCL §§125 (Job Description Prohibited Based on Prior Receipt of Benefits) and 125-a (Civil Enforcement) shall be ineligible to submit a bid or be awarded any public work contract or subcontract with ORDA for a period of five (5) years from such conviction.
- 25.7 **ENVIRONMENTAL CONSERVATION LAWS:** The Contractor certifies and warrants that all heavy-duty vehicles, as defined in New York State Environmental Law (ECL) section 19-0323, to be used under this Contract, will comply with the specifications and provisions of ECL section 19-0323 and any regulations promulgated pursuant thereto, which requires the use of BART and ULSD, unless specifically waived by NYSDEC. Qualification for a waiver under this law will be the responsibility of the Contractor.
- 25.8 **REPORTING OF ILLEGAL ACTIVITY:** During the term of the contract, the Contractor agrees to report any observed or suspected illegal activity of its employees, agents or other third parties, to the Director at 518-302-5332, ORDA Legal Services at 518-302-5372, the State Inspector General or other law enforcement agency. Failure to report criminal conduct associated with a contract awarded by the Office of General Services, will be considered a material breach of the contract and may provide grounds for disqualification of the subject contractor or subcontractor for award of future contracts. The Contractor will include the provisions of this section in every subcontract, in such a manner that the provisions will be binding upon each subcontractor as to work performed in connection with the State contract.
- 25.9 **CONDITIONS PRECEDENT:** The notice requirements set forth in these General Conditions are each a condition precedent to the Contractor's commencement of an action on the Contract.
- 25.10 **EMERGENCIES:** In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, the Contractor, without special instruction or authorization from the Director or the Director's Representative, is obligated to act to prevent threatened damage, injury or loss. The Contractor shall give the Director prompt written notice if the Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Director determines that a change in the Contract Documents is required because of the action taken by the Contractor in response to such an emergency, a Work Change Directive, Field Order or Change Order will be issued to document the consequences of such action.
- 25.11 **GEOTECHNICAL DATA:** Geotechnical Data/Subsurface Logs: Subsurface logs included in Contract Document are made on the dates indicated on the individual logs. Therefore, the observed water levels and/or conditions noted on the subsurface logs are as recorded at the time of exploration. Water levels and/or conditions may vary considerably with time, according to the prevailing climate, rainfall, or other factors and are otherwise dependent on the duration of and method used in the explorations program. Sound engineering judgment is exercised in preparing the subsurface logs. The information is prepared and is intended for project design and estimate purposes only. Its presentation is for the purpose of providing intended users with access to the same information available to ORDA. Subsurface logs are presented in good faith and are not intended as a substitute for personal investigation, independent interpretations, or judgment of the bidders.
- Geotechnical Reports: Geotechnical reports and information provided by ORDA are for information only. The opinions expressed in these reports are those of the geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by the geotechnical engineer. ORDA

shall not be responsible for interpretations or conclusion drawn from their data. The contractor shall make additional test borings and conduct other exploratory operations as necessary for excavation support and protection design and construction.

25.12 REGIONAL WOOD AND STONE: The Contractor agrees, that if the value of this Contract exceeds \$100,000, all wood used in millwork (excluding factory assemblies) and decoctive / ornamental stone items to be incorporated in the Work of this Contract shall be harvested / mined from New York State natural resources unless written permission is provided otherwise by the Director.

25.13 ALLOWANCES: It is understood that the Contractor has included in the Contract Price all General, Cash and Field Order Allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to ORDA. The Contractor agrees that the allowances include the cost to the Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

General Allowance: The Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the allowance and no demand for additional payment or mark-up on account of any of the foregoing will be valid; and

Cash Allowance: The Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment or mark-up on account of any of the foregoing will be valid; and

Field Order Allowance: It is understood that the Contractor has included in the Contract Price a Field Order Allowance. The Field Order Allowance shall be used only as directed by the Director's Representative for ORDA's purposes, and only by means of a Field Order which shall designate amounts to be charged to the Field Order Allowance. The Contractor's actual cost for the work can include all costs in accordance with Article 10 of these General Conditions.

The Contractor shall provide copies of all documentation including purchase orders,

invoices, bids and all such items as requested by ORDA to substantiate the allowance purchase to support the final allowance amount.

Prior to final payment, an appropriate Change Order will be issued as recommended by the Director to reflect actual amounts due the Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

25.14 SAFETY PLAN POSTING: In addition to the posting requirements of Article 23, Part 23.1, the Contractor shall post a Safety Plan and shall post all other related and relevant documentation to comply with COVID-19 protocols.

OLYMPIC REGIONAL DEVELOPMENT AUTHORITY (“ORDA”)

STANDARD CONTRACT TERMS<sup>1</sup>

The Parties to the attached contract, license, lease, amendment, or other agreement of any kind (hereinafter, “Agreement,” “this Agreement,” “Contract,” and/or “this Contract”) agree to be bound by the following clauses which are hereby made a part of the Contract. The word “Contractor” herein refers to any party other than ORDA, whether a contractor, consultant, licensor, licensee, lessor, lessee, vendor or any other party.

1. **Executory Clause.** In accordance with Section 41 of the State Finance Law, ORDA shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.
2. **Doing Business in New York.** Contractor hereby represents and warrants that it is duly organized and validly existing under the laws of its jurisdiction of incorporation or formation and is qualified to do business in the State of New York and all other jurisdictions in which the nature of the business conducted by it makes such qualification necessary, and has all requisite legal power and authority to carry on its business and to execute this Contract and to perform the terms, conditions and provisions hereof.
3. **Prohibiting State Contracts with Entities That Support Discrimination.** Pursuant to Executive Order No. 177, ORDA is prohibited from entering into contracts with entities that have institutional policies or practices that fail to address the harassment of individuals on the basis of their age, race, creed, color, national origin, sexual orientation, gender identity, military status, sex, marital status, disability or other protected basis. Contractor hereby represents and warrants that it has enacted policies or practices that are designed to prevent such harassment or discrimination.
4. **Ensuring Pay Equity by State Contractors.** Pursuant to Executive Order No. 162, for all procurements issued and executed on or after June 1, 2017, ORDA’s contractors must agree to include detailed workforce utilization reports to include, in addition to the equal employment opportunity information currently required to be included in such reports, the job title and salary of each employee of a contractor performing work on a State contract, or of each employee in the contractors’ entire workforce if the contractor cannot identify the individuals working directly on a State contract. For all subcontracts executed by Contractor in furtherance

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<sup>1</sup> In the event of any conflict between these ORDA Standard Contract Terms and the terms of the contract or agreement to which it is appended or attached, or any other attachments, exhibits or addenda, the terms of these ORDA Standard Contract Terms shall control.

of this Contract (including all Exhibits hereto), Contractor must include a clause imposing the same requirement on all subcontractors for their employees. Such information shall be reported to ORDA on a quarterly basis in the form and in such manner as required by ORDA.

5. **Comptroller Approval.** Pursuant to Public Authorities Law § 2879-a and 2 NYCRR Part 206, Comptroller approval may be required for certain contracts entered into by public authorities. The Comptroller, at his or her discretion and upon written notification, may elect to review State authority contracts in excess of \$1 million which are a) contracts that are to be paid from monies appropriate by the State or b) awarded to a single source, sole source, or pursuant to any other method of procurement that is not competitive in nature. The Comptroller may exercise authority to review and pre-approve other types of contracts as well. Where Comptroller review and pre-approval of contracts is required, then such agreement shall not be valid or enforceable until it has first been approved by the Comptroller.
6. **Governing Law and Forum.** This Agreement is to be construed and interpreted according to the laws of the State of New York without regard to principles of conflicts of law. Any and all actions or proceedings relating to the subject matter of this Agreement will be maintained by and subject to a court of competent jurisdiction located in the State of New York. The Contractor hereby irrevocably submits to the exclusive jurisdiction of the Supreme Court, County of Essex, State of New York for the purpose of any action by the parties relating to or arising in whole or in part under or in connection with the Agreement and hereby waives to the extent not prohibited by applicable law, and agrees not to assert, by way of motion, as a defense or otherwise, in any such action, any claim that the Contractor is not subject personally to the jurisdiction of the above-named court, that its property is exempt or immune from attachment or execution, and/or that any such action brought in one of the above-named courts should be dismissed on grounds of forum non conveniens or should be transferred or removed to any court other than one of the above-named courts.
7. **Entire Agreement.** This Agreement (including all Exhibits hereto) constitutes the entire Agreement between Contractor and ORDA and supersedes any prior Agreements or understandings between the parties. It shall not be amended, varied, or modified unless in writing executed by both parties hereto.
8. **Cancellation.** Pursuant to Public Authorities Law § 2875, upon the refusal by a person, when called before a grand jury, head of a state department, temporary state commission or other state agency, the organized crime task force in the department of law, head of a city department, or other city agency, which is empowered to compel the attendance of witnesses and examine them under oath, to testify in an investigation concerning any transaction or contract had with the state, any political subdivision thereof, a public authority or with any public department, agency or official of the state or of any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract, such person, and any



firm, partnership or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any public authority or official thereof, for goods, work or services, for a period of five years after such refusal, and to provide also that any and all contracts made with any public authority or official thereof, since the effective date of this law, by such person and by any firm, partnership or corporation of which he is a member, partner, director or officer may be cancelled or terminated by the public authority without incurring any penalty or damages on account of such cancellation or termination, but any monies owing by the public authority for goods delivered or work done prior to the cancellation or termination shall be paid.

9. **Workers Compensation Benefits.** Pursuant to State Finance Law § 142, this contract shall be void and of no force and effect unless Contractor shall provide and maintain coverage, during the life of this contract, for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.
10. **Non-Discrimination Requirements.** In accordance with Executive Law Article 15 (also known as the Human Rights Law) and Article 15-A (also known as the MWBE Law), and all other State and Federal statutory and constitutional non-discrimination provisions, Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, sexual orientation, gender identity or expression, age, disability, genetic predisposition or carrier status, or marital status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration, or repair of any public building or public work or for the manufacture, sale, or distribution of materials, equipment, or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin, discriminate in hiring against any New York State citizen who is qualified and available to perform the work, or discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, national origin, age, sex, or disability, discriminate in hiring against any New York State citizen who is qualified and available to perform the work, or discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of \$50.00 per person, per day, for any violation of Section 220-e or Section 239, as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.
11. **Wage and Hours Provisions.** If this is a public work contract covered by Article 8 of the Labor Law, or a building service contract covered by Article 9 thereof, neither Contractor's/vendor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement

schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the State of any State approved sums due and owing for work done upon the project.

12. **Non-Collusive Bidding Requirement.** Pursuant to Public Authorities Law § 2878 and State Finance Law §139-d, if this contract was awarded based upon the submission of bids, Contractor warrants, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further warrants that, at the time it submitted its bid, an authorized and responsible person executed and delivered to ORDA a non-collusive bidding certification on its behalf.
13. **Set-Off Rights.** ORDA shall have all of its common law, equitable, and statutory rights of set-off. These rights shall include, but not be limited to, ORDA's option to withhold for the purposes of set-off any moneys due to Contractor under this contract up to any amounts due and owing to ORDA with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to ORDA for any other reason including, without limitation, tax delinquencies, fee delinquencies, or monetary penalties relative thereto. ORDA shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by ORDA, its representatives, or the State Comptroller.
14. **Force Majeure.** Should either Contractor or ORDA be prevented from or delayed in performing any act required of it hereunder, and such prevention or delay is caused by disruption due to unforeseen or unavoidable circumstances including but not limited to: unforeseen or unavoidable construction activities, strikes, labor disputes, Acts of God including but not limited to adverse or hazardous weather events or conditions, war, terrorism, government restrictions including but not limited to those resulting from a government-declared pandemic or epidemic, judicial orders, fire or other casualty, civil commotion, or other similar causes beyond its reasonable control, or if performance hereunder would foreseeably involve either party in or subject it to the effects of a labor dispute and the party therefore withholds or delays performance, making it illegal or impossible to provide or use the facilities, it shall have no liability. In such instances, the party asserting a force majeure event shall not have any further obligation under the agreement. Contractor (or lessee if applicable) shall have no other recourse against ORDA except to obtain monies for services already rendered under the agreement or to obtain refunds of monies paid for services yet to be performed.



15. **Records.** Contractor shall establish and maintain complete and accurate books, records, documents, accounts, and other evidence directly pertinent to performance under this contract (hereinafter, collectively, "the Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General, and any other person or entity authorized to conduct an examination, as well as the agency or agencies involved in this contract, shall have access to the Records during normal business hours at an office of Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing, and copying. As a Public Authority, the Olympic Regional Development Authority is subject to the provisions and requirements of Public Officer's Law Article 6 §§ 84-90, more commonly known as the Freedom of Information Law ("FOIL"). ORDA shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (1) Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; (2) said records shall be sufficiently identified; and (3) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, ORDA's right to discovery in any pending or future litigation.

16. **Identifying Information and Privacy Notification.** FEDERAL EMPLOYER IDENTIFICATION NUMBER and/or FEDERAL SOCIAL SECURITY NUMBER. All invoices, or ORDA standard vouchers, submitted for payment for the sale of goods or services, or the lease of real or personal property, to a New York State agency must include the payee's identification number, i.e., the seller's or lessor's identification number. The number is either the payee's federal employer identification number, federal social security number, or vendor identification number, or all such numbers when the payee has all such numbers. Failure to include this number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice or ORDA standard voucher, must give the reason or reasons why the payee does not have such number or numbers.

(a) **PRIVACY NOTIFICATION.**

- i. The authority to request the above personal information from a seller of goods or services, or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to ORDA is mandatory. The principal purpose for which the information is collected is to enable ORDA to identify individuals, businesses, and others who have been delinquent in filing tax returns, or may have understated their tax liabilities, and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law.
- ii. The personal information is requested by the purchasing unit of the agency contracting to purchase the goods or services, or lease the real or personal property covered by this contract or lease. The information is maintained in New York State's Central

**17. Equal Employment Opportunities for Minorities and Women**

In accordance with Article 15-A of the Executive Law and 5 NYCRR Part 143, if this contract or any subcontract thereto, is: (1) a written agreement or amendment thereto, or purchase order instrument, providing for a total expenditure in excess of \$25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services (including but not limited to legal, financial, and other professional services), supplies, equipment, materials, or any combination of the foregoing, to be performed for, rendered, or furnished to the contracting agency; (2) a written agreement in excess of \$100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair, or renovation of real property and improvements thereon; or (3) a written agreement in excess of \$100,000.00 whereby the owner of a State-assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair, or renovation of real property and improvements thereon for such project, then the following shall apply and by signing this agreement Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:

- (a) Contractor will not discriminate against any employee or applicant for employment, will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgrades, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;
- (b) Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability, or marital status; and
- (c) At the request of the contracting agency, Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union, or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability, or marital status and that such union or representative will affirmatively cooperate in the implementation of Contractor's obligations herein.

Contractor will include the provisions of "a", "b", and "c" above, in every subcontract over \$25,000.00 for the construction, demolition, replacement, major repair, renovation, planning, or design of real property and improvements thereon (the "Work"), except where the Work is for the beneficial use of Contractor. Executive Law Section 312 does not apply to work, goods

or services unrelated to this contract or to employment outside New York State. ORDA shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this section. The contracting agency shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the contracting agency shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Governor's Office of Minority and Women's Business Development pertaining hereto.

18. **Conflicting Terms.** In the event of any conflict between these ORDA Standard Contract Terms and the terms of the contract or agreement to which it is appended or attached, or any other attachments, exhibits or addenda, the terms of these ORDA Standard Contract Terms shall control.
19. **Late Payment.** Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Public Authorities Law § 2880 to the extent required by law.
20. **No Arbitration.** Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration or mediation (except where statutorily authorized) but must, instead, be heard in a court of competent jurisdiction of the State of New York.
21. **Service of Process.** In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon ORDA's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify ORDA, in writing, of each and every change of address to which service of process can be made. Service by ORDA to the last-known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete within which to respond.
22. **Prohibition on Purchase of Tropical Hardwoods.** Contractor certifies and warrants that all wood products to be used under this contract award will be in accordance with, but not limited to, the specifications and provisions of Section 165 of the State Finance Law (Use of Tropical Hardwoods) which prohibits the purchase and use of tropical hardwoods, unless specifically exempted, by the State or any governmental agency or political subdivision or public benefit corporation. Qualification for an exemption under this law will be the responsibility of Contractor to establish, to meet with the approval of ORDA.

In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with the specifications and provisions regarding use of tropical hardwoods as

detailed in Section 165 of the State Finance Law. Any such use must meet with the approval of ORDA; otherwise, the bid may not be considered as responsive. Under bidder certifications, proof of qualification for exemption will be the responsibility of Contractor to meet with the approval of ORDA.

23. **Iranian Energy Sector Divestment.** In accordance with Public Authorities Law § 2879-c, by signing this Contract, Contractor certifies, under penalty of perjury, that to the best of its knowledge and belief that it is not on the list created pursuant to State Finance Law § 165-a(3)(b). Such list, known as the “Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012”(“Prohibited Entities List”), is posted at: <http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf>

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by ORDA.

During the term of the Contract, should ORDA receive information that a person (as defined in Public Authorities Law § 2879-c) is in violation of the above-referenced certifications, ORDA will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then ORDA shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring Contractor in default.

ORDA reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

24. **Promotion of New York State Business Enterprises & New York State Residents in Procurements**

It is the policy of New York State, and ORDA, to maximize opportunities for the participation of New York State business enterprises, including minority- and women-owned business enterprises, and New York State residents, as bidders, subcontractors, and suppliers on its procurement contracts.

Information regarding the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development  
Division for Small Business

Albany, New York 12245  
Telephone: 518-292-5100  
Fax: 518-292-5884  
Email: [opa@esd.ny.gov](mailto:opa@esd.ny.gov)

A directory of certified minority- and women-owned business enterprises is available from:

NYS Department of Economic Development  
Division of Minority and Women's Business Development  
633 Third Avenue  
New York, New York 10017  
Telephone: 212-803-2414  
Email: [mwbecertification@esd.ny.gov](mailto:mwbecertification@esd.ny.gov)  
<http://esd.ny.gov/MWBE/directorySearch.html>

Public Authorities Law § 2879 requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than \$1 million:

- (a) The contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State and ORDA.
- (b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended.

Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the community service division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. Contractor agrees to document these efforts and to provide said documentation to the State and ORDA upon request.

Contractor acknowledges notice that the State and ORDA may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State and ORDA in these efforts.

25. **Reciprocity and Sanctions Provisions.** Contractors are hereby notified that if their principal place of business is located in a country, nation, province, state, or political subdivision which employs a preference or price distorting mechanism to the detriment of or otherwise discriminates against a New York State business enterprise in the procurement of goods or services by the same or a non-governmental entity influenced by the same, Public Authorities Law § 2879 requires that they be denied contracts which they would otherwise obtain. NOTE: As of May 15, 2002, the list of discriminatory jurisdictions subject to this provision includes the states of Alaska, Hawaii, Louisiana, South Carolina, West Virginia, and Wyoming. Contact the NYS Department of Economic Development for a current list of jurisdictions subject to this provision.



26. **Compliance with New York State Information Security Breach and Notification Act.** Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Sections 899-aa and 899-bb; State Technology Law Section 208).
27. **Procurement Lobbying.** To the extent this agreement is a “procurement contract” as defined by State Finance Law Sections 139-j and 139-k, by signing the Agreement, Contractor certifies and affirms that all disclosures made in accordance with State Finance Law Sections 139-j and 139-k are complete, true, and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, ORDA may terminate this Agreement by providing written notification to Contractor in accordance with the terms of this Agreement.
28. **Certification of Registration to Collect Sales and Compensating Use Tax by Certain State Contractors, Affiliates, and Subcontractors.** To the extent this agreement is a contract as defined by Tax Law Section 5-a, if Contractor fails to make the certification required by Tax Law Section 5-a, or if during the term of the contract, the Department of Taxation and Finance or the covered agency (ORDA), as defined by Tax Law Section 5-a, discovers that the certification, made under penalty of perjury, is false, then such failure to file or such false certification shall be a material breach of this contract, and this contract may be terminated by providing written notification to Contractor in accordance with the terms of this Agreement, if ORDA determines that such action is in the best interest of the State.
29. **Non-Assignment Clause.** In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the State’s previous written consent, and attempts to do so are null and void. Notwithstanding the foregoing, such prior written consent of an assignment of a contract let pursuant to Article XI of the State Finance Law may be waived at the discretion of the contracting agency and with the concurrence of the State Comptroller where the original contract was subject to the State Comptroller’s approval, where the assignment is due to a reorganization, merger or consolidation of the Contractor’s business entity or enterprise. The State retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the State. The Contractor may, however, assign its right to receive payments without the State’s prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.
30. **International Boycott Prohibition.** In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds \$5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated

said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2NYCRR 105.4).

31. **MacBride Fair Employment Principles.** In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.
32. **Letting of Certain Contracts Involving Steel Products.** Pursuant to Public Authorities Law § 2603-a, notwithstanding any other provision of law, and absent a determination to the contrary by the ORDA Board of Directors, ORDA must award contracts involving steel products as follows:
- (a) All purchase contracts for supplies, material or equipment involving an estimated expenditure in excess of fifty thousand dollars shall require with respect to materials, supplies and equipment made of, fabricated from, or containing steel components, that such steel components be produced or made in whole or substantial part in the United States, its territories or possessions. The provisions of this paragraph shall not apply to motor vehicles and automobile equipment assembled in Canada in conformity with the United States-Canadian trade agreements known as the "Automotive Products Trade Act of 1965" or any amendments thereto.
  - (b) All contracts in excess of one hundred thousand dollars for the construction, reconstruction, alteration, repair, maintenance or improvement of public works shall require that all structural steel, reinforcing steel or other major steel items to be incorporated in the work of the contract shall be produced or made in whole or substantial part in the United States, its territories or possessions.
33. **Vendor Responsibility, Pursuant to Executive Order No. 192.**
- (a) Responsibility for Duration of Contract: The Contractor shall at all times during the Contract term remain responsible. The Contractor agrees, if requested by ORDA's President & CEO, or his or her designee, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.
  - (b) Suspension of Work (for Non-Responsibility): The President & CEO of ORDA, or his or her designee, in his or her sole discretion, reserves the right to suspend any or all activities under this Contract, at any time, when he or she discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the President & CEO of ORDA, or his



or her designee, issues a written notice authorizing a resumption of performance under the Contract.

- (c) **Termination (for Non-Responsibility):** Upon written notice to the Contractor, and a reasonable opportunity to be heard with appropriate ORDA officials or staff, the Contract may be terminated by President & CEO of ORDA, or his or her designee, at the Contractor's expense where the Contractor is determined by the President & CEO of ORDA or his or her designee to be non-responsible. In such event, the President & CEO of ORDA, or his or her designee, may complete the contractual requirements in any manner he or she may deem advisable and pursue available legal or equitable remedies for breach.

34. **Diesel Emissions Reduction Act of 2006.** In 2007, New York State passed legislation establishing the Diesel Emissions Reduction Act 2006 (DERA). This Act amended the Environmental Conservation Law (ECL) by adding Section 19-0323 which requires the use of best available retrofit technology (BART) and ultra-low sulfur diesel fuel (ULSD) for heavy duty vehicles owned or operated by, including on behalf of, state agencies and state or regional public authorities. The Department has promulgated regulations (6 NYCRR Part 248) to provide guidance on provisions of the law. The regulations may be found on the Department's website at <http://www.dec.ny.gov/regs/2492.html>. Contractor must comply with the specifications and provisions of ECL § 19-0323 and 6 NYCRR Part 248, which require the use of BART and ULSD, unless specifically waived by the Department. Qualifications for a waiver under this law are the responsibility of the Contractor.

35. **Photographs/Videos.** Contractor shall not take any photographs or videos during the performance of this Contract unless necessary to fulfill the Contractor's obligations under this Contract. Any and all photographs and videos (individually, a "Photo," and collectively, "Photos") taken by Contractor shall be the property of ORDA and shall be turned over to ORDA at the conclusion of the Project. Contractor shall not use any Photo, nor shall Contractor publish or disseminate any Photo, or any part or aspect thereof, without first obtaining written approval from ORDA for such publication or dissemination and of the format and content thereof. The foregoing shall be applicable to Contractor and its agents, servants, employees, officers, consultants, subcontractors and anyone directly or indirectly employed/retained by any of them and shall survive the termination of this Contract.

36. **Use of Unmanned Aircraft.** If Contractor is seeking to operate an unmanned aircraft system ("UAS") on property managed or maintained by ORDA under the terms of this Contract, Contractor shall complete ORDA's Mission Planning Form and supply all necessary documentation indicated therein before permission may be granted. ORDA, in its sole discretion, will determine if Contractor may operate the UAS pursuant to this Contract and will notify Contractor of said determination prior to the commencement of the Term of this Contract. Consistent with FAA regulations, if operation of a UAS under the terms of this

Contract takes place in Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport, Contractor must also provide to ORDA written approval of airspace authorization from the airport's Air Traffic Control.

37. **Admissibility of Reproduction of Contract.** Notwithstanding the best evidence rule or any other legal principle or rule of evidence to the contrary, the Contractor acknowledges and agrees that it waives any and all objections to the admissibility into evidence at any court proceeding or to the use at any examination before trial of an electronic reproduction of the Contract, regardless of whether the original of the Contract is in existence.
38. **Prohibition on Contracting with Businesses Conducting Business in Russia.** Executive Order No. 16, issued on March 17, 2022 ("EO 16"), directs all State agencies, including public authorities, to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia. As defined in EO 16, an "entity conducting business operations in Russia" means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or with commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.
- By signing the Agreement, Contractor certifies and affirms that Contractor does not conduct business operations in Russia within the meaning of EO 16. Should Contractor not be able to certify and affirm that Contractor does not conduct business operations in Russia within the meaning of EO 16, Contractor should not sign the Agreement and must contact ORDA staff.
39. **Counterparts/Electronic Signature.** This Agreement may be executed in counterparts, and if so executed and delivered, all of the counterparts when taken together shall constitute one and the same instrument. An electronic signature or e-mail transmission of a signature shall have the same force and effect as an original signature.

STANDARD CLAUSES FOR CONTRACTOR DEFAULT AND SURETY TAKEOVER

1. If the Contractor performs the Contract, the Surety and the Contractor shall have no obligation under the Performance Bond.

2. The Surety's obligation under the Performance Bond shall arise after:

2.1 ORDA has notified the Contractor and the Surety in writing that ORDA is considering declaring a Contractor in default, or

2.2 ORDA has declared a Contractor in default and formally terminated the Contractor's right to complete the Contract, and

2.3 ORDA has agreed to pay the Balance of the Contract Price to the Surety or to a Contractor selected to complete the Contract in accordance with the terms of the Contract with ORDA.

3. The Surety shall promptly and at its own expense, take the following actions:

3.1 Undertake to perform and complete the Contract, through its agent or retained contractor, according to the following schedule:

Day 1-10 Immediately begins its investigation. Advises ORDA of its Representatives.

Day 10-25 Visits Site with ORDA representatives to review the contract documents and completed work, and determines extent of acceptable Work.

Day 25-30 Submits proposed completion contractor, completion plan, and CPM, as required, for approval by the ORDA.

Day 30-44 As completing contractor, the surety or its representative, presents its list of subcontractors to ORDA for approval. Additionally, an Insurance Certificate naming the Surety and completion Contractor as named insured must be submitted to ORDA's Contracting Officer prior to beginning any completion of the Work. The completion plan and schedule is returned to Surety.

Day 45 Surety begins the Completion of the Work.

4. If the Surety does not proceed with reasonable promptness, the Surety shall be deemed to be in default on the Performance Bond, and ORDA shall be entitled to enforce any remedy available pursuant to the terms of the Contract.

5. After ORDA has terminated the Contractor's right to complete the Contract, and if the Surety elects to act, then the responsibilities of the Surety to ORDA shall not be greater than those of the Contractor under the Contract, and the responsibilities of ORDA to the Surety shall not be greater than those provided under the Contract. To the limit of the amount of the Performance Bond, the Surety is obligated to correct defective work and complete the work of the Contract in a timely manner.

6. The penal sum of the Performance Bond furnished by the contractor to ORDA, approved and filed with the ORDA, in no way shall be impaired or affected by any other bond that may relate to the Contract in question

END OF DOCUMENT

**SUPPLEMENTARY CONDITIONS – GENERAL CONDITIONS ARTICLE 6**

Add to General Conditions Article 6 paragraphs 6.6 through 6.20, inclusive, as follows:

**Management, Supervision and Superintendence:**

- 6.6. The Contractor shall be solely responsible for the management of their contract. The Contractor shall provide a competent and experienced management team necessary for the size and scope of the Project. The Project shall have a Project Manager assigned to the Project by the Contractor with the skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Project Manager shall not be replaced without written notice to ORDA and the Consultant except under extraordinary circumstances. If ORDA finds the Project Manager, or any members of the management team, to be incompetent by reason of failing to perform their duties in a professional manner, including, but not limited to, a lack of professional knowledge of the Project scope, acts of workplace violence, acts of workplace discrimination, acts of sexual harassment and any other types of actions considered by ORDA to be inconsistent with their workplace requirements, ORDA shall notify the Contractor in writing and the said person shall be removed from the Project and replaced without delay.
- 6.6.1 The Contractor shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but the Contractor shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. The Contractor shall be responsible that the completed Work complies with the Contract Documents.
- 6.6.2 The Contractor shall keep on the Project Site at all times during the progress of the Work a competent resident superintendent, who shall not be replaced without written notice to ORDA and the Consultant except under extraordinary circumstances. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications to the superintendent shall be as binding as if given to the Contractor. If ORDA finds the resident superintendent to be incompetent by reason of failing to perform their duties in a professional manner, including, but not limited to, a lack of professional knowledge of the Project scope, acts of workplace violence, acts of workplace discrimination, acts of sexual harassment and any other types of actions considered by ORDA to be inconsistent with their workplace requirements, ORDA shall notify the Contractor in writing and the resident superintendent shall be removed from the Project and replaced without delay.

### **Labor, Materials and Equipment:**

- 6.7. The Contractor shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. The Contractor shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours.
- 6.8. Unless otherwise specified in the Division 1 - General Requirements, the Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.
- 6.9. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of ORDA. If required by the Consultant, the Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

### **Concerning Subcontractors, Suppliers and Others:**

- 6.10. The Contractor shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to ORDA and the Consultant as indicated in paragraph 6.10.2), whether initially or as a substitute, against whom ORDA or the Consultant may have reasonable objection.
- 6.10.1 The Contractor shall not be required to employ any subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom the Contractor has reasonable objection.
- 6.10.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to ORDA in advance of the specified date prior to the Effective Date of the Agreement for acceptance by ORDA and the Consultant, and if the Contractor has submitted a list thereof in accordance with the Supplementary Conditions, ORDA's or the Consultant's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case the Contractor shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such substitution and an appropriate Change Order executed. No acceptance by ORDA or the Consultant of any such

Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of ORDA or the Consultant to reject defective Work.

- 6.10.3 Reasonable objection to a contractor shall include such considerations as safety record, whether they are currently in litigation with another state agency, labor law compliance, prior work history, including timeliness, compliance with technical specifications as well as being in compliance with all other requirements of the Contract, all subject to the Contractor's right to show cause at a hearing why a preferred sub/supplier should not be rejected.
- 6.11 The Contractor shall be fully responsible to ORDA and the Consultant for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor just as the Contractor is responsible for the Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other person or organization any contractual relationship between ORDA or the Consultant and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of ORDA or the Consultant pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws; and
- 6.11.1 The Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor. The Contractor shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the Consultant through the Contractor.
- 6.12. The divisions and sections of the Specifications and the identifications of any drawings shall not control the Contractor in dividing the Work among Subcontractors, Suppliers or delineating the Work to be performed by any specific trade.
- 6.13. All Work performed by a Subcontractor or Supplier to the Contractor will be pursuant to an appropriate agreement between the Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or supplier to the applicable terms and conditions of the Contract Documents for the benefit of ORDA and the Consultant. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided pursuant to General Conditions Article 19, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against ORDA, the Contractor, the Consultant, the Consultant's consultants and all other Indemnified Parties for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers in any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, the Contractor will obtain the same.
- 6.14 Every Subcontractor shall complete and execute Document 00 52 01 - Sub-Contractor Site Access Agreement, with endorsement from the sponsoring Prime Contractor, including all stated requirements and submission, prior to working on the Site.

**Use of Premises:**



- 6.15. The Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the work areas identified in and permitted by the Contract Documents and other land and areas permitted Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. The Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, the Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. The Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless ORDA, the Consultant, the Consultant's consultants, and all other Indemnified Parties, and anyone directly or indirectly employed by any of them, from and against all claims costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against ORDA, the Consultant or any other Indemnified Party to the extent caused by or based upon the Contractor's performance of the Work.
- 6.16. During the progress of the Work, the Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. If the Contractor does not keep the premises free from accumulation of waste materials the Director will notify the Contractor and if it is not remedied promptly, ORDA shall make corrections as provided in Article 13. At the completion of the Work, the Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. The Contractor shall leave the site clean and ready for occupancy by ORDA at Substantial Completion of the Work. The Contractor shall restore to original condition all property not designated for alteration by the Contract Documents.
- 6.17. The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.
- 6.18. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
- 6.18.1. all persons on the Work site or who may be affected by the Work;
  - 6.18.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
  - 6.18.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when



prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.18.2 or 6.18.3 caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by the Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of ORDA or the Consultant or the Consultant's consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). The Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ORDA issues the Physical Completion Report.

**Safety Representative:**

- 6.19. The Contractor shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and maintaining and supervising of safety precautions and programs.

**Hazard Communication Programs:**

- 6.20. The Contractor shall be responsible for coordinating any exchange of Safety Data Sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

**END OF DOCUMENT**

**SUPPLEMENTARY CONDITIONS –  
INSURANCE COVERAGES AND ADDITIONAL INSURED  
FOR CONSTRUCTION CONTRACTS**

**New York State Olympic Regional Development Authority requires the following policies and coverages with valid Certificate of Insurance as a minimum for each Contractor and tiers below the Contractor including, but not limited to, subcontractors, consultants, vendors, etc.**

	<u>Contractor</u>	<u>All Other Tiers</u>	
Comprehensive Form Commercial General Liability:			
Each Occurrence / BI & PD Combined Occurrence:	\$1,000,000	\$1,000,000	
General Aggregate / BI & PD General Aggregate:	\$2,000,000	\$2,000,000	
Automobile Liability including Hired and Non-owned Liability:			
Each Occurrence:	\$1,000,000	\$1,000,000	
Commercial Umbrella Liability:			
Each Occurrence:	\$4,000,000	\$1,000,000	
General Aggregate:	\$4,000,000	\$1,000,000	
Environmental Liability:			
Each Occurrence:	\$2,000,000	\$2,000,000	
Workers' Compensation and Employer's Liability Insurance:			
Worker's Compensation:	Statutory Limit	Statutory Limit	
Employer's Liability:	\$1,000,000	\$1,000,000	
Professional Liability Insurance (Design Delegation) to cover errors and omissions arising during the performance of professional engineering and architectural services in the amount of:			
Each Claim:	\$2,000,000	\$2,000,000	
Annual Aggregate:	\$2,000,000	\$2,000,000	
Builder's Risk Insurance: Losses covered by the Builder's Risk property insurance provided by ORDA, except that the Contractor shall be liable for the applicable deductible.			
<b>Project Value:</b>	<b><u>Less than \$1,000,000</u></b>	<b><u>\$1,000,000 to \$5,000,000</u></b>	<b><u>Greater than \$5,000,000</u></b>
Deductible:	\$1,000	\$5,000	\$10,000

**Conditions:**

1. Prior to the commencement of the agreement between ORDA and Contractor (Agreement), Contractor shall procure all insurance coverage as required by this Document. Contractor shall maintain such policies in full force and effect for the entire term of the Agreement.

2. All policies of insurance shall be written by companies licensed or authorized by the New York State Department of Financial Services to issue insurance in the State of New York with an A.M. Best Company rating of "A-" Class "VII" or better. If, during the term of the policy, a carrier's rating falls below "A-" Class "VII," the insurance must be replaced no later than the renewal date of the policy with an insurer rated at least "A-" Class "VII" in the most recently published Best's Insurance Report.

3. For both workers' compensation and disability benefits insurance, Contractor shall provide either a CE-200 Attestation of Exemption (can be found by visiting [http://www.wcb.ny.gov/content/ebiz/wc\\_db\\_exemptions/requestExemptionOverview.jsp](http://www.wcb.ny.gov/content/ebiz/wc_db_exemptions/requestExemptionOverview.jsp)) or acceptable proof of

compliant coverage as defined in this Document. Unless otherwise determined by the Workers' Compensation Board, the following are the only acceptable means of proof:

For workers' compensation:

- a. C-105.2 Certificate of Workers' Compensation Insurance,
- b. U-26.3 Certificate of Workers' Compensation Insurance, or
- c. SI-12 Certificate of Worker's Compensation Self-Insurance

For disability benefits:

- a. DB-120.1 Certificate of Disability Benefits Insurance, or
- b. DB-155 Certificate of Disability Benefits Self-Insurance

An ACORD 25 form is **NOT** acceptable as proof of workers' compensation coverage or disability benefits coverage.

4. Contractor acknowledges that, pursuant to Workers' Compensation Law Sections 57 and 220 (8), ORDA cannot enter into the Contract without receiving proof of Contractor's compliance with or exemption from the coverage requirements of the Workers' Compensation Law.

5. After the initial submission of proof of coverage, Contractor shall be required to provide proof of the coverage required by this Document within ten (10) business days of request by ORDA. All required policies of liability insurance must be written such that ORDA is afforded at least thirty (30) days' notice prior to the effective date of any material change, cancellation or expiration of coverage.

6. **Waiver of Subrogation:** For insurance required pursuant to this Document, Contractor shall cause to be included in each of its policies a waiver of the insurer's right to recovery or subrogation against ORDA and the State of New York. With the exception of Umbrella Liability, a Waiver of Subrogation endorsement shall be provided in the certificate of insurance to be provided to ORDA upon request. A blanket Waiver of Subrogation Endorsement evidencing such coverage is also acceptable.

7. **The certificate holder must be identified on all certificates of insurance as "New York State Olympic Regional Development Authority, 37 Church Street, Lake Placid, NY 12946," who shall be designated as the loss payee.**

8. All certificates of insurance must be completely and accurately completed and shall reflect the date of issuance, name(s) of the insured(s), the carrier, the policy number(s), the coverage period, any deductible or self-insured retention amounts, and each occurrence limit.

9. All required commercial general liability, auto liability, umbrella liability, environmental liability, and professional liability policies of insurance must provide that the required coverage is primary and non-contributory to other insurance available to ORDA.

10. All certificates of insurance must be signed by an authorized representative of the insurance company. Only original forms or electronic versions of the same that can be directly traced back to the insurer, agent, or broker via email distribution or similar means will be accepted.

11. ORDA reserves the right to review any policy required pursuant to this Document. Contractor agrees to provide copies of any relevant required insurance policy in the event of litigation against or involving ORDA in connection with any act or omission undertaken by either ORDA or Contractor in relation to the Agreement, including, but not limited to, any discovery in connection with such litigation.

12. It shall be Contractor's responsibility to ensure that all of Contractor's contractors, subcontractors and/or consultants maintain in force during the term of the Agreement the types and amounts of coverage outlined in this Document. Contractor agrees to indemnify ORDA from any liability, exposure or damages which occur as a result of a failure to comply with the terms and provisions of this Document. Contractor shall hold ORDA harmless from any claims, suits, proceedings or other actions brought by or against any of Contractor's contractors, subcontractors and/or consultants for failure to comply with the terms and provisions of this Document. Contractor shall be solely responsible for Contractor's contractors, subcontractors and/or consultants who fail to comply with the requirements imposed by this Document.

**Additional Insured:**

The policy or policies shall be endorsed to be primary as respects the coverage afforded the New York State Olympic Regional Development Authority and others identified to be included as Additional Insured and such policy or policies shall be primary to any other insurance maintained by the New York State Olympic Regional Development Authority and others identified as Additional Insured.

Additional Insured shall be defined by project location as follows:

Olympic Center (PINs starting with ARN)

1. New York State Olympic Regional Development Authority
2. State of New York
3. Town of North Elba
4. Town Board of the Town of North Elba, as Trustee for the Town of North Elba Public Parks and Playground District
5. Projects at the Olympic Speed Skating Oval will additionally require the following:
  - a. Lake Placid Central School District #2
  - b. The Trustees of Lake Placid Central School District

Olympic Jumping Complex (PINs starting with OJC)

1. New York State Olympic Regional Development Authority
2. State of New York
3. Town of North Elba
4. Town Board of the Town of North Elba, as Trustee for the Town of North Elba Public Parks and Playground District

Mt. Van Hoevenberg (PINs starting with MVH)

1. New York State Olympic Regional Development Authority
2. State of New York
3. New York State Department of Environmental Conservation
4. Town of North Elba
5. Town Board of the Town of North Elba, as Trustee for the Town of North Elba Public Parks and Playground District

Lake Placid Olympic & Paralympic Training Center (PINs starting with OTC)

1. New York State Olympic Regional Development Authority
2. State of New York
3. United States Olympic & Paralympic Committee

Belleayre Mountain Ski Center (PINs starting with BEL)

1. New York State Olympic Regional Development Authority
2. State of New York
3. New York State Department of Environmental Conservation

Gore Mountain Ski Center (PINs starting with GOR)

1. New York State Olympic Regional Development Authority
2. State of New York
3. New York State Department of Environmental Conservation
4. Projects at the North Creek Ski Bowl at Gore will additionally require the following:
  - a. Town of Johnsburg

Whiteface Mountain Ski Center (PINs starting with WFM)

1. New York State Olympic Regional Development Authority
2. State of New York
3. New York State Department of Environmental Conservation
4. Projects at the Veterans Memorial Highway will additionally require the following:
  - a. New York State Department of Transportation

ORDA Administration Building (PINs starting with ADM)

1. New York State Olympic Regional Development Authority
2. State of New York
3. Town of North Elba
4. Town Board of the Town of North Elba, as Trustee for the Town of North Elba Public Parks and Playground District

**Project Specific:** Refer to the Appendix for Project Specific Additional Insured.

**Addresses:**

The State of New York  
The Capitol  
Albany, NY 12210

New York State Department of Transportation  
884 NYS Route 86  
Ray Brook, NY 12977

New York State Olympic Regional  
Development Authority  
37 Church Street  
Lake Placid, NY 12946

Town of North Elba  
2693 Main Street  
Lake Placid, NY 12946  
Attn: Supervisor of Town of North Elba

United States Olympic & Paralympic Committee  
196 Old Military Road  
Lake Placid, NY 12946

Town of Johnsburg  
219 Main Street  
North Creek, NY 12853

New York State Department of Environmental  
Conservation  
884 NYS Route 86,  
Ray Brook, NY 12977

Lake Placid Central School District #2 &  
The Trustees of Lake Placid Central School District  
50 Cummings Road  
Lake Placid, NY 12946  
Attn.: Superintendent of Schools

Town Board of the Town of North Elba, as  
Trustee for the Town of North Elba Public Parks  
and Playground District  
2693 Main Street  
Lake Placid, NY 12946  
Attn: Supervisor of the Town of North Elba

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**Venue Addresses:**

Belleayre Mountain  
181 Galli Curci Road  
Highmount, NY 12441

Olympic Jumping Complex  
5486 Cascade Road  
Lake Placid, NY 12946

Whiteface Mountain Ski Center  
5021 Route 86  
Wilmington, NY 12997

Gore Mountain  
793 Peaceful Valley Road  
North Creek, NY 12853

Mt. Van Hoevenberg  
220 Bob Sled Run Lane  
Lake Placid, NY 12946

ORDA Administration Building  
37 Church Street  
Lake Placid, NY 12946

Olympic Center  
2634 Main Street  
Lake Placid, NY 12946

Lake Placid Olympic &  
Paralympic Training Center  
196 Old Military Road  
Lake Placid, NY 12946

**Contact:**

Questions regarding ORDA's Insurance for projects administered by ORDA's Office of Environmental, Planning and Construction shall be directed to The Contracting Officer located at the following address:

Olympic Regional Development Authority  
Attn: Office of Environmental, Planning & Construction  
37 Church Street  
Lake Placid, NY 12946  
insurance@orda.org

PLANROOM COPY NOT FOR BIDDING

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

You have selected the For-Profit Construction questionnaire, commonly known as the “CCA-2,” which may be printed and completed in this format or, **for your convenience, may be completed online using the [New York State VendRep System](#).**

### COMPLETION & CERTIFICATION

The person(s) completing the questionnaire must be knowledgeable about the vendor’s business and operations. An owner or owner’s official representative authorized to legally bind the Reporting Entity, must certify the truth of the questionnaire answers.

### NEW YORK STATE VENDOR IDENTIFICATION NUMBER (VENDOR ID)

The Vendor ID is a ten-digit identifier issued by New York State when the vendor is registered on the Statewide Vendor File. This number must now be included on the questionnaire. If the business entity has not obtained a Vendor ID, contact the IT Service Desk at [ITServiceDesk@osc.state.ny.us](mailto:ITServiceDesk@osc.state.ny.us) or call 866-370-4672.

### DEFINITIONS

All underlined terms are defined in the “New York State Vendor Responsibility Definitions List,” found at <http://www.osc.state.ny.us/vendrep/documents/questionnaire/definitions.pdf>. These terms may not have their ordinary, common, or traditional meanings. Each vendor must read the respective definitions for any and all underlined terms. By submitting this questionnaire, the vendor agrees to be bound by the terms as defined in the “New York State Vendor Responsibility Definitions List” existing at the time of certification.

### RESPONSES

Every question must be answered fully. Each response must provide all relevant information to appropriately explain the answer. If you have concerns as to the legal requirements behind your answers, please seek clarification from your counsel. However, information regarding a determination or finding made in error which was subsequently corrected or overturned, and/or was withdrawn by the issuing government entity, is not required to be identified. Individuals and Sole Proprietors may use a Social Security Number but are encouraged to obtain and use a federal Employer Identification Number (EIN).



## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

BUSINESS ENTITY INFORMATION				
<u>Legal Business Name</u>		<u>EIN</u> _____		
Address of the <u>Principal Place of Business</u> (street, city, state, zip code) NO P.O. Boxes		<u>New York State Vendor Identification Number</u>		
		Telephone ext. _____		Fax _____
		Website (include all)		
Authorized Contact for this Questionnaire				
Name		Telephone ext. _____		Fax _____
Title		Email _____		
Additional <u>Business Entity</u> Identities: If applicable, list any other <u>DBA</u> , <u>Trade Name</u> , <u>Former Name</u> , Other Identity, or <u>EIN</u> used in the last five (5) years, the state or county where filed and the status (active or inactive).				
Type	Name	EIN	State or County where filed	Status

I. BUSINESS CHARACTERISTICS	
1.0 <u>Business Entity</u> Type – Check appropriate box and provide additional information:	
a) <input type="checkbox"/> <u>Corporation</u> (including <u>PC</u> )	Date of Incorporation
b) <input type="checkbox"/> <u>Limited Liability Company (LLC or PLLC)</u>	Date Organized
c) <input type="checkbox"/> <u>Limited Liability Partnership</u>	Date of Registration
d) <input type="checkbox"/> <u>Limited Partnership</u>	Date Established
e) <input type="checkbox"/> <u>General Partnership</u>	Date Established County (if formed in NYS)
f) <input type="checkbox"/> <u>Sole Proprietor</u>	How many years in business?
g) <input type="checkbox"/> Other	Date Established
If Other, explain:	
1.0 Was the <u>Business Entity</u> formed in New York State?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
If “No,” indicate jurisdiction where the <u>Business Entity</u> was formed:	

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

I. BUSINESS CHARACTERISTICS				
<input type="checkbox"/> United States	State			
<input type="checkbox"/> Other	Country			
1.2 Is the <u>Legal Business Entity</u> publicly traded?				<input type="checkbox"/> Yes <input type="checkbox"/> No
If "Yes," provide the <u>CIK code</u> or Ticker Symbol:				
1.3 Is the <u>Business Entity</u> currently <u>registered to do business in New York State</u> ?				<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>Note: Select "Not Required" if the Business Entity is a Sole Proprietor or General Partnership</i>				<input type="checkbox"/> Not Required
If "No," explain why the <u>Business Entity</u> is not required to be <u>registered to do business in New York State</u> :				
1.4 Is the responding <u>Business Entity</u> a <u>Joint Venture</u> ? Note: If the submitting <u>Business Entity</u> is a <u>Joint Venture</u> , also submit a separate questionnaire for each <u>Business Entity</u> comprising the <u>Joint Venture</u> .				<input type="checkbox"/> Yes <input type="checkbox"/> No
1.5 If the <u>Business Entity's Principal Place of Business</u> is not in New York State, does the <u>Business Entity</u> <u>maintain</u> an office in New York State? (Select "N/A" if <u>Principal Place of Business</u> is in New York State.)				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If "Yes," provide the address and telephone number for one office located in New York State.				
1.6 Is the Business Entity a New York State certified <u>Minority-Owned Business Enterprise</u> , <u>Women-Owned Business Enterprise</u> , <u>Service-Disabled Veteran-Owned Business</u> , <u>New York State Small Business</u> , or federally certified <u>Disadvantaged Business Enterprise</u> ?				<input type="checkbox"/> Yes <input type="checkbox"/> No
If "Yes," check all that apply:				
<input type="checkbox"/> New York State certified <u>Minority-Owned Business Enterprise</u> (MBE)				
<input type="checkbox"/> New York State certified <u>Women-Owned Business Enterprise</u> (WBE)				
<input type="checkbox"/> New York State certified <u>Service-Disabled Veteran-Owned Business</u> (SDVOB)				
<input type="checkbox"/> <u>New York State Small Business</u>				
<input type="checkbox"/> Federally certified <u>Disadvantaged Business Enterprise</u> (DBE)				
1.7 Identify <b>each person</b> or <u>Business Entity</u> that is or has been within the past five (5) years, a <u>Business Entity Official</u> , or a <u>Principal Owner</u> of 5.0% or more of the Reporting Entity's shares; or one of the five largest shareholders, if applicable. (Attach additional pages if necessary.)				
<u>Joint Ventures</u> : Provide information for all firms involved.				
Each <u>Business Entity</u> identified as a <u>Principal Owner</u> must also submit a Vendor Responsibility Questionnaire.				
(Add additional sheets if necessary.) For each person, include name, title, date of birth, percentage of ownership, and employment status. For each <u>Business Entity</u> that is a <u>Principal Owner</u> , include name, address, EIN, and percentage of ownership.				
If there is no person or <u>Business Entity</u> that owns 5% or more of the Reporting Entity, check here: <input type="checkbox"/>				
Name (For each person, include a middle initial)	Title	Date of Birth	Percentage of ownership (Enter 0%, if not applicable)	Employment status with the firm

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

### I. BUSINESS CHARACTERISTICS

				<input type="checkbox"/> Current <input type="checkbox"/> Former <input type="checkbox"/> N/A
				<input type="checkbox"/> Current <input type="checkbox"/> Former <input type="checkbox"/> N/A
				<input type="checkbox"/> Current <input type="checkbox"/> Former <input type="checkbox"/> N/A
				<input type="checkbox"/> Current <input type="checkbox"/> Former <input type="checkbox"/> N/A
Name of <u>Each Business Entity</u> owning 5% or more of <u>Reporting Entity</u>	Address	EIN	Percentage Ownership	

### II. AFFILIATE and JOINT VENTURE RELATIONSHIPS

2.0 Are there any other <u>construction</u> -related firms in which, now or in the past five years, the submitting <u>Business Entity</u> or any of the individuals or business entities listed in question 1.7 either owned or owns 5.0% or more of the shares of, or was or is one of the five largest shareholders or a director, officer, partner, or proprietor of said other firm? If yes, identify below and if there is more than one, <i>attach additional pages with required information.</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No
Firm/Company Name	Firm/Company EIN (If available)	Firm/Company's Primary Business Activity	
Firm/Company Address			
Explain relationship with the firm and indicate percent of ownership, if applicable (enter N/A, if not applicable):			
Are there any shareholders, directors, officers, owners, partners or proprietors that the submitting <u>Business Entity</u> has in common with the disclosed firm(s)?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Individual's Name <i>(Include middle initial)</i>		Position/Title with Firm/Company	

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

### II. AFFILIATE and JOINT VENTURE RELATIONSHIPS

2.1 Does the <u>Business Entity</u> have any <u>construction</u> -related <u>affiliates</u> not identified in the response to question 2.0 above? If yes, identify below and if there is more than one, <i>attach additional pages with the required information.</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No
Affiliate Name	Affiliate EIN (If available)	Affiliate's Primary Business Activity
Affiliate Address		
Explain relationship with the affiliate and indicate percent of ownership, if applicable ( <i>enter N/A, if not applicable</i> ):		
Are there any shareholders, directors, officers, owners, partners or proprietors that the submitting Business Entity has in common with the disclosed affiliate(s)?		<input type="checkbox"/> Yes <input type="checkbox"/> No
Individual's Name ( <i>Include middle initial</i> )	Position/Title with Firm/Company	
2.2 Has the <u>Business Entity</u> participated in any <u>construction</u> -related <u>Joint Ventures</u> within the past three (3) years? If yes, identify below and if there is more than one, <i>attach additional pages with the required information.</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No
Joint Venture Name	Joint Venture EIN (If available)	Identify parties to the Joint Venture

### III. CONTRACT HISTORY

3.0 Has the <u>Business Entity</u> completed any <u>construction</u> contracts?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p><i>If "Yes," list the ten most recent <u>construction</u> contracts the <u>Business Entity</u> has completed for <u>government</u> clients using Attachment A – Completed Construction Contracts, found at <a href="http://www.osc.state.ny.us/vendrep/documents/questionnaire/ac3294s.doc">www.osc.state.ny.us/vendrep/documents/questionnaire/ac3294s.doc</a>.</i></p> <p><i>At the <u>Business Entity</u>'s option, it may include <u>construction</u> contracts completed for private clients. If less than ten, include most recent subcontracts on projects up to that number.</i></p>	
3.1 Does the <u>Business Entity</u> currently have uncompleted <u>construction</u> contracts?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p><i>If "Yes," list all current uncompleted <u>construction</u> contracts for <u>government</u> clients by using Attachment B – Uncompleted Construction Contracts, found at <a href="http://www.osc.state.ny.us/vendrep/documents/questionnaire/ac3295s.doc">www.osc.state.ny.us/vendrep/documents/questionnaire/ac3295s.doc</a>.</i></p> <p><i>Note: Ongoing projects must be included. At the <u>Business Entity</u>'s option, it may include <u>construction</u> contracts uncompleted for private clients.</i></p>	

### IV. INTEGRITY – CONTRACT BIDDING

***Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:***

4.0 Been <u>suspended</u> or <u>debarred</u> from any <u>government</u> contracting process or been <u>disqualified</u> on any government procurement?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.1 Been subject to a denial or revocation of a government prequalification?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.2 Had any bid rejected by a <u>government</u> entity for lack of qualifications, responsibility or because of the submission of an informal, non-responsive or incomplete bid?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.3 Had a proposed subcontract rejected by a <u>government</u> entity for lack of qualifications, responsibility or because of the submission of an informal, non-responsive or incomplete bid?	<input type="checkbox"/> Yes <input type="checkbox"/> No

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

### IV. INTEGRITY – CONTRACT BIDDING

***Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:***

- |   |  |
|---|--|
| 4.4 Had a bid rejected on a <u>government contract</u> for failure to make <u>good faith efforts</u> on any <u>Minority-Owned Business Enterprise</u> , <u>Women-Owned Business Enterprise</u> , <u>Service-Disabled Veteran-Owned Business</u> or <u>Disadvantaged Business Enterprise</u> goal or <u>statutory affirmative action requirements</u> on a previously held contract? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 4.5 Agreed to a voluntary exclusion from bidding/contracting with a <u>government entity</u> ?  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 4.6 Requested or been permitted to withdraw a bid submitted to a <u>government entity</u> or made any claim of an error on a bid submitted to a <u>government entity</u> ?  | <input type="checkbox"/> Yes <input type="checkbox"/> No |

*For each "Yes," provide an explanation of the issue(s), the Business Entity, affiliate, predecessor company or entity involved, the relationship to the submitting Business Entity, the government entity involved, project(s), relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses to explain each "YES" response.*

### V. INTEGRITY – CONTRACT AWARD

***Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:***

- |   |  |
|---|--|
| 5.0 Defaulted on or been <u>suspended</u> , cancelled or <u>terminated for cause</u> on any contract?   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 5.1 Been subject to an <u>administrative proceeding</u> or civil action, including arbitration, seeking specific performance or restitution (except any disputed work proceeding) in connection with any <u>government contract</u> ? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 5.2 Entered into a formal monitoring agreement, integrity agreement, consent decree, or stipulation, settlement as specified by, or agreed to with, any <u>government entity</u> ?  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 5.3 Had its surety called upon to complete any contract whether government or private sector?   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 5.4 Forfeited all or part of a standby letter of credit in connection with any <u>government contract</u> ?   | <input type="checkbox"/> Yes <input type="checkbox"/> No |

*For each "Yes," provide an explanation of the issue(s), the Business Entity, affiliate, predecessor company or entity involved, the relationship to the submitting Business Entity, the government entity/owners involved, project(s), contract number(s), relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses to explain each "YES" response.*

### VI. CERTIFICATIONS/LICENSES

***Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:***

- |   |  |
|---|--|
| 6.0 Had a revocation or <u>suspension</u> of any business or professional permit and/or license?  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 6.1 Had a denial, decertification, revocation or forfeiture of New York State certification of <u>Minority-Owned Business Enterprise</u> , <u>Women-Owned Business Enterprise</u> , <u>Service-Disabled Veteran-Owned Business</u> or a federal certification of <u>Disadvantaged Business Enterprise</u> status, for other than a change of ownership? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

*For each "Yes," provide an explanation of the issue(s), the Business Entity affiliate, predecessor company or entity involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses to explain each "YES" response.*

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

### VII. LEGAL PROCEEDINGS/GOVERNMENT INVESTIGATIONS

*Within the past five (5) years, has the Business Entity, an affiliate, or any predecessor company or entity:*

7.0 Been the subject of a criminal <u>investigation</u> , whether open or closed, or an indictment for any business-related conduct constituting a crime under local, state or <u>federal</u> law?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.1 Been the subject of: (i.) An indictment, grant of immunity, <u>judgment</u> or conviction (including entering into a plea bargain) for conduct constituting a crime; or (ii.) Any criminal <u>investigation</u> , felony indictment or conviction concerning the formation of, or any business association with, an allegedly false or fraudulent <u>Minority-Owned Business Enterprise</u> , <u>Women-Owned Business Enterprise</u> , Service-Disabled Veteran-Owned Business, or a <u>Disadvantaged Business Enterprise</u> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.2 Received any <u>OSHA</u> citation, which resulted in a final determination classified as <u>serious</u> or <u>willful</u> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.3 Had a <u>government entity</u> find a willful prevailing wage or supplemental payment violation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.4 Had a New York State Labor Law violation deemed willful?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.5 Entered into a consent order, monitoring agreement or other type of oversight with the New York State Department of Environmental Conservation, or a <u>federal</u> , state or local government enforcement entity involving a violation of <u>federal</u> , state or local environmental laws?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.6 Other than previously disclosed, been the subject of any <u>citations</u> , notices or violation orders; a pending administrative hearing, proceeding or determination of a violation of: <ul style="list-style-type: none"> <li>• <u>Federal</u>, state or local health laws, rules or regulations;</li> <li>• <u>Federal</u>, state or local environmental laws, rules or regulations;</li> <li>• Unemployment insurance or workers compensation coverage or <u>claim</u> requirements;</li> <li>• Any labor law or regulation, which was deemed willful;</li> <li>• Employee Retirement Income Security Act (ERISA);</li> <li>• <u>Federal</u>, state or local human rights laws;</li> <li>• <u>Federal</u>, state or local security laws;</li> <li>• <u>Federal</u>, state, or local tax laws?</li> </ul>	<input type="checkbox"/> Yes <input type="checkbox"/> No

For each "Yes," provide an explanation of the issue(s), the Business Entity, affiliate, predecessor company or entity involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses to explain each "YES" response.

Note: Information regarding a determination or finding made in error, which was subsequently corrected or overturned, and/or was withdrawn by the issuing government entity, is not required.

## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

### VIII. LEADERSHIP INTEGRITY

*If the Business Entity is a Joint Venture Entity, answer "N/A - Not Applicable" to questions in this section.*

*Within the past five (5) years has any individual previously identified or any individual currently or formerly having the authority to sign, execute or approve bids, proposals, contracts or supporting documentation on behalf of the Business Entity with any government entity been:*

8.0 <u>Sanctioned</u> relative to any business or professional permit and/or license?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
8.1 <u>Suspended, debarred or disqualified</u> from any <u>government contracting process</u> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
8.2 The subject of a criminal <u>investigation</u> , whether open or closed, or an indictment for any business-related conduct constituting a crime under local, state or <u>federal</u> law?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
8.3 Charged with a misdemeanor or felony, indicted, granted immunity, convicted of a crime or subject to a judgment for: (i.) Any business-related activity, including but not limited to theft, fraud, coercion, extortion, bribe or bribe-receiving, giving or accepting unlawful gratuities, immigration or tax fraud, racketeering, mail fraud, wire fraud, price-fixing or collusive bidding; or (ii.) Any crime, whether or not business-related, the underlying conduct of which related to truthfulness, including but not limited to the filing of false documents or false sworn statements, perjury or larceny	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

*For each "Yes," provide an explanation of the issue(s), the individual involved, the relationship to the submitting Business Entity, the government entity involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer(s) below or attach additional sheets with numbered responses to explain each "YES" response.*

### IX. FINANCIAL AND ORGANIZATIONAL CAPACITY

9.0 Within the past five (5) years, has the Business Entity or any <u>affiliate</u> received any <u>formal unsatisfactory performance assessment(s)</u> from any <u>government entity</u> on any contract?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If "Yes," provide an explanation of the issue(s), the Business Entity or affiliate involved, the relationship to the submitting Business Entity, the <u>government entity</u> involved, relevant dates, any remedial or corrective action(s) taken and the current status of the issue(s). Provide answer below or attach additional sheets with numbered responses to explain the "Yes" response.</i>	
9.1 Within the past five (5) years, has the Business Entity or any <u>affiliate</u> had any <u>liquidated damages</u> assessed over \$25,000 for any reason, including failure to meet <u>Minority-Owned Business Enterprise, Women-Owned Business Enterprise, Service-Disabled Veteran-Owned Business, or Disadvantaged Business Enterprise goals</u> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If "Yes," provide an explanation of the issue(s), the name of the Business Entity or affiliate involved, the relationship to the submitting Business Entity, relevant dates, the contracting party involved, the amount assessed and the current status of the issue(s), and the balance of the assessment not yet paid. Provide answer below or attach additional sheets with numbered responses.</i>	
9.2 Within the past five (5) years, has the Business Entity or any <u>affiliate</u> had any <u>liens, claims or judgments</u> over \$25,000 filed against the Business Entity which remain undischarged or were unsatisfied for more than 90 days? (Note: Including but not limited to tax warrants or liens. Do not include UCC filings.)	<input type="checkbox"/> Yes <input type="checkbox"/> No



## NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE FOR-PROFIT CONSTRUCTION (CCA-2)

### IX. FINANCIAL AND ORGANIZATIONAL CAPACITY

If "Yes," provide an explanation of the issue(s), the name of the Business Entity or affiliate involved, the relationship to the submitting Business Entity, relevant dates, the Lien holder or Claimants' name(s), the amount of the lien(s), the current status of the issue(s), and the balance of the lien, claim or judgment not yet paid. Provide answer below or attach additional sheets with numbered responses.

9.3 In the last seven (7) years, has the Business Entity or any affiliate, or official initiated or been the subject of any bankruptcy proceedings, whether or not closed, or is any bankruptcy proceeding pending? ☐ Yes ☐ No

If "Yes," provide the name of the Business Entity, affiliate or official involved, the relationship to the submitting Business Entity, the bankruptcy chapter number, the court name and the docket number. Indicate the current status of the proceedings as "Initiated," "Pending" or "Closed." Provide answer below or attach additional sheets with numbered responses to explain the YES response.

9.4 What is the Business Entity's Bonding Capacity?

a. Single Project

b. Aggregate (All Projects)

9.5 List Business Entity's Gross Sales for the previous three (3) Fiscal Years:

1st Year (Indicate year ) Gross Sales	2nd Year (Indicate year ) Gross Sales	3rd Year (Indicate year ) Gross Sales
--	--	--

9.6 List Business Entity's Average Backlog for the previous three (3) fiscal years:  
(Estimated total value of uncompleted work on outstanding contracts)

1st Year (Indicate year ) Amount	2nd Year (Indicate year ) Amount	3rd Year (Indicate year ) Amount
-------------------------------------	-------------------------------------	-------------------------------------

9.7 Attach Business Entity's most recent annual financial statement and accompanying notes or complete Attachment C – Financial Information, found at [www.osc.state.ny.us/vendor/documents/questionnaire/ac3296s.xls](http://www.osc.state.ny.us/vendor/documents/questionnaire/ac3296s.xls).

(This information must be attached.)

### X. FREEDOM OF INFORMATION LAW (FOIL)

10.0 Indicate whether any information provided herein is believed to be exempt from disclosure under the Freedom of Information Law (FOIL). ☐ Yes ☐ No

Note: A determination of whether such information is exempt from FOIL will be made at the time of any request for disclosure under FOIL. Attach additional pages if necessary.

If "Yes," indicate the question number(s) and explain the basis for the claim.

Authorized

### XI. AUTHORIZED CONTACT FOR THIS QUESTIONNAIRE

Name	Telephone	ext.	Fax
Title	Email		

**NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE  
FOR-PROFIT CONSTRUCTION (CCA-2)****Certification**

The undersigned: (1) recognizes that this questionnaire is submitted for the express purpose of assisting New York State government entities (including the Office of the State Comptroller (OSC)) in making responsibility determinations regarding award or approval of a contract or subcontract and that such government entities will rely on information disclosed in the questionnaire in making responsibility determinations; (2) acknowledges that the New York State government entities and OSC may, in their discretion, by means which they may choose, verify the truth and accuracy of all statements made herein; and (3) acknowledges that intentional submission of false or misleading information may result in criminal penalties under State and/or federal law, as well as a finding of non-responsibility, contract suspension or contract termination.

It being acknowledged and agreed that all responses included in this questionnaire are to the knowledge, information and belief of the Business Entity, the undersigned certifies under penalties of perjury that they:

**The undersigned certifies that he/she:**

- are knowledgeable about the submitting Business Entity's business and operations;
- have legal authority to bind the Business Entity;
- have read and understand all of the questions contained in the questionnaire, including all definitions;
- have not altered the content of the questionnaire in any manner;
- have reviewed and/or supplied full and complete responses to each question;
- have provided true, accurate and complete responses, including all attachments, if applicable;
- understand that New York State government entities will rely on the information disclosed in the questionnaire when entering into a contract with the Business Entity; and
- are under an obligation to update the information provided herein to include any material changes to the Business Entity's responses at the time of bid/proposal submission through the contract award notification, and may be required to update the information at the request of the New York State government entities or OSC prior to the award and/or approval of a contract, or during the term of the contract.

Signature of Owner/Official \_\_\_\_\_

Printed Name of Signatory \_\_\_\_\_

Title \_\_\_\_\_

Name of Business \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Date \_\_\_\_\_

**NEW YORK STATE  
VENDOR RESPONSIBILITY QUESTIONNAIRE  
ATTACHMENT A – COMPLETED CONSTRUCTION CONTRACTS**

Vendor Name:

NYS Vendor ID:

**Question 3.0: List the ten most recent construction contracts the Business Entity has completed. If less than ten, include most recent subcontracts on projects up to that number:**

1.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable
2.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable
3.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable
4.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable
5.	Agency/Owner			Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable

**NEW YORK STATE  
VENDOR RESPONSIBILITY QUESTIONNAIRE  
ATTACHMENT A – COMPLETED CONSTRUCTION CONTRACTS**

Vendor Name:

NYS Vendor ID:

<b>Question 3.0: List the ten most recent construction contracts the Business Entity has completed. If less than ten, include most recent subcontracts on projects up to that number:</b>							
<b>6.</b>	Agency/Owner				Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable	
<b>7.</b>	Agency/Owner				Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable	
<b>8.</b>	Agency/Owner				Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable	
<b>9.</b>	Agency/Owner				Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable	
<b>10.</b>	Agency/Owner				Award Date	Amount	Date Completed
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer			
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable			EIN of JV, if applicable	

**NEW YORK STATE**  
**VENDOR RESPONSIBILITY QUESTIONNAIRE**  
**ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS**

Vendor Name:

NYS Vendor ID:

**Question 3.1: List all current uncompleted construction contracts:**

1.	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
2.	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
3.	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
4.	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount

**NEW YORK STATE  
VENDOR RESPONSIBILITY QUESTIONNAIRE  
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS**

**Vendor Name:****NYS Vendor ID:****Question 3.1: List all current uncompleted construction contracts:**

<b>5.</b>	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
<b>6.</b>	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
<b>7.</b>	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
<b>8.</b>	Agency/Owner			Award Date	Completion Date
	Contact Person		Telephone No.	Designer Architect and /or Design Engineer	
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount

**NEW YORK STATE  
VENDOR RESPONSIBILITY QUESTIONNAIRE  
ATTACHMENT B – UNCOMPLETED CONSTRUCTION CONTRACTS**

Vendor Name:

NYS Vendor ID:

**Question 3.1: List all current uncompleted construction contracts:**

<b>9.</b>	Agency/Owner			Award Date	Completion Date
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
<b>10.</b>	Agency/Owner			Award Date	Completion Date
	Contact Person	Telephone No.	Designer Architect and /or Design Engineer		
	Contract No.	Prime or Sub	Joint Venture (JV) Name, if applicable		EIN of JV, if applicable
			Total Contract Amount	Amount Sublet to others	Uncompleted Amount
<b>Grand Total All Uncompleted Contracts</b>					<b>\$0.00</b>



NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE  
ATTACHMENT C - FINANCIAL INFORMATION

NYS Vendor ID: \_\_\_\_\_

As of Date: \_\_\_\_\_

ASSETS

Current Assets

1. Cash		\$	
2. Accounts receivable - less allowance for doubtful accounts	\$ -		
Retainers included in accounts receivable	\$ -		
Claims included in accounts receivable not yet approved or in litigation	\$ -		
Total Accounts Receivable		\$	-
3. Notes receivable - due within one year		\$	-
4. Inventory - materials		\$	-
5. Contract costs in excess of billings on uncompleted contracts		\$	-
6. Accrued income receivable			
Interest	\$ -		
Other (list) _____	\$ -		
_____	\$ -		
Total Accrued Income Receivable		\$	-
7. Deposits			
Bid and Plan _____	\$ -		
Other (list) _____	\$ -		
_____	\$ -		
Total Deposits		\$	-
8. Prepaid Expenses			
Income Taxes	\$ -		
Insurance	\$ -		
Other (list) _____	\$ -		
_____	\$ -		
Total Prepaid Expenses		\$	-
9. Other Current Assets			
Other (list) _____	\$ -		
_____	\$ -		
Total Other Current Assets		\$	-
10. Total Current Assets			\$ -
11. Investments			
Listed securities-present market value	\$ -		
Unlisted securities-present value	\$		
Total Investments			\$ -
12. Fixed Assets			
Land	\$ -		
Building and improvements	\$ -		
Leasehold improvements	\$ -		
Machinery and equipment	\$ -		
Automotive equipment	\$ -		
Office furniture and fixtures	\$ -		
Other (list) _____	\$ -		
_____	\$ -		
Total		\$	-
Less: Accumulated depreciation		\$	-
Total Fixed Assets - Net			\$ -
13. Other Assets			
Loans receivable			
Officers	\$ -		
Employees	\$ -		

Shareholders	\$	-	
Cash surrender value of officers' life insurance	\$	-	
Organization expense – net of amortization	\$	-	
Notes receivable - due after one year	\$	-	
Other (list) _____	\$	-	
	\$	-	
Total Other Assets			\$ -
14. TOTAL ASSETS			\$ -

## LIABILITIES

### Current Liabilities

15. Accounts payable	\$		
16 a. Loans from shareholders - due within one year	\$		
16 b. Other Loans - due within one year	\$		
17. Notes payable - due within one year	\$		
18. Mortgage payable - due within one year	\$		
19. Other payables - due within one year	\$		
Other (list) _____	\$		
	\$		
Total Other Payables - due within one year		\$ -	
20. Billings in excess of costs and estimated earnings	\$	-	
21. Accrued expenses payable			
Salaries and wages	\$		
Payroll taxes	\$	-	
Employees' benefits	\$		
Insurance	\$	-	
Other	\$	-	
Total Accrued Expenses Payable		\$ -	
22. Dividends payable	\$		
23. Income taxes payable			
State	\$	-	
Federal	\$		
Other	\$	-	
Total Income Taxes Payable		\$ -	
24. Total current liabilities			\$ -
25. Deferred income taxes payable			
State	\$	-	
Federal	\$	-	
Other	\$	-	
Total Deferred Income Taxes		\$ -	
26. Long Term Liabilities			
Loans from shareholders - due after one year	\$	-	
Other Loans - due within one year			
Principle	\$	-	
Interest	\$	-	
Notes payable - due after one year	\$	-	
Mortgage - due after one year	\$	-	
Other payables - due after one year	\$	-	
Other (list) _____	\$	-	
	\$		
Total Long Term Liabilities		\$ -	
27. Other Liabilities			
Other (list) _____	\$		
	\$		
Total Other Liabilities		\$ -	
28. TOTAL LIABILITIES			\$ -

## NET WORTH

29. Net Worth (if proprietorship or partnership)	\$	-
--	----	---

30. Stockholders' Equity  
Common stock issued and outstanding  
Preferred stock issued and outstanding  
Retained earnings  
Total  
Less: Treasury stock  
31. TOTAL STOCKHOLDERS' EQUITY  
32. TOTAL LIABILITIES AND NET WORTH

\$	-
\$	-
\$	
\$	-
\$	-

\$	-
\$	-

PLANROOM COPY NOT FOR BIDDING

**SECTION 01 10 02**  
**SUMMARY OF WORK - MULTIPLE PRIME CONTRACTS**

**PART 1 - GENERAL**

**1.01 DESCRIPTIONS**

- 1.02 Project Information
- 1.03 Work Covered by Contract Documents
- 1.04 Related Contracts – Prime Contractors
- 1.05 Related Documents
- 1.06 Definitions
- 1.07 Concurrent and Future Projects
- 1.08 Contractor's Project Management
- 1.09 General Requirements of all Contracts
- 1.10 Owner Occupancy
- 1.11 Work Restrictions
- 1.12 Contractor Use of Premises
- 1.13 Payment Item Descriptions
- 1.14 General Description – Liquidated Damages
- 1.15 General Trades Contract (G)
- 1.16 Plumbing Contract (P)
- 1.17 Heating, Ventilation and Air Conditioning Contract (H)
- 1.18 Electrical Contract (E)
- 1.19 Work Completion
- 1.20 Novel Coronavirus

**1.02 PROJECT INFORMATION**

- A. Project / Contract Identification:
  - 1. PIN: BEL.21.006
  - 2. Project Name: Admin Building Renovation and Gondola Maintenance Building Construction Project
  - 3. CIN: BEL.21.006.100
    - a. General Trades Contract (G)
  - 4. CIN: BEL.21.006.101
    - a. Plumbing Contract (P)
  - 5. CIN: BEL.21.006.102
    - a. Electrical Contract (E)
  - 6. CIN: BEL.21.006.103
    - a. HVAC Contract (H)
- B. Owner: NYS Olympic Regional Development Authority (ORDA), 37 Church Street, Lake Placid, NY 12946.
- C. Design Professional:
  - QPK Design, LLP
  - 450 South Salina Street
  - Syracuse, NY 13201-0029
- D. Design Professional's Consultants
  - 1. F/S Engineering

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. The title and location of the work is included in Division 0 *Notice to Bidders*
- B. Project Type: Multiple Prime
- C. Type of Contract: Lump Sum

**Time is of the essence for this contract due to ORDA's operational obligations, financial responsibilities and the concurrent and related contracts.**

1.04 RELATED CONTRACTS – PRIME CONTRACTORS

- A. This Project is a Multiple Prime contract in accordance with New York State procurement law, Wicks Law. Listed below are each of the Prime Contractors (Contractor) associated with the Project. The term *Contractor* shall mean each Prime Contractor.
  - 1. Contract No: *BEL.21.006.100* General Trades Contractor (G)
  - 2. Contract No: *BEL.21.006.101* Process Piping and Plumbing Contractor (P)
  - 3. Contract No: *BEL.21.006.102* Electrical Contractor (E)
  - 4. Contract No: *BEL.21.006.103* Heating, Ventilation and Air Conditioning Contractor (H)
- B. Each Contractor shall be responsible for the following items in addition to their respective Specification Sections:
  - 1. Compliance with Specification Division 0, *Bidding and Contract Requirements*
  - 2. Compliance with Specification Division 1, *General Requirements*
  - 3. Maintaining and securing a staging area, coordinated with the Owner
- C. Related Contracts Bid Separately:
  - 1. None at this time.

## 1.05 RELATED DOCUMENTS

- A. Multiple Prime Contracts are awarded for interrelated major elements of the Work that must be performed simultaneously. These Contracts are considered as related contracts and require close coordination of the work.
- B. The Contract Documents, include, but are not limited to, the Division 0, Division 1, Technical Specification Sections, and Drawings.
- C. Each Prime Contractor shall be responsible for a full and complete review all the Divisions and Technical Specifications and Drawings in the development of their bid. The major work elements for each Prime Contractor shall be presented within the Technical Specification Sections and on the Drawings for their division of work. However, it is common to have some related work elements found within the Technical Specification Sections and on the Drawings of the other Trades due to the structure of the Multiple Prime Contract framework. No claims shall be considered for work presented within the Technical Specification Sections and work on the Drawings for the Project by any Contractor due to the placement within the Technical Specifications Section or the location on the Drawing. It is fully incumbent on the Bidder to review the Contract Documents and request clarifications during the Bidding Phase for any items for which the Bidder believes may ambiguous and/or not totally defined. Failure to perform this level of review shall not be considered grounds for extra compensation. Clarifications requested after award shall be made by the Engineer/Architect-of-Record and shall be binding and final.
- D. Fast-Track Bidding: In some instances, Fast-Track Bidding is required to meet the schedules of the Owner. This may result in the release of Contract Documents prior to the release of this Contract. The Technical Specifications and Drawings presented within these Contract Documents shall maintain the same conditions as presented in Part 1, Subpart 1.04, Section C. Additionally, this shall include all Addendums, and Record Documents, which include, but are not limited to Value Engineering Changes, Submittals, and Shop Drawings, which shall become part of the Project Contract Documents.

## 1.06 DEFINITIONS

- A. Permanent Enclosure: As determined by the Owner, the condition at which roofing is insulated and weathertight, exterior walls are insulated and weathertight, and all openings are closed with permanent construction or substantial temporary closures equivalent in weather protection to permanent construction.
- B. Project: The Project is defined as the sum of all the Work of all the Contracts and the efforts of the Owner.
- C. Work: The Work is defined as the Contractors responsibilities required to satisfy their contractual requirements.
- D. Provide: Provide is defined as the supply and install and includes all tools, equipment, and materials required to execute.
- E. Supply: Supply is defined as the act of the supply of the material, equipment, and/or element.
- F. Install: Install is defined as the act of installation of the material, equipment, and/or element and any and all associated services for the complete fulfillment of said service, including all tools, equipment and materials required to execute.

#### 1.07 CONCURRENT AND FUTURE PROJECTS

- A. Owner, at its option, may have concurrent work going on at the premises by Owner's own employees or those of a utility or subcontractor. Reference General Conditions Article 7.
- B. List of Contracts which are concurrent or will be awarded in the future but are not directly related to the Contract(s) being let under this Project.
  - 1. Overlook Lodge Fuel Tank Removal
  - 2. Lift 7 Replacement
  - 3. Electrical Systems Upgrades
  - 4. Trailwork and Snowmaking Upgrades

#### 1.08 CONTRACTOR'S PROJECT MANAGEMENT

- A. Each Contractor shall identify a Project Manager, Project Superintendent and Project Scheduler assigned to this Project who shall be responsible for the following tasks, unless otherwise defined by the Contractor and communicated to the Owner:
  - 1. Project Manager:
    - a. Responsible for communicating with Owner all contractual matters including pricing of change orders, scheduling issues and all other communications with Owner and Engineer.
    - b. Responsible for submitting and tracking Requests for Information (RFI's).
    - c. Responsible for all submittals.
    - d. Responsible for Coordination of work activities.
    - e. Coordination of shared access to workspaces.
    - f. Coordination of temporary facilities and controls.
    - g. Coordination and communication of temporary utility interruptions.
    - h. Preparing coordination drawings with input from other trades including, but not limited to: ceiling spaces and reflected ceiling plan, wall spaces/penetrations, roof penetrations, underground utilities and foundation penetrations.
    - i. Attendance at all Project meetings.
    - j. Providing pre, ongoing, and post construction photographic documentation.
    - k. Quality Assurance and Quality Control for the work as specified.
    - l. Coordinating sequence of activities to accommodate tests and inspections.
    - m. Coordinating preparation and completion of punch list items.
    - n. Responsible for all Project turnover documents and preparation of O&M Manuals.
  - 2. Project Superintendent: Person responsible for day to day field operations and supervision of the Work.
  - 3. Project Scheduler: Person responsible to coordinate the scheduling activities of their Contract and to monitor and update their schedule periodically.

#### 1.09 GENERAL REQUIREMENTS OF ALL CONTRACTS:

- A. Trenches and other excavation work of each Contract shall be the work of such Contract.



- B. Backfill for trenches and excavation shall be the work of such Contract.
- C. Firestopping: Firestopping for the work of each Contract shall be done by each Contractor.
- D. Cutting and patching – minor: When Contractor is required to cut a minor hole (approximately 4” or smaller) in sheetrock or masonry to achieve a minor installation such as a device box or conduit or pipe penetration, Contractor requiring such work will be responsible for the cutting and patching. Contractor shall be required to cut holes for penetrations as close a tolerance as possible, and not more than 1/2” around the penetration to minimize firestopping material and minimize structural issues associated with penetrations.
- E. Cutting and Patching – major: Major penetrations shall be those which are called out on the plans as required for the Project and may be required for the work of other Prime Contractors but shall be performed by the General Trades Contractor. When Contractor is required to cut a large hole (defined as approximately 4” and larger), unless exception is taken elsewhere, Contractor shall be required to provide a schedule of such penetrations to the Owner for review prior to G Contractor performing the work. Contractor requiring such penetrations shall be responsible for coordinating the location and timing of the penetration with the G Contractor in accordance with the Project Schedule.
- F. Housekeeping Pads – Minor: Minor housekeeping pads, such as those for small domestic water heaters or expansion tanks shall be the requirement of the trade providing such equipment.
- G. Housekeeping Pads – Structural: Structural housekeeping pads are those which are detailed in the structural drawings as being cast integral to a slab or footing. Such structural pads shall not be cast or placed until such time that Contractor requiring such slab for equipment they are providing, has provided dimensions of submitted equipment for coordination with the proposed structural slab. Contractor shall provide required slab information a minimum of two weeks prior to the slab casting for review by the Owner and Engineer. If the structural pad is cast according to schedule and the Contractor requiring such structural pads did not communicate any required deviation from the drawings, such Contractor will be responsible for any modifications to the slab as needed to accommodate the submitted equipment.
- H. Access Panels: Contractors requiring access panels to accommodate their work are responsible for providing same for the G Contractor to install. Contractors providing the panels are responsible for:
1. Submitting a list of proposed access panels, their sizes and locations, for review by the Engineer prior to purchasing.
  2. Upon response from Engineer, submit a schedule of Access Panels to the G Contractor, their location and size a minimum of 1 week prior to any framing required for the access panel.
  3. Contractors who require the framing and do not provide the information to the G Contractor will then become responsible for the framing required for the access panel as well as the access panel installation in accordance with the specifications associated with this Work.
- I. Painting: If painting is required of specific piping and conduit as a means to differentiate it from other piping, such painting is the responsibility of the contractor providing such piping.

- J. Control vs. Power Wiring: Power and Control Wiring for all equipment shall be included and provided by the Electrical Contractor in accordance with the equipment schedule as detailed in the drawings.
- K. Blocking: Contractors requiring blocking for wall or ceiling mounted equipment are responsible for providing the blocking and a scaled drawing/sketch of the blocking location to the G Contractor for installation. Details shall be provided a minimum of one (1) week prior to the blocking install in accordance with the Project Schedule.

#### 1.10 WORK RESTRICTIONS

- A. On-site work hours: Limit work to normal business working hours of 7:00 AM to 5:00 PM Monday through Friday, unless otherwise approved by the Owner.
- B. Noise, Vibration and Odors: Coordinate operations that may result in high levels of noise, vibration, odors or other disruptions to Owner at least two days in advance of proposed disruptive operations.
- C. Restricted Substances: Use of tobacco products and other controlled substances on Project site is not permitted unless a designated area is specified.
- D. If requested by Owner, Contractors shall provide identification tags for their personnel and their subcontractors on the Project site. Such identification shall be required to be worn at all times.
- E. The Contractor shall assume full and complete responsibility for protection and safekeeping of their materials and equipment stored at the Project site.

#### 1.11 CONTRACTOR USE OF PREMISES

- A. Furniture and portable equipment which interferes with execution of the Work, egress paths, or Owner occupancy shall be relocated by Contractor immediately upon notification from Owner.
- B. Furniture and portable equipment which is not removed per above will be removed and relocated by Owner.
- C. Contractor shall be courteous at all times to others including, but not limited to Owner, Owner's agents and suppliers, and visitors to the facility.
- D. Contractor shall not wear clothing that advertises or promotes controlled substances (including tobacco or alcohol) or firearms due to visibility of the Project to the public and Owner's customers.
- E. Limit use of site and premises to designated staging areas, permitted haul roads, and Project site.

#### 1.12 PAYMENT ITEM DESCRIPTIONS

- A. Payment Item include all work within the Prime Contractor's section in addition to the responsibilities, items and elements cited above in Sections 1.4 – 1.11.

#### 1.13 GENERAL DESCRIPTION

- A. Bids shall be received in accordance with the New York State Public Bidding Laws. This Project shall be executed under MULTIPLE PRIME CONTRACTS known as General Trades Contract, Plumbing Contract, HVAC Contract, and Electrical Contract.

#### 1.14 GENERAL TRADES CONTRACT (G)

- A. The General (G) Trades Contractor is responsible for all of the Bidding and

Contract Requirements, General Requirements (Division 0 and 01), and all work specifically indicated including Divisions 2 (non-MEP) through 14 and 31 through 33 and the Architectural and Structural Drawings including hazardous (when applicable) materials, demolition, cutting and patching as specifically required to complete the work of the general trades contract, and Division 31 and 32 and 33 and all work shown on Civil and Landscape and Demolition drawings. All contractors are responsible to provide a complete installation of their work, a “turnkey” installation, as through there were no other contractors, with the exception of such work that is specifically indicated to be by another contractor. Exceptions or clarifications are as indicated in Coordination between trades set forth in Section 10 73 29.

Major work includes that encompassed by the following Specification Divisions:

Division 02 - Existing Conditions

Division 03 - Concrete

Division 04 - Masonry

Division 06 - Wood, Plastics, and Composites

Division 07 - Thermal and Moisture Protection

Division 08 - Openings

Division 09 – Finishes

Division 12 - Furnishings

Division 13 - Special Construction

Division 31 – Earthwork

Division 32 – Exterior Improvements

Major work includes that is encompassed by the following Drawing Sheets: A Series, S Series, C Series.

Note Section 1.4 RELATED DOCUMENTS for additional information on the complete scope of work.

- B. Work in the General Trades Contract includes, but is not limited to, the following:
1. General Project Coordination and Organization.
  2. Coordination with all other Prime Contractors
  3. Provide all site work, excavation, backfill, and grading.
  4. Provide erosion and sediment control.
  5. Provide Temporary Sanitary Facilities.
    - a. Provide temporary sanitary facilities in compliance with the NYS Uniform Building and Fire Prevention Code.
    - b. Clean sanitary facilities at least daily.
  6. Provide exterior improvements
    - a. Window Replacement
    - b. Exterior Siding Replacement
    - c. Roof ventilation replacement
    - d. Exterior egress improvements

- C. Payment Items
  - 1. Base Bid Work
  - 2. Field Order Allowance: Used to address unforeseen issues.

#### 1.15 PLUMBING CONTRACT

- A. The Plumbing Contract (P) is responsible for all of the Bidding and Contract Requirements, General Requirements (Division 0 and 01), and all work specifically indicated including Divisions 21 and 22 and the Plumbing and Fire Suppression Drawings, and such work types including demolition and cutting and patching as specifically required to complete the work of the plumbing installation. All contractors are responsible to provide a complete installation of their work, a “turnkey” installation, as through there were no other contractors, with the exception of such work that is indicated to be by another contractor. Exceptions or clarifications are as indicated in Coordination between trades set forth in Section 10 73 29.

Major work includes that encompassed by the following Specification Divisions:

Division 22 – Plumbing

*Major work includes that is encompassed by the following Drawing Sheets: SM Series.*

Note Section 1.4 RELATED DOCUMENTS for additional information on the complete scope of work.

- B. Work in the Plumbing Contract includes, but is not limited to, the following:
  - 1. *Coordination with all other Prime Contractors.*
  - 2. *Install all plumbing fixtures.*
  - 3. *Provide domestic hot and cold-water distribution lines and supports, valves and insulation.*
  - 4. *Provide waste vent piping, and sanitary waste piping within building and up to 5 feet outside the building.*

- C. Payment Items
  - 1. Base Bid Work
  - 2. Field Order Allowance: Used to address unforeseen issues.

#### 1.16 HEATING, VENTILATION AND AIR CONDITIONING CONTRACT

- A. Heating, Ventilation and Air Conditioning Contract (H) is responsible for all of the Bidding and Contract Requirements, General Requirements (Division 0 and 01), and all work specifically indicated including Divisions 23 and the HVAC Drawings, and such work types including demolition and cutting and patching as specifically required to complete the work of the HVAC installation. All contractors are responsible to provide a complete installation of their work, a “turnkey” installation, as through there were no other contractors, with the exception of such work that is indicated to be by another contractor. Exceptions or clarifications are as indicated in Coordination between trades set forth in Section

10 73 29.

Major work includes that encompassed by the following Specification Divisions:

Division 23 – Heating, Air Conditioning and Ventilation

*Major work includes that is encompassed by the following Drawing Sheets: H Series.*

Note Section 1.4 RELATED DOCUMENTS for additional information on the complete scope of work.

B. Work in the Mechanical Contract includes, but is not limited to, the following:

1. *Coordination with all other Prime Contractors.*
2. *Provide new toilet exhaust systems*
3. *Coordination with all exhausting laundry exhaust and venting.*
4. *Relocating existing PTAC and associated wall assemblies with proposed*

*envelope.*

C. Payment Items

1. Base Bid Work
2. Field Order Allowance: Used to address unforeseen issues.

#### 1.17 ELECTRICAL CONTRACT

A. The Electrical Contract (E) responsible for all of the Bidding and Contract Requirements, General Requirements (Division 0 and 01), and all work specifically indicated including Divisions 26 through 28 and the Electrical, Communications and Safety & Security Drawings, and such work types including demolition and cutting and patching as specifically required to complete the work of the plumbing installation. All contractors are responsible to provide a complete installation of their work, a “turnkey” installation, as through there were no other contractors, with the exception of such work that is indicated to be by another contractor. Exceptions or clarifications are as indicated in Coordination between trades set forth in Section 10 73 29.

Major work includes that encompassed by the following Specification Divisions:

Division 26 – Electrical

Division 27 – Communications

Division 28 – Electronic Safety and Security

*Major work includes that is encompassed by the following Drawing Sheets: M Series.*

Note Section 1.4 RELATED DOCUMENTS for additional information on the complete scope of work.

B. Work in the Electrical Contract includes, but is not limited to, the following:

1. *Coordination with all other Prime Contractors.*
2. *Provide electrical service to proposed ADA door operator.*
3. *Provide power, switching and circuiting for proposed exhaust fans.*
4. *Provide electrical heat trace at gutter and downspout locations*

C. Payment Items

1. Base Bid Work
2. Field Order Allowance: Used to address unforeseen issues.

1.18 WORK COMPLETION

1. Refer to the Schedule of Important Dates and Times in Division 00 11 14 *Notice to Bidders* for the Substantial Completion date.
2. Refer to the Schedule of Important Dates and Times in Division 00 11 14 *Notice to Bidders* for the Physical Completion date.

PART 2 - PRODUCTS

1.1 OWNER SUPPLIED PRODUCTS AND SERVICES

- A. The Owner will supply the following: (Installation noted by Contract)
1. Existing Exterior Cameras
  2. Access control card readers

1.2 OWNER SUPPLIED PRODUCTS AND/OR SERVICES

- B. Electrical power at all existing buildings.

1.3 WORK COMPLETION

- A. See Document 00 11 14 – *Notice to Bidders*, Schedule of Important Dates and Times

PART 3 - EXECUTION

NOT USED

**END OF DOCUMENT**



**SECTION 01 10 03**  
**SUPPLEMENTARY CONDITIONS**  
**SUMMARY OF WORK – MULTIPLE PRIME CONTRACT COORDINATION**

**PART 1 – GENERAL**

**1.1 SUMMARY**

- 1.2 Section includes the responsibilities for Project Coordinator.
- 1.3 Section includes responsibilities for coordination and temporary facilities and controls.
- 1.4 Section includes administrative provisions for supplying and coordinating a Web-Based Project Management Software.

**1.2 PROJECT COORDINATOR**

- A. 1. Project Coordinator shall be responsible for coordination of the work of the General Trades Contract, the Plumbing Contract, the HVAC Contract, and the Electrical Contract (collectively, the “Work”).  
2. **The contractor for the General Trades Contract** is designate as and shall preform the responsibilities of the Project Coordinator.
- B. Coordination activities of Project Coordinator include, but are not limited to, the following:
  - 1. Provide overall coordination of the Work.
  - 2. Coordinate shared access to workspaces.
  - 3. Provide overall coordination of temporary facilities and controls.
  - 4. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
  - 5. Coordinate construction and operations of all Prime Contractors.
  - 6. Prepare coordination drawings in collaboration with each contractor to coordinate work by more than one contract.
  - 7. Coordinate sequencing and scheduling of the Work including a combined contractors' construction schedule for entire Project.
  - 8. Provide quality-assurance and quality-control services specified in Section 01 40 00 "Quality Requirements."
  - 9. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
  - 10. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
  - 11. Coordinate cutting and patching.
  - 12. Coordinate protection of the Work.
  - 13. Coordinate firestopping.
  - 14. Coordinate preparation of Project record documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
  - 15. Print and submit record documents if installations by more than one contractor are indicated on the same contract drawing or shop drawing.
  - 16. Coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated to form one combined record.



C. Substitutions:

1. Each Prime Contractor shall cooperate with others involved to coordinate approved substitutions with the remainder of the Work.
2. Project Coordinator shall coordinate substitutes.

1.3 TEMPORARY FACILITIES AND CONTROLS

- A. Project Coordinator shall provide the temporary facilities and controls for the Project, which include the following:
1. Provide common-use field office for use by all personnel engaged in construction activities.
  2. Provide common-use sanitary facilities.
  3. Provide internet/data service for common-use facilities.
  4. Provide temporary Heating, Cooling, and Ventilation: Project Coordinator is responsible for temporary heating and cooling of the field offices for all Prime Contractors.

1.4 WEB-BASED PROJECT MANAGEMENT SOFTWARE

- A. Project Coordinator shall be responsible for providing a Web-Based Project Management Software as specified by the Owner for purposes of hosting and managing project communication and documentation until Physical Completion.
- B. Web-Based Project Management Software shall include the following functions:
1. Project directory.
  2. Project correspondence.
  3. Meeting minutes.
  4. Contract modifications forms and logs.
  5. RFI forms and logs.
  6. Photo documentation.
  7. Submittals forms and logs.
  8. Payment application forms.
- C. Provide up to fifteen (15) Web-Based Project Management Software site user licenses for use of Owner, other Prime Contractors, the Owner's Consultants, and Sub-Consultants. Provide at least eight (8) hours of on-line software training for each licensee.
- D. On completion of Project, provide one (1) complete archive copy of Web-Based Project Management Software site files to Owner and to Consultant in a digital storage format acceptable to ORDA.
- E. Contractor, subcontractors, and other parties granted access by Contractor to the Web-Based Project Management Software shall execute a data licensing agreement in the form ORDA's Digital Data Licensing Agreement – Section 01 10 04.

**END OF DOCUMENT**

## SECTION 01 10 04

### DITIGAL DATA LICENSING AGREEMENT

**AGREEMENT** made as of the \_\_\_\_\_ day of \_\_\_\_\_ 202\_\_\_\_.

**BETWEEN** the Party transmitting Digital Data (“Transmitting Party”):  
(Name, address and contact information, including electronic addresses)

and the Party receiving the Digital Data (“Receiving Party”):  
(Name, address and contact information, including electronic addresses)

for the following Project:  
(Name and location or address)

The Transmitting Party and Receiving Party hereby agree as follows.

#### Article 1. General Provisions

**1.1** The purpose of this Agreement is to grant a license from the Transmitting Party to the Receiving Party for the Receiving Party’s use of Digital Data on the Project, and to set forth the license terms.

**1.2** This Agreement is the entire and integrated agreement between the parties as to the matters set forth herein. Except as specifically set forth herein, this Agreement does not create any other contractual relationship between the parties.

**1.3** For purposes of this Agreement, the term Digital Data is defined to include only those items identified in Article 3 below.

**1.4** Confidential Digital Data is defined as Digital Data containing confidential or business proprietary information that the Transmitting Party designates and clearly marks as “confidential.”

**1.5** The license granted by this Agreement is effective as of the day and year first written above and will terminate upon Final Completion of the Project, unless otherwise agreed by the parties in writing.

#### Article 2. Transmission of Digital Data

**2.1** The Transmitting Party grants to the Receiving Party a nonexclusive limited license to use the Digital Data identified in Article 3 solely and exclusively to perform services for, or construction of, the Project in accordance with the terms and conditions set forth in this Agreement.

**2.2** The transmission of Digital Data constitutes a warranty by the Transmitting Party to the Receiving Party that the Transmitting Party is the copyright owner of the Digital Data, or otherwise has permission to transmit the Digital Data to the Receiving Party for its use on the Project in accordance with the terms and conditions of this Agreement.

**2.3** If the Transmitting Party transmits Confidential Digital Data, the transmission of such Confidential Digital Data constitutes a warranty to the Receiving Party that the Transmitting Party is authorized to transmit the Confidential Digital Data. If the Receiving Party receives Confidential Digital Data, the Receiving Party shall keep the Confidential Digital Data strictly confidential and shall not disclose it to any other person or entity except as set forth in Section 2.3.1.

**2.3.1** The Receiving Party may disclose the Confidential Digital Data as required by law or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity. The Receiving Party may also disclose the Confidential Digital Data to its employees, consultants or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants and contractors are subject to the restrictions on the disclosure and use of Confidential Digital Data as set forth in this Agreement.

**2.4** The Transmitting Party retains its rights in the Digital Data. By transmitting the Digital Data, the Transmitting Party does not grant to the Receiving Party an assignment of those rights nor does the Transmitting Party convey to the Receiving Party any right in the software used to generate the Digital Data.

**2.5** To the fullest extent permitted by law, the Receiving Party shall indemnify and defend the Transmitting Party from and against all claims arising from or related to the Receiving Party's modification to, or unlicensed use of, the Digital Data.

### **Article 3. Digital Data**

The Parties agree that the following items constitute the Digital Data subject to the license granted in Section 2.1:

The Project Manual and Drawings and all other data required to support the following functions:

- a. Project directory;
- b. Project correspondence;
- c. Meeting minutes;
- d. Contract modifications forms and logs;
- e. RFI forms and logs;
- f. Photo documentation;
- g. Submittals forms and logs; and
- h. Payment application forms.

### **Article 4. Licensing Fee or Other Compensation**

There shall be no fee or other compensation for the Receiving Party's use of the Digital Data.

\_\_\_\_\_  
**TRANSMITTING PARTY** *(Signature)*

\_\_\_\_\_  
*(Printed name and title)*

\_\_\_\_\_  
**RECEIVING PARTY** *(Signature)*

\_\_\_\_\_  
*(Printed name and title)*

## SECTION 01 20 00

### COST COMPUTATIONS

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. Contractor shall use OEPC 120-127 Contractor Proposal Worksheet for all changes to Contract cost.
- B. Definitions:
1. Extra Work – Work that is a continuation of an existing Work item, but is extra in quantity to the Contract.
  2. Additional Work – Work added to the Contract which is within the scope of the Contract but is not a continuation of an existing Work item.
  3. Omitted Work – Work within the scope of the Contract which is removed from the Contract by ORDA.
- C. The Contracting Officer shall determine the value of any Change Order or Field Order by one or more of the following methods:
1. Agreed to Amount:
    - a. By estimating the fair and reasonable cost of:
      - 1) Labor, including all wages, required wage supplements and insurance/taxes required by law (workers' compensation, social security, disability, unemployment, etc.) paid to or on behalf of working foremen, workers and other employees below the rank of the Contractor's designated representative directly employed at the Site of the Project, and, on contracts with an award price less than \$500,000, the Contractor's designated representative, regardless of job title or work status.
      - 2) Materials (to be installed or turned over to ORDA).
      - 3) Consumables are items that are used during the progression of the extra/additional that do not become a permanent part of the Work and as such are considered overhead.
      - 4) Equipment, excluding hand tools, which, in the judgment of ORDA, would have been or will be employed in the performance of the extra/additional work.
      - 5) Where the omitted or extra/additional work is performed directly by the Contractor, by adding to the total of such estimated costs a sum equal to 15 percent thereof, but, where the omitted or extra/additional work is performed by a subcontractor, by adding a sum equal to 15 percent of said costs for the benefit of such subcontractor, and by adding, for the benefit of the Contractor (no further allowance will be made where extra/additional work is performed by any sub-subcontractor), an additional sum equal to:
        - a) 10 percent of the first \$10,000 of the above-estimated costs, including the subcontractor's percentage override.
        - b) Plus 5 percent of the next \$90,000 of the total of said items.
        - c) Plus 3 percent of any sum in excess of \$100,000 of the total of said items.

- d) For the purposes of the aforesaid percentage overrides, the words “extra/additional work” shall be defined as a complete item of added, modified or changed work as described in writing to the Contractor and the reductions enumerated shall be applied individually to each Change Order or Field Order issued on a Contract. Such “extra/additional work” may include the work of one or more trades and/or subcontractors or sub-subcontractors and shall include all labor, material, plant, equipment, tools and all incidentals directly and/or indirectly necessary, related, involved in or convenient to the successful completion of the extra/additional work item.
- b. By accepting an amount agreed upon by both parties, which amount is to be calculated in a manner similar to that provided in subparagraph 1.01 A. 1. a.
- c. Should the Contractor fail to submit the required proposal as required by Article 10.5.1, the Contractor shall be compensated as follows:
- 1) The costs will be determined by ORDA as described in 1.01 A. 1. a. above, but the percentages for profit and overhead will be as follows:
- a) Where the omitted or extra/additional work is performed directly by the Contractor, by adding to the total of such estimated costs a sum equal to 10 percent thereof, but, where the omitted or extra/additional work is performed by a subcontractor, by adding a sum equal to 10 percent of said costs for the benefit of such subcontractor, and by adding, for the benefit of the Contractor (no further allowance will be made where extra/additional work is performed by any sub-subcontractor), an additional sum equal to:
- (1) 5 percent of the first \$10,000 of the above-estimated costs, including the subcontractor’s percentage override.
- (2) Plus 3 percent of any sum in excess of \$10,000 of the total of said items.
2. ACTUAL COSTS - By determining the actual cost of the extra/additional work in the same manner as in the above Subparagraph 1.01 A. 1.a. except that actual costs of the Contractor be utilized in lieu of estimated costs. ORDA shall have the option to utilize this method provided it notifies the Contractor of its intent to do so prior to the time the Contractor is properly authorized to commence performance of such work.
3. By applying the applicable price or prices set forth in the Contract Documents or by applying a unit price agreed to by both parties.
4. All profit, overhead and expense of whatsoever kind and nature, other than those set forth above in Subparagraphs A.1.a. 1), 2) and 4), and below in Paragraph 1.01 F., of the Contractor, its subcontractors and sub-subcontractors, are covered by the aforesaid percentage overrides and no additional payment therefore will be made by ORDA.
- D. Irrespective of the method used or to be used by ORDA in determining the value of extra/additional or omitted work, the Contractor shall, within 15 days after receipt of a

request, submit to ORDA a detailed breakdown of the Contractor's estimate of the value of the omitted or extra/additional work. The Contractor shall submit evidence, satisfactory to the Contracting Officer, to substantiate each and every item that constitutes the Contractor's proposal for the change. ORDA shall promptly respond to such submission.

- E. Labor: Whenever the Contract requires the determination of labor hours, it shall be determined as follows:
1. Labor Hours shall be based on the labor factors as published in "RSMeans data" by Gordian. The latest versions of the following books shall be used:
    - a. Building Construction Cost Data
    - b. Electrical Cost Data
    - c. Mechanical Cost Data
    - d. Plumbing Cost Data
    - e. Site Work and Landscape Cost Data
  2. In the event that a labor factor for an item of work is not available from these publications, the Director shall establish a labor factor as to the amount of time it takes to perform an item of Work.
    - a. Conditions that affect the performance of the extra/additional work whether addressed in the Contract Documents or not shall be taken into consideration and negotiated.
    - b. Unforeseen conditions or conditions that are not identifiable shall not be included in the Contractor's proposal. If while in the process of performing the omitted or extra/additional work a condition or event that affects the work becomes evident, it will be addressed at that time via a Field Order or Change Order.
- F. Materials:
1. Materials used in performance of the extra/additional work shall conform to Contract Documents and shall be listed by description, quantity and standard unit of measure.
  2. Where the extended value of an item of material is \$5,000 or more, a quote or invoice from a supplier shall be included as part of the Contractor's proposal. The Director's Representative reserves the right to request substantiating pricing documentation to verify actual and reasonableness of any and all submitted costs. This requirement does not impede Subparagraph 1.01 B. above.
  3. Travel costs including mileage, tolls, and overnight lodging and meal per diems incurred as a result of the extra/additional work will be reimbursed at costs without any markup for the Contractor or subcontractor as the case may be. Daily travel to the project site must exceed 35 miles, one way, from the Contractor's office address to claim mileage and toll expenses. Only mileage beyond 35 miles will be reimbursed. Travel distance must exceed 50 miles, one way, from Contractor's office address to the project site to claim overnight lodging and meal per diems. Actual cost for overnight lodging and meal per diems will be reimbursed up to the maximum rates listed per locality, as established by U.S. General Services Administration (GSA).
  4. Personal Protection Equipment required for hazardous materials abatement and materials used to create critical barriers and protection barriers, provided that they are expended during the performance of the extra/additional work or turned over to ORDA at the request of the Director's Representative, are reimbursable as part of a Change Order or Field Order.

G. Equipment:

1. Whenever the Contract requires the determination of the subtility and/or cost of equipment, it shall be determined as per the below.
2. Suitable Equipment:
  - a. Equipment used or to be used in the performance of Work shall be specifically described by the manufacturer, model number and date of manufacture and be of suitable size and capacity required for the work to be performed.
  - b. For the purposes of the performance of extra/additional work when, in the opinion of the Contractor, and as approved in writing by the Director's Representative, suitable equipment is not available on the Site, the moving of said equipment to and from the Site will be paid for at actual cost.
  - c. Notwithstanding any other provision, if ORDA should determine that the nature or size of the equipment used by the Contractor in connection with the performance of Work is larger or more elaborate, as the case may be, than the size or nature of the minimum equipment determined by ORDA to be suitable for the performance of Work, the cost of equipment used in calculating the costs of extra/additional work or delay damages will not be based upon the equipment used by the Contractor but instead will be based on the smallest or least elaborate equipment determined by ORDA to have been suitable for the performance of the Work. In no event shall the amount paid to the Contractor as the allowance for the use of self-owned construction equipment exceed the lower of the actual cost of such equipment or the depreciated value of such equipment as carried on the Contractor's or subcontractor's books.
2. Equipment Cost:
  - a. Ownership Cost: Equipment, excluding hand tools which are defined as tools and equipment having a new purchase price of less than \$1,000, and which will be employed in the performance of the extra/additional work. For the purposes of computing the Contractor's cost for self-owned equipment, including equipment rented from Contractor controlled or affiliated companies, the rate used for periods of under five days shall be the monthly rate set forth for the item of equipment in the Equipment Watch® "Rental Rate Blue Book" published by Penton Media (800 669-3282) divided by 22 days to establish a daily rate and divided again by eight hours to establish an hourly rate. The rate used for periods of five days or more shall be 45% of the published monthly rate. In the event the "Rental Rate Blue Book" does not list the item of equipment used, the applicable rate shall be determined in the same manner as set forth above except that the monthly rate used shall be that set forth in "The AED Green Book" published by Penton Media (800-669-3282). In the event that a rate is not established in the "Rental Rate Blue Book" or "The AED Green Book" for a particular piece of equipment, the Contracting Officer shall establish a rate for ownership costs and operating costs for that piece of equipment that is consistent with its cost and expected life.

i. Rented Equipment:



- Equipment rented specifically and exclusively for the performance of extra/additional work will be paid at the actual, invoice supported, rental cost.
      - Equipment rented for the Contract Work that is used in the performance of extra/additional work will be reimbursed for operating costs only.
    - ii. Self-Owned Equipment: The maximum amount of reimbursement for the ownership costs of self-owned equipment is limited to the original purchase price of the equipment as supported by Bill of Sale. In the specific event when the ownership reimbursement is limited by the original purchase price, the Contractor shall, nevertheless, be reimbursed for the operating cost per hour for each hour of actual use.
  - b. Operating Costs:
    - i. Equipment: The Contractor shall be reimbursed for its operating costs for equipment based on actual cost data. Operating costs shall include fuel, lubricants, other operating expendables and preventive and field maintenance. Operating costs do not include the operator's wages. In the event, after documented and demonstrated due diligence, actual operating costs are not ascertainable, then the Contractor will be compensated utilizing 100 percent of the operating costs set forth in the "Rental Rate Blue Book" and the Contractor shall be reimbursed the product of the number of hours of actual use multiplied by the operating cost per hour.
- H. Insurance and Bonds:
- 1. The additional cost of all required Bonds and Liability and Builder's Risk Insurance Premium required by the Contract, arising from the additional cost of performing extra/additional work shall be paid by a Change Order or Field Order to be issued upon physical completion of the Work and upon the submission of proof of payment of such additional premiums assessed by the respective insurance companies for such additional cost of the extra/additional work.
  - 2. Should the additional work require an additional insurance policy not initially required or anticipated for the execution of the Contract, whether required of the Contractor or a subcontract between the Contractor and a subcontractor actually performing extra/additional work, reimbursed will be made based on actual cost.
- I. Unless otherwise specifically provided for in a Change Order or Field Order, the compensation specified therein for extra/additional work includes full payment for both the extra/additional work covered thereby and for any damage or expense caused the Contractor by any delays to other work to be done under the Contract resulting from or on account of said extra/additional work, and the Contractor waives all rights to any other compensation for said extra/additional work, damage or expense.
- J. In computing the value of a Change Order or Field Order which involves additions and deletions of work and the cost of the added work exceeds the cost of the deleted work, overhead and profit shall be computed on the amount by which the actual cost of additional labor and material exceeds the actual cost of the deleted labor and material, except no additional overhead and profit shall be allowed on the value of any Change

Order or Field Order determined by the method provided in Subparagraphs 1.01 A. 1.b. or 1.01 A. 3.

- K. In computing the value of a Change Order or Field Order which involves additions and deletions of work and the cost of the deleted work exceeds the cost of the added work, the Contractor will be allowed to retain the overhead and profit on the amount by which the cost of the deleted work exceeds the cost of the added work, except that no overhead and profit shall be retained on the cost of work determined by the method provided in Subparagraphs 1.01 A. 1.b. or 1.01 A. 3.
- L. Subject to the provisions of Article 17A of the General Conditions, the following elements of damage, and only the following elements, as determined by the Contracting Officer, will be recoverable by the Contractor as “delay damages” provided that they are actual, reasonable and necessary:
1. Documented additional or escalated job site labor expenses.
  2. Documented additional or escalated costs for materials.
  3. Documented additional or escalated equipment costs less appropriate credits, as such are determined in accordance with this Section.
  4. Documented costs of extended job site overhead (including job superintendent, office engineer and clerical staff, but not including working foremen).
  5. An additional 15 percent of the total of the above items in Subparagraphs 1.01 J. 1., 2., 3. and 4. for home office overhead and profit thereon.
  6. Documented additional or escalated insurance and bond costs.
  7. When the work is performed by a subcontractor, the Contractor shall be paid the actual, reasonable and necessary cost of such subcontracted work as outlined Subparagraphs 1.01 J. 1 through 4., including the subcontractor’s main office overhead and profit of 15 percent. The Contractor shall also be allowed an additional 5 percent administrative fee for processing.
  8. The phrases “additional expenses”, “escalated expenses”, “additional costs” and “escalated costs” shall include expenses and costs above or below those normally incurred in the performance of the work, less any appropriate credit, and/or attributable, with appropriate credits, to the performance of work or portions of work in a different time period than that which was indicated on the approved progress schedule.
- M. With regard to delay damages, ORDA will have no liability for the following items and the Contractor shall make no claim for the following items:
1. Profit, in excess of that provided for above.
  2. Loss of anticipated or unanticipated profit.
  3. Labor inefficiencies and loss of productivity.
  4. Home office overhead in excess of that provided for above.
  5. Consequential damages including, but not limited to, interest on monies in dispute, including interest which is paid on such monies, loss of bonding capacity, bidding opportunities, or interest on retainage or investment, or any resultant insolvency.
  6. Indirect costs or expenses of any nature.
  7. Direct or indirect costs attributable to performance of work where the Contractor, because of situations or conditions within its control, has not progressed in a manner satisfactory to the Director.
  8. Attorneys’ fees and/or claim preparation expenses.

- N. Remedies Exclusive: With respect to extra/additional costs and delay damages, ORDA shall have no liability to the Contractor for expenses, costs, or items of damage other than those which are specifically identified as payable above. In the event any legal action is instituted against ORDA by the Contractor on account of any extra/additional work or for additional compensation, whether on account of delay, acceleration, breach of contract, or otherwise, ORDA's liability will be limited to those items which are specifically identified as compensable above. The Contractor shall make no claim for expenses other than those which are specifically identified as compensable above.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

**SECTION 01 21 02**  
**ALLOWANCES – MULTIPLE PRIME**

**Part 1 – GENERAL**

**1.1 SCOPE**

- A. Definition and Purpose: Allowances have been established to provide controlled cost of certain project requirements which cannot be completely described in the Contract Documents but which are required in construction. The cost of all allowances indicated in the Contract Documents shall be included in the Base Bid.
- B. Types of Allowances
1. Field Order Allowance: The Contractor shall include as part of the base bid, a lump sum allowance in the amount stated for extra/additional work to accommodate field changes and/or extra/additional work required. The Field Order Allowance shall be used only as directed by the Owner's Representative for the Owner's purposes, and only by means of a Field Order which shall designate amounts to be charged to the Field Order Allowance.
    - a. The Field Order Allowance shall include all labor, materials, overhead and profit. Refer to Document 01 20 00 Cost Computations for allowed overhead and profit and to General Conditions Article 25.13 Allowances.
    - b. The value of the Field Order Allowance may be increased with a Change Order or the incorporation of credit proposals from the Contractor.
    - c. At time of project closeout, unused amounts remaining in Field Order Allowance shall be credited to the Owner by Change Order.
  2. Cash Allowance: The Contractor shall include as part of the base bid, a lump sum allowance in the amount stated for specific items which shall be covered under the Cash Allowance. Cash allowances will not have a corresponding "Unit Price". Unless specifically included in the description, cash allowances excluded the labor to install the materials, services, equipment, etc. covered by the cash allowance. The latter is part of the Contractor's base bid.

**1.2 SCHEDULE OF ALLOWANCES**

**A. Field Order Allowance:**

1. General Trades Contract (G) BEL.21.006.100
  - a. Field Order Allowance SP-1: Allow the amount as identified in the Bid Schedule for work ordered in accordance with Section 1.1.B.1 above.
  - b. Allowance shall be included into the Total Bid as per the Bid Schedule.  
**Total Bid (Bid Item No. 1 + Allowance No. 1)**
2. Plumbing Contract (P) BEL.21.006.101
  - a. Field Order Allowance SP-1: Allow the amount as identified in the Bid Schedule for work ordered in accordance with Section 1.1.B.1 above.
  - b. Allowance shall be included into the Total Bid as per the Bid Schedule.  
**Total Bid (Bid Item No. 1 + Allowance No. 1)**
3. Electrical Contract (E) BEL.21.006.102
  - a. Field Order Allowance SP-1: Allow the amount as identified in the Bid Schedule for work ordered in accordance with Section 1.1.B.1 above. Allowance shall be included into the Total Bid as per the Bid Schedule.  
**Total Bid (Bid Item No. 1 + Allowance No. 1)**

4. Heating, Ventilation and Air Conditioning Contract (H) BEL.21.006.103
  - a. Field Order Allowance SP-1: Allow the amount as identified in the Bid Schedule for work ordered in accordance with Section 1.1.B.1 above.
  - b. Allowance shall be included into the Total Bid as per the Bid Schedule.

**Total Bid (Bid Item No. 1 + Allowance No. 1)**

- B. Cash Allowance: Not Used

## PART 2 PRODUCTS (Not Used)

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. The allowance amounts listed in the specifications shall be included in the base bid.
- B. Allowances shall be administered under the direction of the Project Management Team.
- C. Allowances application and adjustment shall be in accordance with Sections 01 20 00 Cost Computations, 01 29 77 Measurement and Payment Standards, and 01 50 00 Change Orders and Field Orders.

END OF SECTION

## SECTION 01 30 00

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Other requirements pertaining to payments are included in the General Conditions and in the various sections of the Specifications.
- B. Section 01 20 00 Cost Computations
- C. Section 01 33 00 Submittals

##### 1.02 SCHEDULES AND RECORDS

- A. Submit the following information not later than 15 days after approval of the Contract unless the Contractor or the Director determines an earlier submission is required to properly schedule or progress the Work.
  - 1. **CONTRACTOR'S LIST OF SUBCONTRACTORS – SUPPLIERS:** An affirmative review of the subcontractor's responsibility will be conducted. Any subcontractor disapprovals resulting from negative information derived from the State's review will result in written notice (by letter or e-mail) to the Contractor. A responsibility meeting may result from these actions. The Contractor will defer to the provisions of General Conditions Article 6 regarding its responsibility to prosecute the work.
    - a. Submit the **CONTRACTOR'S LIST OF SUBCONTRACTORS – SUPPLIERS** information.
    - b. Indicate the items of Work proposed to be accomplished by subcontractors, the name and address of each proposed subcontractor, the dollar value of the subcontract, Minority and Women-Owned Business Enterprise (MWBE) information, and Service-Disabled Veteran-Owned Business Enterprises (SDVOB).
      - 1) Attach a properly completed and executed NEW YORK STATE VENDOR RESPONSIBILITY QUESTIONNAIRE – FOR PROFIT CONSTRUCTION (CCA-2) for each subcontractor whose subcontract is valued at \$100,000.00 or more unless requested otherwise by the Director and/or the Director's Representative.
      - 2) As an alternative to submitting a paper version of the form, subcontractors may opt to submit the CCA-2 on-line via the New York State VendRep System. Information on this system and the New York State vendor responsibility requirements is available at: <http://www.osc.state.ny.us/vendrep/index.htm>.
    - c. Indicate the names and addresses of proposed suppliers, the dollar value of the supplies, and MWBE information.
    - d. Failure in providing this information may result in payments being withheld and referral to the Contracting Officer for a responsibility determination.

- B. If after initial approval, circumstances require a change in a subcontractor or supplier or require additional subcontractors or suppliers to be used, submit a revised list of Subcontractors - Suppliers that reflects the changes or additions.

#### **1.04 DETAILED ESTIMATE**

- A. Before making the first requisition for a progress payment, prepare a detailed estimate of quantities and prices for materials, labor and other items required for the Work, which shall aggregate the contract sum.
- B. The detailed estimate shall be supported by such evidence, including certified copies of subcontracts, as the Director may require.
- C. The detailed estimate must be approved by the Director who may revise it as, in the Director's reasonable judgment, is necessary to make the various items conform to their true values.
  - 1. The value of each requisition for payment shall be based on the approved detailed estimate.

#### **PART 2 PRODUCTS**

Not Used

#### **PART 3 EXECUTION**

Not Used

**END OF SECTION**



## SECTION 01 31 13

### PROJECT SCHEDULE

#### PART 1 GENERAL

##### 1.1 RELATED DIVISION 1 DOCUMENTS AND REQUIREMENTS SPECIFIED ELSEWHERE

- A. Section 01 10 01 Summary of Work – Single Prime

##### 1.2 SUMMARY

- A. This section provides procedural requirements to plan, schedule, and document the progress of the Project, and predict and prevent delays to established activities and milestones during performance of the Work.
- B. Bid Milestones as defined and incorporated into this Section 01 31 13.

##### 1.3 DEFINITIONS:

- A. Activities/Tasks: Specific to a CONTRACTORS Work which adequately represent the Project scope. It shall include durations as defined in workdays and shall have Resources assigned to it.
- B. Project Work Plan: A comprehensive list of Contractor tasks, predecessors, durations, resources required to develop the Project Schedule.
- C. Project Team: Persons acting on behalf of the Owner and Contractors in an effort to successfully plan, schedule, and coordinate the Work of the Project.
- D. Project Schedule: A list of activities/tasks, sequencing projected start and finish dates and resource allocation required to successfully complete the Work by the Project completion date. Project Schedule shall include the work of all Prime Contractors and all Subcontractors and shall have been agreed to by all parties.
- E. Project Completion Date: The date as set forth in 00 01 14 Notice to Bidders: *Schedule of Important Dates and Times*.
- F. Milestones: As defined in General Conditions Section 2.
- G. Bid Milestones: A significant start or completion date of a particular set of activities, as set forth in this section and as a requirement of the Contract to achieve the Project Completion Date.
- H. Float: The measure of latitude in starting and/or completing an activity without impeding on the successful realization of Project milestones.
1. Float time is not for the exclusive use or benefit of either the Owner or the Contractor but is a jointly owned expiring Project resource. Float is available as needed to meet scheduled milestones and the Project Completion Date. Recognizing float within or among activities does not permit the Contractor to disrupt progress or delay completion of an activity or milestone.
- I. Resources: Labor, material or equipment, shared or exclusive, required for the completion of an Activity or the Work, which recognizes an associated cost.
1. When the delivery of Resources is required for the purposes of this section it is requiring the following:
- a. Labor loading schedule, indicating the trades required and quantity of each to achieve the Project Schedule.
- b. Material delivery schedule, indicating the major pieces of equipment with a value of more than \$1,000 or any material with a delivery period of greater than 2 weeks.
- c. Equipment schedule, indicating any piece of equipment which is not owned the Contractor and shall be either rented or sub-contracted out to achieve the milestones and activities set forth in the Project Schedule. Equipment that is incidental to the Project is not required to be shown

- here.
- d. Subcontractor work is required to be shown in resource loading, and shall include the work of all subcontractors regardless of contract value or duration of work.
  - J. Subcontractors: Refer to General Conditions Article 6.
  - K. Time is of the Essence: Refer to General Conditions Article 13.1.3
  - L. Work Progress: The progress that each Contractor is completing throughout the duration of the Project as measured in accordance with every task listed on the Project Schedule.
  - M. Novel Coronavirus Coordination: Contractors shall review, administer and manage schedules of work to ensure coordination of work with compliance to all Novel Coronavirus guidelines and requirements.
- 1.4 PROJECT SCHEDULE:
- A. FOR ALL CONTRACTS:
    - 1. Each Prime Contractor shall provide schedule in accordance with General Conditions Section 2.9 *Initially Acceptable Schedule*. This schedule shall incorporate the activities and milestones set forth in this section *Project Schedule* and shall be detailed in accordance with Section 1.5 Submittals below.
    - 2. FOR MULTIPLE PRIME CONTRACTS: If specified in Section 01 10 02 Summary of Work – Multiple Prime Contracts that the Project is a multiple prime contract, the following procedures are set forth to establish the Project Schedule. The General Trades Contractor shall compile a critical path schedule with the schedule provided by each Contractor as detailed in paragraph 1.4.A.1. A scheduling meeting shall then be held within five working days' with the Engineer and Owner to review each predecessor and successor as well as each activity and milestone to insure the Project can be delivered on time.
      - a. All Contractors shall prepare and submit a resource loading chart in agreement with the Project Schedule.
      - b. Novel Coronavirus Coordination shall be fully employed.
      - c. All Contractors shall sign the SCHEDULE AGREEMENT FORM found at the end of this Section 01 31 13.
    - 3. Time is of the essence for this contract.
- 1.5 SUBMITTALS
- A. SCHEDULE SUBMITTALS
    - 1. All schedules shall be submitted in electronic format using Microsoft Project or another industry standard scheduling software.
    - 2. Each schedule shall show the durations for submittal periods, material and equipment lead times for all equipment with a delivery period longer than two weeks.
    - 3. Each schedule shall reflect the predecessors and successors relevant to achieve the intended schedule.
    - 4. Each schedule shall include milestones as set forth in this section.
  - B. RESOURCE LOADING SUBMITTAL
    - 1. Resource loading includes labor, material, equipment and subcontractors required to complete each activity/task of the Project Schedule.
- 1.6 MONITORING THE PROJECT Work PLAN
- A. WEEKLY PROGRESS MEETINGS
    - 1. The progress toward achieving the Project Schedule will be discussed at every weekly Project meeting or as otherwise directed by the Owner based on the Project needs.
    - 2. Work Progress as it relates to the Project Schedule shall be updated two days

- prior to every meeting and submitted to the Owner.
3. Any task progress which varies from the Project Schedule by +/- two (2) days as it relates to the start or finish for any activity shall be flagged on the Project Schedule.
  4. Contractors shall be prepared to discuss the following as it relates to their Work and the Work of their subcontractors:
    - a. Actual Start of each task
    - b. Actual Finish of each task
    - c. In-progress activities for the next week
    - d. Any task progress which vary two (2) days + or - from the Project Schedule. If the work is behind by two (2) days, the Contractor shall refer to Section 1.7 Maintaining Schedule below.

#### 1.7 MAINTAINING SCHEDULE

- A. Perform the Work in accordance with the Project Schedule and providing resources necessary to maintain the progress of tasks and activities as detailed in the Project Schedule so that no delays are caused to other Contractors engaged in the work.
  1. Should any Contractor fail to maintain progress according to the Project Schedule or cause delay to another CONTRACTOR, that Contractor shall provide such additional manpower, equipment, additional shifts, or other measures, at their own cost, to bring their activities and tasks back on schedule.
  2. Performing Work out of sequence with the Project Schedule is not permitted unless written approval is obtained by the other Contractors affected and the Owner prior to work commencing.

#### 1.8 RECOVERY Work PLAN

- A. When weekly updates indicate the Work is five (5) or more work days behind the approved Project Completion date, the Contractors shall present recovery options to the Owner to be considered for incorporation into an updated Project Schedule. Such items shall include, but not limited to, allocating additional resources to reduce durations or modify activity sequencing. An updated schedule submitted for consideration must be approved by all Contractors and Owner and a new Schedule Agreement signed by all parties. In any case, any modification to the schedule will not extend the Project Completion date as specified in the Contract Agreement.
- B. If a Contractor fails to provide recovery options within 10 calendar days subsequent to the identification of the schedule deficiency indicated in 1.8A, the Owner will execute an updated Project Schedule for the Contractor to adhere.
- C. If the Contractors are unable to remedy a deficient SCHEDULE through the Recovery Work Plan process, the Owner will exercise its rights and responsibilities accordingly.

#### PART 2 PRODUCTS

Not Used.

#### PART 3 EXECUTION

Not Used

**SCHEDULE AGREEMENT**

**Project Title:** \_\_\_\_\_  
**Project Number:** \_\_\_\_\_  
**Date:** \_\_\_\_\_

**Prepared by:** \_\_\_\_\_

**Scheduled Name:** \_\_\_\_\_ **Schedule Date:** \_\_\_\_\_ **Schedule Version:** \_\_\_\_\_

**It is agreed that the Project Schedule as defined by the above listed reference is accepted for use in coordinating, scheduling, and monitoring the work of all related contracts.**

**GENERAL TRADES Contractor:**

\_\_\_\_\_  
NAME (Print) SIGNATURE DATE

**HVAC TRADES Contractor:**

\_\_\_\_\_  
NAME (Print) SIGNATURE DATE

**PLUMBING TRADES Contractor:**

\_\_\_\_\_  
NAME (Print) SIGNATURE DATE

**ELECTRICAL TRADES Contractor:**

\_\_\_\_\_  
NAME (Print) SIGNATURE DATE

**Owner REPRESENTATIVE:**

\_\_\_\_\_  
NAME (Print) SIGNATURE DATE

**END OF DOCUMENT**

## SECTION 01 31 19

### PROJECT MEETINGS

#### PART 1 GENERAL

##### 1.01 INITIAL JOB MEETING

- A. The Director's Representative will notify all parties concerned of the time and place of the initial job meeting. The meeting will be conducted by the Director's Representative. The agenda will be based on the Format for Initial Job Meeting. All items on the Format, as they apply, will be discussed.
  - 1. A copy of the Facility's current Visitor Identification Policy will be distributed.

##### 1.02 PROJECT SCHEDULE MEETINGS

- A. The Initial Schedule Meeting will be held within 15 days of Project award. The Director's Representative will notify all members of the Project Team of the time and place of the meeting. The meeting will be conducted by the Director's Representative and ORDA Scheduling via WebEx™ or an equivalent online method for the following purposes:
  - 1. Define the intent of the specification.
  - 2. Review the reporting structure of the Project.
  - 3. Provide training to the Project Team.
- B. The Director's Representative will notify all members of the Project Team of any Schedule development/coordination meetings conducted by the Director's Representative and ORDA Scheduling via WebEx™ or an equivalent online method.
- C. The Project will have monthly project update reporting periods. The update meetings will be conducted by the Director's Representative and ORDA Scheduling via WebEx™ or an equivalent online method for the following purposes:
  - 1. Agree to the completed Activity dates.
  - 2. Coordinate and approve the next 6-week Project Work Plan.
  - 3. Evaluate and acknowledge any impact to the Contractor's ability to execute the Project Schedule according to the approved Baseline Project Schedule.

##### 1.03 BI-WEEKLY JOB MEETINGS

- A. Unless otherwise directed, job meetings will be held bi-weekly, at a time and place agreed upon by the Director's Representative, the Contractor, and the Facility Representative. Other interested parties may attend when needed, e.g., subcontractors and representatives from suppliers, public utilities, and local government. The meetings will be conducted by the Director's Representative for the following purposes:
  - 1. Review job progress, quality of Work, and approval and delivery of materials.
  - 2. Identify and resolve problems which impede planned progress.
  - 3. Coordinate the efforts of all concerned so that the project progresses on schedule to on-time completion.
  - 4. Maintain sound working relationships between the Contractors and the Director's Representative, and a mutual understanding of the project requirements.
  - 5. Maintain sound working procedures.

#### 1.04 PRINCIPALS' MEETINGS

- A. Unless otherwise directed, all projects with a total project cost exceeding one million dollars will require Principals' Meetings to be held monthly, via Microsoft Teams with one (1) meeting every fourth month to be on-site. The Contractor shall be required to have in attendance at least one individual of the rank of Vice-President or greater whom is directly responsible for executive level binding decision making for the Project on behalf of the Contractor and one individual whom has direct knowledge of the day to day management of the project whom position is not lower than Project Manager. Other interested parties may be invited with the approval of the Director, e.g., Superintendent and on major subcontractors\* (*\*Major Subcontractors are typically only allowed on Design-Build and PLA Contracts*). The meetings will be conducted by the Director in association with the Director's Representative for the following purposes:
1. Review job progress and quality of Work.
  2. Identify and resolve problems which impede planned progress.
  3. Coordinate the efforts of all concerned so that the project progresses on schedule to on-time completion.
  4. Maintain sound working relationships between the Contractors and the Director's Representative, and a mutual understanding of the project requirements.
  5. Maintain sound working procedures.
  6. Check in on meeting MWBE and SDVOB goals.

#### 1.05 PRE-INSTALLATION MEETINGS

- A. Pre-installation meetings will be held to review the specifications, Project Schedule, drawings, and approved submittals in preparation for start of a particular activity.
- B. The meetings shall be attended by the Director's Representative, a Design Representative, and the Contractor's Representative, including installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination with other materials/trades.
- C. The Director's Representative shall schedule the meetings prior to the start of the work. The goal of these meetings is to ensure the quality of construction and to maintain the schedule.

#### 1.06 ATTENDANCE

- A. A Contractor's Representative shall be required to attend all meetings scheduled by the Director's Representative, as set forth above.
- B. If the Contractor's Representative fails to attend two scheduled meetings without prior approval, the Contractor will be directed to replace the current Contractor's Representative. Further incidents of non-attendance by the Contractor's Representative will form the basis for review of the Contractor's responsible vendor status.

**PART 2 PRODUCTS** (Not Used)  
**PART 3 EXECUTION** (Not Used)

**END OF SECTION**

## SECTION 01 32 00

### CONSTRUCTION PROGRESS DOCUMENTATION

#### PART 1 GENERAL

##### 1.01 RELATED REQUIREMENTS AND INFORMATION SPECIFIED ELSEWHERE

- A. Document 00 31 13 Reference Project Schedule
- B. Section 01 10 01 Summary of Work – Single Prime Contract /  
Section 01 10 02 Summary of Work – Multiple Prime Contracts
- C. Section 01 31 19 Project Meetings

##### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements to plan, schedule, and document the progress of the Project; realize boundaries and expectations for schedule development and management; and predict and prevent delays to established sequences and milestones during performance of the Work including the following:
  - 1. Critical Path Method schedule and reports.
  - 2. Material location and delivery reports.
  - 3. Field condition reports.
  - 4. Special reports.
  - 5. Change management.
  - 6. Time Impact Recognition and Time Impact Analysis.
  - 7. As-Planned vs. As-Updated

##### 1.03 SUBMITTALS

- A. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 01 33 00 Submittal Procedures does not apply to this Section 01 32 00.
- B. Submittals Package: Submit required reporting, Scheduling Software files, and quality control submittals as indicated within this or related sections.
- C. Schedule Submittals:
  - 1. Preliminary Project Schedule
  - 2. Baseline Project Schedule
  - 3. Schedule Basis documentation
  - 4. CMU 01 Agreement Form
  - 5. As-Built Project Schedule

##### 1.04 DEFINITIONS

- A. Project: Work to be performed as part of one or more Contracts.



- B. Project Team: Persons acting on behalf of the State or Contractors in an effort to successfully plan, schedule, and coordinate the Work of the Project.
- C. Schedule: A comprehensive leveling of necessary procedural tasks, the sequencing of those tasks, and the resource allocation required to successfully complete the Work by the Project completion date.
- D. Activity: An intricate part of the Work that can be identified and measured for planning, coordinating, monitoring, and controlling the project.
- E. Milestone: A significant start or finish to Work on the Project defined by both the Director's Representative and the Contractors.
- F. Bid Milestones: Milestones or phases identified and included in the Contract Documents to be utilized by the Contractors in developing the Baseline Project Schedule.
- G. CPM: Critical Path Method is a scheduling process used to plan and coordinate the Project, arranging activities based on logical relationships in order to create a network diagram of interconnected procedures.
- H. Preliminary Project Schedule: The initial CPM schedule submission capturing, at a minimum, the anticipated Work for the first 90 calendar-days after Project Award, and to be initiated by the Contractor's Schedule Preparer.
- I. Baseline Project Schedule: The as-planned CPM schedule for completion of the Work of the Project in accordance with the Contract duration, approved by the Director's Representative and Contractors.
1. Following the initial update to the Baseline Project Schedule, including but not limited to starts, finishes, activity percent complete, logic adjustments, or duration amendments, as agreed upon at the Project Schedule meeting by the Project team, the current updated schedule rendering will be defined as the Project Schedule.
  2. The Baseline Project Schedule will remain unaltered as a tool to measure progress outlined and anticipated.
- J. Project Schedule Update: The as-updated contemporary view of the Project Schedule, as understood by the Project team at the time of the schedule status, which comprehends the accurate reflection of Work started, progressed, and completed on the Project and the intended path of progress for Work going forward.
- K. Narrative Statement: A narrative description of the Project Schedule Update.
- L. PDM: Precedence Diagram Method utilizes standard CPM calculations creating an interdependent logical relationship between activities and a dependent path from Project Award through Substantial and Physical Completion.
- M. Float: The measure of latitude in starting and/or completing an activity without impeding on the successful realization of Project milestones.

1. Recognizing float within an activity, or chain of activities, does not permit the Contractors to disrupt progress or delay completion of an activity.
- N. Critical Path: A progressing sequence of interdependent activities within the schedule network containing zero (0d) total float and establishing the minimum Project Substantial and Physical Completion duration.
- O. Resource: Any labor, material, or equipment, shared or exclusive, required for the completion of an Activity or the Work, which recognizes an associated cost.
- P. ORDA Scheduling: A member of the ORDA Scheduling Department responsible for analyzing, reviewing, and interpreting schedule related information for the benefit of the Project team.

#### **1.05 CONTRACTOR'S SCHEDULE PREPARER**

- A. The Contractor shall engage the services of a professional scheduling consultant to act as the Contractor's Schedule Preparer responsible for the preparation and coordination of schedule related information for the Preliminary Project Schedule, the Baseline Project Schedule, and all required updates and reporting for the Project Schedule.
- B. The Contractor's Schedule Preparer is responsible for the timely development and submission of all specified schedule iterations, statements, and reports; responsibilities include at a minimum the following:
  1. Preliminary Project Schedule.
  2. Project Schedule updating and reporting.
  3. Submission of the As-Built final Project Schedule.

#### **1.06 DEVELOPMENT OF THE PROJECT SCHEDULE**

- A. The Director's Representative will schedule the Project Schedule Definition Meeting as outlined in Section 013119. The meeting will include members of the Project team and will be conducted by ORDA Scheduling for the purpose of reviewing the Contractor's initial Preliminary Project Schedules. The discussions and mutual agreements reached at this and subsequent meetings by the Project team will form the basis for the CPM Preliminary Project Schedule and the development of the Baseline Project Schedule, and will be used for coordinating, scheduling, and monitoring the Work of all related contracts
- B. The Contractor's Schedule Preparer is to complete the Preliminary Project Schedule after the Project Schedule Definition Meeting with input from the Contractor's team and after review of the Contract documents and drawings.
- C. The Contractors will sign the CMU 01 Agreement form (blank included at end of this Section) within five (5) calendar-days of receipt of the final Baseline Project Schedule. Failure to develop and submit the Baseline Project Schedule and sign the CMU 01 Agreement form will not absolve the Contractors of the scheduling requirements. The Contractors will be required to provide the necessary

resources, at no additional charge to the State, to complete the Project in the manner defined by the Director's Representative.

- D. Bid Milestones included in the Contract Documents are to be incorporated into the project schedule.
- E. During the period between Project Award and the execution of the CMU-01 Agreement by the Contractors and the Director's Representative, the Contractors will comply with the Preliminary Project Schedule and will be responsible for providing the necessary resources to complete the Work.

#### 1.07 UPDATING THE PROJECT SCHEDULE

- A. Bi-weekly Project Schedule meetings will be held as part of the standard Project Progress Meetings to review updates to the actual starts, actual finishes, and the percent complete of in-progress activities, and consider logic changes, sequencing alterations, duration amendments, time impact events, and scope changes, for the purpose of determining the status of construction progress on the updated Project Schedule.
  - 1. The Contractors and Director's Representative will review the updated progress at the Project Schedule meeting prior to acceptance of progress information and anticipated work as the Project Schedule Update.
    - i. Revisions and comments are to be incorporated within two (2) days of the Project Schedule update meeting, and required reports are to be presented for review.
  - 2. Any Contractor failing to progress their Work as outlined in the updated Project Schedule will be informed of their deficiencies and, if required, be requested to provide a recovery option.
    - i. The Schedule Preparer is responsible for incorporating any recovery options as needed by the Contractors for the duration of the Project.
- B. The Contractors will furnish all schedule information requested by the Director's Representative and as defined in the Schedule Management strategy outlined in the Schedule Basis. Any Contractor who fails to furnish accurate information prior to Project Schedule meeting will be required to provide all resources necessary to execute the updated Project Schedule based on progress information documented and recorded by the Director's Representative and submitted to the Schedule Preparer.
- C. During the period between scheduled updates, any time impact event due to, but not limited to, a field condition or scope change, is to be noted by the Contractors; the impact is to be represented by the Contractor's Schedule Preparer, at a minimum, with a milestone event, the time for resolution, and the impact to work.
- D. Project Schedule updates recognizing early completion will be reviewed by members of the Project team prior to acceptance of the Project Schedule update.

## **1.08 MAINTAINING SCHEDULE**

- A. Perform the Work in accordance with the Project Schedule and provide resources necessary to maintain the progress of activities as scheduled so that no delays are caused to other Contractors engaged in the Work.
  - 1. Should any Contractor fail to maintain progress according to the Project Schedule, or cause delay to another Contractor, that Contractor shall provide such additional manpower, equipment, additional shifts, or other measures, at their own cost, to bring their operations back on schedule.
  - 2. Performing activities as part of the Work out of sequence with the Project Schedule is not permitted unless written approval is obtained prior to commencement.

## **1.09 RECOVERY SCHEDULE**

- A. CPM Recovery Schedule: When periodic updates indicate the Work is five (5) or more calendar-days behind the approved Baseline Project Schedule's Substantial or Physical Completion dates, the Contractor will present recovery options to the Director's Representative to be incorporated into an updated Project Schedule by the Schedule Preparer; these include, but are not limited to, allocating additional resources for activity duration reduction, modifying network logic, or revising activity sequences.
- B. Any Contractor failing to furnish information to assist in developing recovery options to the Director's Representative, for a CPM Recovery Schedule, within 3 calendar-days subsequent to the bi-weekly Project Schedule update, will be required to provide all resources necessary to execute an updated Project Schedule defined by a the Director's Representative.
- C. Alterations to the Project Schedule by a CPM Recovery Schedule will require approval.
- D. Approved alterations to the Project Schedule by a CPM Recovery Schedule, will constitute the updated Project Schedule.
  - 1. The updated Project Schedule following the implemented CPM Recovery Schedule will be recognized as the primary baseline schedule for reporting. The Baseline Project Schedule will be retained as a secondary baseline schedule and will be utilized to measure progress against the alterations.
- E. A CPM Recovery Schedule recognizing early completion will be reviewed by prior to acceptance of the Project Schedule update.

## **PART 2 PRODUCTS**

### **2.01 SCHEDULING SOFTWARE**

- A. Scheduling Software: Schedule is to be prepared and managed utilizing Microsoft Project or Oracle Primavera P6® PPM or EPPM operating system.

## **2.02 PRELIMINARY PROJECT SCHEDULE**

- A. The Contractor's Schedule Preparer is to submit the Preliminary Project Schedule in the format discussed at Project Schedule Definition Meeting, and in conjunction with the requirements of this and related sections.

## **2.03 SCHEDULE UPDATE REPORTS**

- A. The Contractor's Schedule Preparer is to provide update reports in the format required as defined during the Project Schedule Definition Meeting.

## **2.05 NARRATIVE STATEMENT**

- A. The Schedule Preparer is to provide the Narrative Statement with the specified Schedule Update Reports and prior to each Project Schedule meeting.

## **2.06 AS-BUILT PROJECT SCHEDULE**

- A. The Contractor's Schedule Preparer will submit an As-Built Project Schedule recognizing the actualized progression of Work on the Project vs. the intended as-planned Baseline Project Schedule within five (5) days prior to Physical Completion.

# **PART 3 EXECUTION**

## **3.01 CPM SCHEDULE**

- A. The Contractor's Schedule Preparer and Contractors are to determine, with input from the Director's Representative, a breakdown of WBS Levels within the Project which adequately and appropriately organize and represent the Work and the intended structure of construction progress.
- B. The Contractor's Schedule Preparer and Contractors will determine and define activities applicable to the Work of each Contract and the scope of the Project. Activities are to be appropriately placed within WBS Levels and are to identify specific aspects of the Work according to Project and contract requirements.
- C. Within 5 calendar-days of Project Award, the Contractor's Schedule Preparer is to prepare and submit the Preliminary Project Schedule in compliance with this section to the Director's Representative for review and comment.
- D. The Baseline Project Schedule is to be developed by ORDA Scheduling from the Contractor's submitted Preliminary Project Schedules. The Contractors are to review and comment on the preliminary Baseline Project Schedule within 5 days

of receipt. The Contractors shall approve the preliminary Baseline Schedule and sign the CMU 01 Agreement Form within 30 calendar-days of Project Award. Failure to approve the Baseline Project Schedule and sign the CMU 01 Agreement Form will result in non-payment for Work progressing beyond the 90-day approved Preliminary Project Schedule.

### **3.02 ACTIVITIES**

- A. The Contractor's Schedule Preparer are to provide activities which accurately reflect the Work of the Project and which can be utilized for monitoring and anticipating progress. In establishing activities for the Work and their durations, the Contractors are to include, as a minimum, the following:
1. Mobilization.
  2. Fabrication.
  3. Material Delivery.
  4. Utility Interruptions.
  5. Coordination.
  6. Work Period Restrictions.
  7. Contractual Constraints.
  8. Installation.
  9. Inspection.
  10. Testing and Commissioning.
  11. Punchlist.
- B. Long-lead and critical submittals and contract procurement items are to be identified and defined by the Contractors, the Contractor's Schedule Preparer, and the Director's Representative, and will be established in the appropriate WBS Level for monitoring and sequencing by the Schedule Preparer.
- C. The Contractor's Schedule Preparer will identify each activity with a unique activity identification number.
- D. The Schedule Preparer will not allow activities to be open-ended having either no predecessor or successor, with the exception of the first and last activity in the Project Schedule network.
- E. Activities will be linked sequentially by the Contractor's Schedule Preparer with information provided by the Contractors according to the anticipated flow and progress of the Work on the Project and the Work of concurrent projects.
1. Activities, and the sequencing of activities, which do not accurately reflect the Work of the Project will not be accepted by the Director's Representative.
  2. Negative lag on an activity will not be accepted by the Director's Representative.

### **3.03 CALENDARS**

- A. The calendar utilized by the Schedule Preparer for each activity is to accurately reflect anticipated state and federal holidays, as well as work being performed

off-hours as defined in the Contract Documents, by the Director's Representative, or by specific approved Contractor means and methods.

### **3.06 BASELINES**

- A. The Contractor's Schedule Preparer will maintain a copy of the Baseline Project Schedule as the assigned project baseline schedule.

### **3.07 TIME IMPACT AND TIME IMPACT ANALYSIS**

- A. The Contractor's Schedule Preparer will represent Time Impact to the Project Schedule milestones utilizing, at a minimum, a milestone event, an activity for resolution, and related work associated with the impact to the as-updated Work of the Project.
  - 1. The Contractor's Schedule Preparer is to use the most current Project Schedule update to prepare the Time Impact representation.
  - 2. If Project Schedules have not been updated in accordance with this specification, an update must be generated which includes an accurate realization of the Work performed and progressed up to the Time Impact event. Failure to maintain Project Schedule updates in accordance with this or related specifications will not absolve the Schedule Preparer or Contractors of the responsibility to identify Time Impact as defined at a minimum by this article.
  - 3. A Request for Time Extension will require Time Impact recognition within the CPM schedule.
  - 4. Time Impact events will be reviewed for accuracy and are to be updated in accordance with relevant new information regarding time for resolution and impact to remaining work on the Project.

### **3.08 REQUESTS FOR TIME EXTENSIONS**

- A. The Contractors are to submit in writing to the Director's Representative a Request for Time Extension within ten (10) days of recognizing the need to amend the contractual Substantial or Physical Completion date.
  - 1. The Contractors and Schedule Preparer are to provide Project Schedule reports, generated from the current Project Schedule update, recognizing the inability to complete the contractual, Project, or Bid Milestones by the established completion dates and a copy of the schedule file used to generate the reports.
  - 2. Submitting a Request for Time Extension does not permit the Contractors to delay Work on the current Project Schedule update.
- B. The Contractors and Contractors Schedule Preparer are to develop and submit CPM schedule options, in accordance with applicable requirements of this section, showing a milestone event, the time for resolution, the related work associated with the resolution or alternate options, and the newly projected Project and Bid Milestone dates.



- C. Requests for Time Extensions will be responded to within 15 calendar-days of receipt and the Contractors will be notified in writing of the refusal or acceptance of the request.
- D. Reasons for which extensions will be rejected upon receipt include, but are not limited to, the Contractors' failure to provide appropriate resources to complete the Work, misinterpretations of contract requirements, improper planning, failure to coordinate with other Contractors or the Director's Representative, misappropriated distribution of approved costs, payments, or budget for Project Work, failure to comprehend project schedule requirements, failure to provide Project Schedule updates consistent with the requirements of this or related sections, material procurement or delivery delays not associated with Special Events (*force majeure*), or subcontractor and worker related issues such as contractual disputes or work-stoppage strikes.
- E. Approved Request for Time Extensions will require the creation of a revised Project Schedule prepared by the Schedule Preparer which will serve as the primary baseline schedule for updating. The Baseline Project Schedule will be retained as a secondary baseline and will be utilized to measure progress against the alterations.

**END OF SECTION**

**NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY  
CMU-01 AGREEMENT**

PROJECT NO. \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

REPORT DATE: \_\_\_\_\_

REPORT NAME(S): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

It is agreed that the Baseline Project Schedule defined by the above listed computer reports has been reviewed and is accepted for use in coordinating, scheduling, and monitoring the work of all related contracts.

FOR THE CONSTRUCTION WORK CONTRACTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

FOR THE HVAC WORK CONTRACTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

FOR THE PLUMBING WORK CONTRACTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

FOR THE ELECTRICAL WORK CONTRACTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

THE DIRECTOR'S REPRESENTATIVE: \_\_\_\_\_ DATE: \_\_\_\_\_

SECTION 01 33 00  
SUBMITTAL PROCEDURES

PART 1      GENERAL

1.01      RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Other requirements pertaining to submittals are included in the General Conditions and in the various sections of the Specifications.
- B. Section 01 10 01 Summary of Work – Single Prime Contract /  
Section 01 10 02 Summary of Work – Multiple Prime Contracts
- C. Section 01 30 00 Administrative Requirements
- D. Section 01 77 16 Contract Closeout Submittals

1.02      SECTION INCLUDES

- A. Submittal procedures.
- B. Proposed products list.
- C. Product data.
- D. Certificates.
- E. Manufacturer's instructions.

1.03      DEFINITIONS

- A. Deviation: Changes in products, materials, equipment and methods of construction from those required by the Contract Documents and proposed by the Contractor.
- B. Acceptable Manufacturer, Company or Product: A manufacturer, company or product capable of achieving the requirements established in the Contract Documents and demonstrating compliance.
- C. Portable Document Format (PDF): An open standard file format used for representing documents in a device-independent and display resolution-independent fixed layout document format.

1.04      DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS

- A. Deviations from the requirements of the Contract Documents will not be allowed unless a request for deviation is made in writing prior to or at the time of submission and the specific deviation is approved by the Director's Representative subject to the requirements of Article 4 of the General Conditions. The request for deviation shall be made utilizing the CONTRACT DOCUMENT DEVIATION REQUEST FORM.
  - 1. The submission of a deviation shall be done in a timely manner according to the schedule of submittals to allow the Director sufficient time for review.

1.05 “OR EQUAL” TO BRAND NAME PRODUCTS

- A. Whenever a product is specified by brand name, a comparable brand, equal to that named, may be submitted for approval subject to the requirements of General Conditions Article 5.
  - 1. The Contractor shall bear the burden of proving that the proposed product is equal to the specified product. The submission of an “or equal” shall be done in a timely manner to allow the Director sufficient time to review the proposed product.
  - 2. Whenever a color or pattern is indicated by a specific manufacturer’s name or number, the intent is to communicate the required color or pattern of the material. Other manufacturers’ comparable colors or patterns may be submitted for approval as equal.

1.06 WAIVER OF CERTAIN SUBMITTAL REQUIREMENTS

- A. Unless otherwise specified, the requirement to submit product data and samples for approval will be waived for products specified by brand name if the specifically named products are furnished for the Work. In such cases, submit required Product Data to the Director’s Representative for information only.

1.07 SUBMITTAL PROCEDURES

- A. Transmit each submittal with accepted form.
- B. Sequentially number the transmittal form.
- C. Identify Project, Contractor, subcontractor, and supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and deliver via E-Mail to project architect and CC project manager.
- F. For each submittal for review, allow (14) fourteen days.
- G. Identify variations from Contract Documents and product or system limitations, which may be detrimental to successful performance of the completed Work.
- H. Provide space for review stamps.
- I. When revised for resubmission, identify all changes made since previous submission. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- J. Submittals not requested will not be recognized or processed.

1.08 PROPOSED PRODUCTS LIST

- A. Within two (2) days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.09 PRODUCT DATA

- A. Product Data: Submit to Owner for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Owner, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing to Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

**END OF SECTION**

## SECTION 014110

### SPECIAL INSPECTIONS AND TESTING

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Related documents attached to this specification:
  - 1. Statement of Special Inspections.
  - 2. Schedule of Special Inspection Services.
  - 3. Final Report of Special Inspections.
  - 4. Certificates of Compliance.

##### 1.02 GENERAL REQUIREMENTS

- A. This specification section delineates Special Inspection and Testing Requirements for the following construction:
  - 1. Geotechnical.
  - 2. Structural.
- B. Special Inspections and Testing shall be in accordance with Chapter 17 of the 2018 International Building Code and as modified by the 2020 Building Code of New York State.
- C. This specification section is intended to inform the Contractor of the Owner's quality assurance program and the extent of the Contractor's responsibilities. This specification section is also intended to notify the Special Inspector, Testing Laboratory, and other Agents of the Special Inspector of their requirements and responsibilities.

##### 1.03 SCHEDULE OF INSPECTIONS AND TESTS

- A. Required inspections and tests are described in the attached *Schedule of Special Inspection Services* and in the individual specification Sections for the items to be inspected or tested.

##### 1.04 QUALIFICATIONS

- A. See Table herein for Special Inspection Qualifications. The Special Inspector and Testing Laboratory shall be approved by the Registered Design Professional in responsible charge (RDP) and the local Building Official.
- B. The testing laboratory shall either maintain or contract with a full time Professional Engineer licensed in the State of New York who shall certify all test reports. The Engineer shall be

responsible for the training of the testing technicians and shall be in responsible charge of all field and laboratory testing operations.

#### 1.05 SUBMITTALS

- A. The Special Inspector and Testing Laboratory shall submit to the RDP and Building Official for review a copy of their qualifications which shall include the names and qualifications of each of the individual inspectors and technicians who will be performing inspections or tests.
- B. The Special Inspector and Testing Laboratory shall disclose any past or present business relationship or potential conflict of interest with the Contractor or any of the Subcontractors whose work will be inspected or tested.

#### 1.06 PAYMENT

- A. The Owner shall engage and pay for the services of the Special Inspector and Testing Laboratory.
- B. If any materials which require Special Inspections are fabricated in a plant which is not located within 100 miles of the project, the Contractor shall be responsible for the travel expenses of the Special Inspector or Testing Laboratory.
- C. The Contractor shall be responsible for the cost of any retesting or re-inspection of work which fails to comply with the requirements of the Contract Documents.

#### 1.07 CONTRACTOR RESPONSIBILITIES

- A. The Contractor shall cooperate with the Special Inspector so that the Special Inspections and testing may be performed without hindrance.
- B. The Contractor shall review the *Statement of Special Inspections* and shall be responsible for coordinating and scheduling inspections and tests. The Contractor shall notify the Special Inspector or Testing Laboratory at least 24 hours in advance of a required inspection or test. Uninspected work that required inspection may be rejected solely on that basis.
- C. The Contractor shall provide incidental labor and facilities to provide access to the work to be inspected or tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.
- D. The Contractor shall keep at the project site the latest set of construction drawings, field sketches, approved shop drawings, and specifications for use by the inspectors and testing technicians.
- E. The Special Inspection program shall in no way relieve the Contractor of his obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program. All work that is to be subjected to Special Inspections shall first be reviewed by the Contractor's quality control personnel.
- F. The Contractor shall be solely responsible for construction site safety.



### 1.08 LIMITS OF AUTHORITY

- A. The Special Inspector or Testing Laboratory may not release, revoke, alter, or enlarge on the requirements of the Contract Documents.
- B. The Special Inspector or Testing Laboratory will not have control nor responsibility over the Contractor's means and methods of construction.
- C. The Special Inspector or Testing Laboratory has no authority to stop the work.

### 1.09 STATEMENT OF SPECIAL INSPECTIONS

- A. The *Statement of Special Inspections* will be prepared by the Registered Design Professional in responsible charge (RDP).
- B. The Statement of Special Inspections shall be submitted with the application for Building Permit.

### 1.10 RECORDS AND REPORTS

- A. Detailed daily reports shall be prepared of each inspection or test submitted to the Special Inspector. Reports shall include:
  - 1. Date of test or inspection
  - 2. Name of inspector or technician
  - 3. Location of specific areas tested or inspected
  - 4. Description of test or inspection and results
  - 5. Applicable ASTM standard
  - 6. Weather conditions
  - 7. Construction documents referenced for inspections and tests.
- B. The Special Inspector shall submit reports to the RDP and Building Official daily. Hand written reports may be submitted if final typed copies are not available.
- C. Any discrepancies from the Contract Documents found during a Special Inspection shall be immediately reported to the Contractor. If the discrepancies are not corrected, the Special Inspector shall notify the RDP and Building Official. Reports shall document all discrepancies identified and the corrective action taken.
- D. The Testing Laboratory shall immediately notify the Special Inspector, RDP, and Building Official by telephone or fax of any test results which fail to comply with the requirements of the Contract Documents.
- E. At the completion of the work requiring Special Inspections, each Special Inspector and Testing Laboratory shall provide a statement to the RDP and Building Official that all work was completed in substantial conformance with the Contract Documents and that all appropriate inspections and tests were performed.

#### 1.11 FINAL REPORT OF SPECIAL INSPECTIONS

- A. The *Final Report of Special Inspections* shall be completed by the Special Inspector and submitted to the RDP and Building Official prior to the issuance of a Certificate of Use and Occupancy.
- B. The *Final Report of Special Inspections* will certify that all required inspections have been performed and will itemize any discrepancies that were not corrected or resolved.

**TABLE 1 - SPECIAL INSPECTOR QUALIFICATIONS**

<b>Special Inspection Category</b>	<b>Experience</b>	<b>Certification(s)</b>
Concrete Construction (Prestressed/Precast)	Path 1	ICC Pre-stressed SI and ICC Reinforced Concrete SI
Reinforced Concrete	Path 1	ICC Reinforced Concrete SI or ACI Concrete Construction SI
Nondestructive testing (NDT)	120 hours for Level II	ANSI/ASNT-CP-189 NDT or SNT-TC-1a NDT
Pier and Pile Foundations	Path1, Path 2	NICET II (geotechnical or construction or construction material testing or soils)
Post-Installed Structural Anchors in Concrete	Path 1	ICC Reinforced Concrete SI or ACI Concrete Construction SI
Soils	Path 1, Path 2	ICC Soils SI (ICC-EC) or NICET II (geotechnical or construction or construction material testing or soils)
Spray-applied Fire-resistant Materials / Intumescent Fire-resistant Coatings / Mastic Fire-resistant Coatings	Path 1	ICC Spray-Applied Fireproofing SI or ICC Fire Inspector I
Steel (High-strength Bolting)	Path 1	ICC Structural Steel and Bolting SI
Steel (Welding)	5 Years Minimum or per AWS	AWS Certified Welding Inspector or ICC Structural Steel and Welding SI
Masonry Construction	Path 1	ACI Masonry Field Testing Technician and ICC Structural Masonry SI
Wood Construction	Path1, Path 2	ICC Commercial Building Inspector
Exterior Insulation and Finish Systems (EIFS)	Path 1	AWCI EIFS Inspector
Firestop Systems	Path 1	UL Firestop Examination or FM Firestop Examination
Wall Panels, Curtain Walls and Veneers	Path 1, Path 2	ICC Commercial Building Inspector
Smoke Control Systems	Path 1, Path 2	AABC Technician Certification
Mechanical Systems	Path 1	ICC Commercial Mechanical Inspector
Fuel-oil Storage and Piping Systems	Path 1	ICC Commercial Mechanical Inspector or API Aboveground Storage Tank Inspector
Structural Cold-formed Steel	Path 1, Path 2	ICC Commercial Building Inspector
Excavation-Sheeting, Shoring and Bracing	Path 1, Path 2	NICET II (geotechnical or construction or construction material testing or soils)
High-Pressure Steam Piping (Welding)	5 Years Minimum or per AWS	AWS Certified Welding Inspector or ICC Structural Steel and Welding SI
Structural Safety-Stability and mechanical Demolition	Path 1	RDP, PE, BS Engineering/Architecture or Valid Site Safety Manager Certification
Site Storm Drainage Disposal and Detention	Path 1, Path 2	ICC Soils SI or NICET II (geotechnical or construction or construction material testing or soils)
Sprinkler Systems	Path 1, Path 2	ICC Commercial Building Inspector
Standpipe Systems	Path 1, Path 2	ICC Commercial Building Inspector
Heating Systems	Path 1, Path 2	ICC Commercial Mechanical Inspector
Chimneys	Path 1, Path 2	ICC Commercial Mechanical Inspector
Seismic Isolation Systems	Path 1, Path 2	RDP, PE, BS Engineering/Architecture
Special Cases	Path 1, Path 2	ICC Commercial Building Inspector

## 1.12 EXPERIENCE REQUIREMENTS

- A. Path 1: Applicants shall comply with one of the following education and experience requirements:

1. Professional Engineer (PE), licensed Architects or Registered Design Professional (RDP) and a minimum of 3 months of relevant work experience.
  2. Bachelor of Science Degree (BS) in Engineering, Architecture or Physical Science and a minimum of 6 months of relevant work experience.
  3. Two years of verified college or technical school (copy of diploma or transcript required) and a minimum of 1 year of relevant work experience.
  4. High school or equivalent graduate (copy of diploma or certificate required) and a minimum of 2 years of verified relevant work experience.
  5. A minimum of 3 years of verified relevant work experience.
- B. Path 2: RDPs, PEs or licensed Architects are exempt from Recommended Certification(s) listed in Table 1 above, but are subject to on-site assessment of competence by the International Accreditation Service (IAS).
- C. Reference Abbreviations and Recognized Certifying or Accreditation Agencies:
- |     |          |   |
|-----|----------|---|
| 1.  | AA       | Associate of Arts   |
| 2.  | AABC     | Associated Air Balance Council                                    |
| 3.  | ACI      | American Concrete Institute                                       |
| 4.  | ACIA     | American Construction Inspectors Association                      |
| 5.  | ASTM     | American Society for Testing and Materials                        |
| 6.  | ASNT     | American Society for Nondestructive Testing                       |
| 7.  | AWCI     | Association of the Wall and Ceiling Industry                      |
| 8.  | AWS/CAWI | American Welding Society/Certified Associate Welding Inspector    |
| 9.  | AWS/CWI  | American Welding Society  |
| 10. | BS       | Bachelor of Science   |
| 11. | ICC      | International Code Council  |
| 12. | NICET    | National Institute for Certification of Engineering Technologists |
| 13. | NRCA     | National Roofing Contractors Association.                         |
| 14. | IAS      | International Accreditation Service                               |
| 15. | SI       | Special Inspector   |
| 16. | UL       | Underwriters Laboratories, Inc.                                   |

**PART 2 - (NOT USED)**

**PART 3 - (NOT USED)**

**END OF SECTION 014110**

## Statement of Special Inspections

Project: Belleayre Administrative Building, Remote Restroom, Gondola and Storage Building  
Location: Highmount, NY  
Owner: NYS Olympic Regional Development Authority

### Design Professional in Responsible Charge

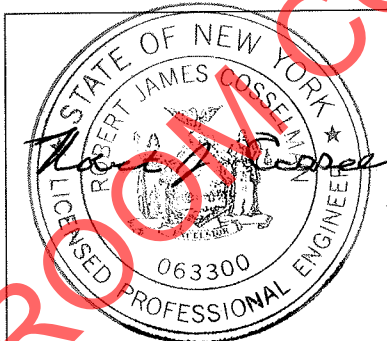
Structural: QPK Design, LLP  
Architectural: QPK Design, LLP  
M/E/P: FS Engineering, DPC  
Geotechnical: QPK Design, LLP

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspectors and the identity of other approved agencies to be retained for conducting these inspections and tests. This *Statement of Special Inspections* encompass the following disciplines:

- ☒ Structural ☐ Mechanical/Electrical/Plumbing (MEP)  
☐ Architectural ☒ Geotechnical

The Special Inspector shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

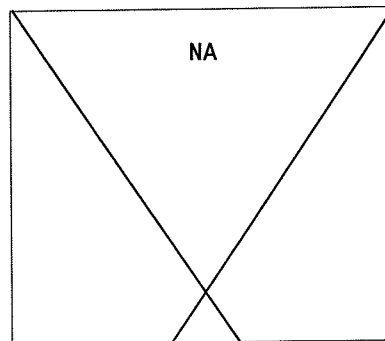


(RDP Structural)

Robert Cosselman  
Printed or Typed Name

*Robert J. Cosselman*  
Signature

February 14, 2022  
Date

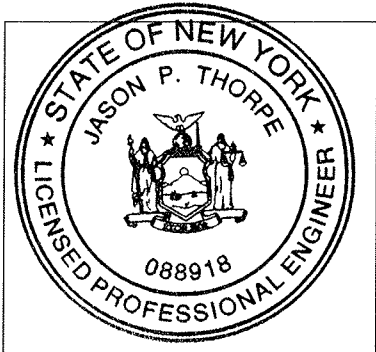


(RDP Architectural)

Printed or Typed Name

Signature

Date



(RDP Geotechnical)

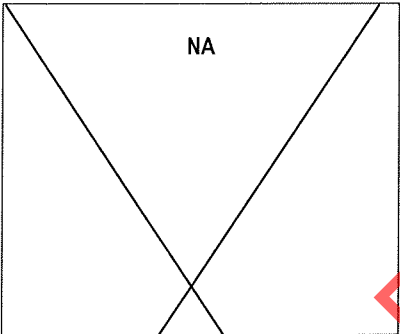
Jason Thorpe

Printed or Typed Name

Signature

February 14, 2022

Date



(RDP M/EXP)

Printed or Typed Name

Signature

Date

PLANROOM COPY NOT FOR BIDDING

## Schedule of Special Inspections

This Schedule of Special Inspections includes the following building systems:

- |   |   |
|---|---|
| <input type="checkbox"/> Special Cases                    | <input type="checkbox"/> Mechanical & Electrical Components           |
| <input checked="" type="checkbox"/> Steel Construction    | <input type="checkbox"/> Storage Racks                                |
| <input type="checkbox"/> Cold-Formed Steel Framing        | <input type="checkbox"/> Spray Fire-Resistant Materials               |
| <input checked="" type="checkbox"/> Concrete Construction | <input type="checkbox"/> Mastic & Intumescent Fire-Resistant Coatings |
| <input type="checkbox"/> Masonry Construction             | <input type="checkbox"/> Exterior Insulation & Finish Systems         |
| <input type="checkbox"/> Wood Construction                | <input type="checkbox"/> Fire-Resistant Penetrations and Joints       |
| <input checked="" type="checkbox"/> Soils and Foundations | <input type="checkbox"/> Smoke Control Systems                        |
| <input type="checkbox"/> Architectural Components         | <input type="checkbox"/> Other  |

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Special Inspector (Structural)	<i>To be determined.</i>	
2. Special Inspector (Architectural)	<i>N/A</i>	
3. Special Inspector (MEP)	<i>N/A</i>	
4. Special Inspector (Geotechnical)	<i>To be determined.</i>	
5. Testing Agency	<i>To be determined.</i>	
6. Testing Agency	<i>To be determined.</i>	



SCHEDULE OF SPECIAL INSPECTION SERVICES				
Per IBC Section 1704 of the 2018 International Building Code the following items require Special Inspections. Additional Special Inspection items may have been added by the Registered Design Professional.				
PROJECT: BELLEAYRE ADMINISTRATIVE BUILDING, REMOTE RESTROOM, GONDOLA AND STORAGE BUILDING			OWNER: NYS OLYMPIC REGIONAL DEVELOPMENT AUTHORITY	
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	NOTES

<b>1704.2.5 Inspection of Fabricators</b>				
Verify fabrication/quality control procedures	In-plant review (1)	Y	Periodic	
<b>1705.2 Steel Construction</b>				
1. Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review	Y	Each submittal	
2. Material verification of structural steel	Shop (1) and field inspection	Y	Periodic	
3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Field inspection	Y	Continuous	
4. Verify member locations, braces, stiffeners, and application of joint details at each connection comply with construction documents	Field inspection	Y	Periodic	
5. Structural steel welding:				
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (1) and field inspection	Y	Observe or Perform as noted (2)	
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-2)	Shop (1) and field inspection	Y	Observe (2)	
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-3)	Shop (1) and field inspection	Y	Observe or Perform as noted (2)	
6. Structural steel bolting:	Shop (1) and field inspection			
a. Inspection tasks Prior to Bolting (Observe, or perform tasks for each bolted connection, in accordance with QA tasks listed in AISC 360, Table N5.6-1)		Y	Observe or Perform as noted (2)	
b. Inspection tasks During Bolting (Observe the QA tasks listed in AISC 360, Table N5.6-2)		Y	Observe (4)	
1) Snug-tight joints		Y	Periodic	
c. Inspection tasks After Bolting (Perform tasks for each bolted connection in accordance with QA tasks listed in AISC 360, Table N5.6-3)		Y	Perform (2)	
<b>1705.3 Concrete Construction</b>				
1. Inspection of reinforcing steel installation (see 1705.2.2 for welding)	Shop (1) and field inspection	Y	Periodic.	
2. Inspection of anchors cast in concrete where allowable loads have been increased per section 1908.5 or where strength design is used	Shop (1) and field inspection	N	Continuous	

SCHEDULE OF SPECIAL INSPECTION SERVICES				
Per IBC Section 1704 of the 2018 International Building Code the following items require Special Inspections. Additional Special Inspection items may have been added by the Registered Design Professional.				
PROJECT: BELLEAYRE ADMINISTRATIVE BUILDING, REMOTE RESTROOM, GONDOLA AND STORAGE BUILDING			OWNER: NYS OLYMPIC REGIONAL DEVELOPMENT AUTHORITY	
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	NOTES

3. Inspection of anchors and reinforcing steel post-installed in hardened concrete: Per research reports including verification of anchor type, anchor dimensions, hole dimensions, hole cleaning procedures, anchor spacing, edge distances, concrete minimum thickness, anchor embedment and tightening torque	Field inspection	Y	Periodic or as required by the research report issued by an approved source	
4. Verify use of approved design mix	Shop (1) and field inspection	Y	Periodic	
5. Fresh concrete sampling, perform slump and air content tests and determine temperature of concrete	Shop (1) and field inspection	Y	Continuous	
6. Inspection of concrete and shotcrete placement for proper application techniques	Shop (1) and field inspection	Y	Continuous	
7. Inspection for maintenance of specified curing temperature and techniques	Shop (1) and field inspection	Y	Periodic	
8. Verification of in-situ concrete strength, prior to stressing of tendons in post tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Review field testing and laboratory reports	N	Periodic	
9. Inspection of formwork for shape, lines, location and dimensions	Field inspection	Y	Periodic	
10. Concrete strength testing and verification of compliance with construction documents	Field testing and review of laboratory reports	Y	Periodic	
<b>1705.6 Soils</b>				
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field inspection	Y	Periodic	
2. Verify excavations are extended to proper depth and have reached proper material.	Field inspection	Y	Periodic	
3. Perform classification and testing of controlled fill materials.	Field inspection	Y	Periodic	
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of controlled fill	Field inspection	Y	Continuous	
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly	Field inspection	Y	Periodic	

**Notes:**

1. Special Inspections as required by Section 1704.2.5 are not required where the fabricator is approved in accordance with IBC Section 1704.2.5.1
2. Observe on a random basis, operations need not be delayed pending these inspections. Perform these tasks for each welded joint, bolted connection, or steel element.
3. NDT of welds completed in an approved fabricator's shop may be performed by that fabricator when approved by the AHJ. Refer to AISC 360 N7.

## Final Report of Special Inspections - Structural

Project: Belleayre Administrative Building, Remote Restroom, Gondola and Storage Building

Location: Highmount, NY

Owner: NYS Olympic Regional Development Authority

Structural Engineer of Record: QPK Design, LLP

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the Statement of Special Inspections submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

*(Attach continuation sheets if required to complete the description of discrepancies)*

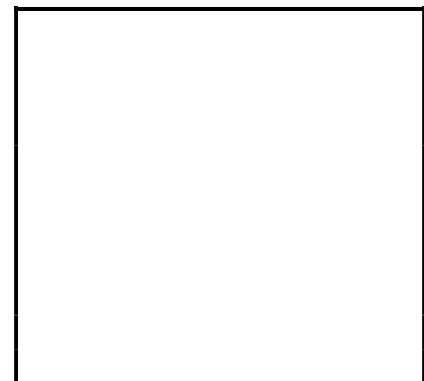
Interim reports submitted prior to this Final Report form a basis for and are an integral part of this Final Report.

Respectfully submitted,  
Special Inspector

Robert Cosselman  
(Type or print name)

(Signature)

(Date)



Licensed Professional

Seal

## Final Report of Special Inspections - Geotechnical

Project: Belleayre Administrative Building, Remote Restroom, Gondola and Storage Building

Location: Highmount, NY

Owner: NYS Olympic Regional Development Authority

Geotechnical Engineer of Record: QPK Design, LLP

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the Statement of Special Inspections submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

*(Attach continuation sheets if required to complete the description of discrepancies)*

Interim reports submitted prior to this Final Report form a basis for and are an integral part of this Final Report.

Respectfully submitted,  
Special Inspector

\_\_\_\_\_  
(Type or print name)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)



Licensed Professional Seal

## Certificate of Compliance

### Fabrication of Structural Load-Bearing or Lateral Load-resisting Members

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per Section 1704.2 of the International Building Code must submit a Certificate of Compliance at the completion of fabrication.

Project: \_\_\_\_\_

Fabricator's Name: \_\_\_\_\_

Certification or Approval Agency: \_\_\_\_\_

Certification Number: \_\_\_\_\_

Date of Last Audit or Approval: \_\_\_\_\_

Description of structural members and assemblies that have been fabricated:

I hereby certify that items described above were fabricated in strict accordance with the approved Construction Documents.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Attach copies of fabricator's certification or building code evaluation service report and fabricator's quality control manual.

## SECTION 01 50 00

### CHANGE ORDERS and FIELD ORDERS

#### PART 1 GENERAL

##### 1.1. SECTION INCLUDES

###### 1.1.1. Change Order and Field Order Procedures

##### 1.2 Procedure for preparation of Change Orders and Field Orders

- 1.2.1 In accordance with Article 10 of the General Conditions the Owner may authorize changes in the work.
- 1.2.2 A Work Change Directive will be issued to the Contractor using Work Change Directive form (Section 01 50 03), which will provide the Contractor with direction as it relates to a change in the work or a proposed change in the work.
- 1.2.3 Contractor shall follow directions as indicated on the form and provide pricing accordingly for Owner approval and future incorporation into a Change Order and/or a Field Order.
- 1.2.4 Contractor shall respond to all Work Change Directives promptly.
- 1.2.5 A Field Order will be used to allocate the costs of extra/additional work to the Contract Allowances.
- 1.2.6 A Change Order will be used when the Contract Allowances have been exhausted such that the Contract Amount needs to be increased to cover the costs of extra/additional work.
- 1.2.7 A Change Order will also be used at the end of the Contract to adjust the Contract Amount to account for the value of unused Contract Allowances.

END OF SECTION

## **CHANGE ORDER**

**Change Order Number:**

**Date of Issuance:**

**PIN:** XXX.XX.XXX

**Project Name:**

**CIN:** XXX.XX.XXX.XXX

**Contract Name:**

**Owner:** New York State Olympic Regional Development Authority (ORDA)

**Contractor:**

### **The Contract is changed as follows:**

(Summaries on next page with full backup documentation for work description and pricing attached.)

WCD 102 – Additional Stonework	\$616,148.00
Amount of Field Order Allowance Allocated to Change Order	\$150,000.00
Change Order Amount	\$466,148.00

### **Contract Amount**

	<b>Amount</b>
Original Contract Amount	\$1,314,200.00
Net Change by Previously Authorized Change Orders	\$0.00
Contract Amount prior to this Change	\$1,314,200.00
The Contract will be Changed by this Amount	\$466,148.00
New Contract Amount Including this Change Order	\$1,780,348.00

### **Field Order Allowance**

	<b>Amount</b>
Original Field Order Allowance	\$150,000.00
Changes by Previously Authorized Change Orders	\$0.00
New Field Order Allowance	\$150,000.00
Amount of Field Order Allowance Allocated by Previously Authorized Contract Field Orders	\$0.00
Remaining Field Order Allowance	\$150,000.00
Amount of Field Order Allowance Allocated to this Change Order	\$150,000.00
Available Field Order Allowance	\$0.00

### **Contract Times**

	<b>Date</b>
Previous Date of Substantial Completion	10 September 2022
Change in Substantial Completion Date for this Change Order	14 days
New Substantial Completion Date	24 September 2022
Previous Date of Final Completion	01 October 2022
Change in Final Completion Date for this Change Order	14 days
New Final Completion Date	15 October 2022

By the acceptance of this Change Order, the Contractor acknowledges that the compensation specified herein for the work covered herein (CO Work) includes payment in full for (i) the CO Work and (ii) all damage and/or expense for delays or inefficiencies to the Work to be done under the Contract resulting from or on account of the CO Work, and the Contractor waives all rights to any other or further compensation or change in the Contract Times therefor.

Neither this Change Order nor any extension of the time for performance granted hereunder constitutes and admission by ORDA that it is responsible for any delays or hinderances to the Work under the Contract. No claims for increased costs, changes, expenses or damages or any kind shall be made by the Contractor against ORDA for any delays or hindrances from any cause whatsoever, including, but not limited to, any delays or hindrances contemplated by this Change Order. ORDA reserves its rights to rely on and enforce



the terms of the Contract and New York law in connection with this Change Order, and further reserves its right to independently assess and allocate responsibility for delay to the Contract in accordance with the Contract Documents.

Recommended by: \_\_\_\_\_ Date: \_\_\_\_\_  
*Name of Engineer*

Endorsed by: \_\_\_\_\_ Date: \_\_\_\_\_  
*Robert W. Hammond*  
*ORDA Director of Environmental, Planning & Construction*

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
*Michael Pratt, ORDA President/CEO*

Accepted by Contractor: *Insert name of Contractor*

\_\_\_\_\_  
*Signature* *Name and Title* Date: \_\_\_\_\_

#### **Work Change Directive Descriptions**

WCD 102 – Additional Stonework

Amount: \$616,148.00

The southwestern facing walls at both the castle and the roundhouse are in substantially worse condition than previously believed. The wall's condition also makes it unsafe to be under and to perform work on. Thus, it was recommended to remove the failed outer wythe in its entirety from the top down including the cap stones rather than trying to differ these additional areas to another year.

END OF DOCUMENT

## **FIELD ORDER**

**Field Order Number:**

**Date of Issuance:**

**PIN:** XXX.XX.XXX

**Project Name:**

**CIN:** XXX.XX.XXX.XXX

**Contract Name:**

**Owner:** New York State Olympic Regional Development Authority (ORDA)

**Contractor:**

### **The Contract is changed as follows:**

(Summaries on next page with full backup documentation for work description and pricing attached.)

WCD 102 – Additional Stonework

\$616,148.00

### **Contract Amount**

	<b>Amount</b>
Original Contract Amount	\$1,314,200.00
Net Change by Authorized Change Orders	\$466,148.00
Revised Contract Amount	\$1,780,348.00

### **Field Order Allowance**

	<b>Amount</b>
Original Field Order Allowance	\$150,000.00
Changes by Authorized Change Orders	\$466,148.00
Revised Field Order Allowance	\$616,148.00
Amount of Work Change Directives Allocated to Field Order Allowance	\$616,148.00
Available Field Order Allowance	\$0.00

### **Contract Times**

	<b>Date</b>
Previous Date of Substantial Completion	10 September 2022
Change in Substantial Completion Date for this Field Order	14 days
New Substantial Completion Date	24 September 2022
Previous Date of Final Completion	01 October 2022
Change in Final Completion Date for this Field Order	14 days
New Final Completion Date	15 October 2022

By the acceptance of this Field Order, the Contractor acknowledges that the compensation specified herein for the work covered herein (FO Work) includes payment in full for (i) the FO Work and (ii) all damage and/or expense for delays or inefficiencies to the Work to be done under the Contract resulting from or on account of the FO Work, and the Contractor waives all rights to any other or further compensation or change in the Contract Times therefor.

Neither this Field Order nor any extension of the time for performance granted hereunder constitutes and admission by ORDA that it is responsible for any delays or hinderances to the Work under the Contract. No claims for increased costs, changes, expenses or damages or any kind shall be made by the Contractor against ORDA for any delays or hindrances from any cause whatsoever, including, but not limited to, any delays or hindrances contemplated by this Field Order. ORDA reserves its rights to rely on and enforce the terms of the Contract and New York law in connection with this Field Order, and further reserves its right to independently assess and allocate responsibility for delay to the Contract in accordance with the Contract Documents.

Recommended by: \_\_\_\_\_ Date: \_\_\_\_\_  
Name of Engineer

Endorsed by: \_\_\_\_\_ Date: \_\_\_\_\_  
Robert W. Hammond  
ORDA Director of Environmental, Planning & Construction

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
Michael Pratt, ORDA President/CEO

Accepted by Contractor: Insert name of Contractor

\_\_\_\_\_  
Signature Name and Title Date: \_\_\_\_\_

**Work Change Directive Descriptions**

WCD 102 – Additional Stonework

Amount: \$616,148.00

The southwestern facing walls at both the castle and the roundhouse are in substantially worse condition than previously believed. The wall's condition also makes it unsafe to be under and to perform work on. Thus, it was recommended to remove the failed outer wythe in its entirety from the top down including the cap stones rather than trying to differ these additional areas to another year.

End of Document

## WORK CHANGE DIRECTIVE

PIN:

Project Name:

CIN:

Contract Name:

Contractor Name:

Date:

Change Directive Number: WCD-XXX-

Basis of Work Change Directive:

Basis for Computation of Cost: Agreed Price: ☐ Actual Costs: ☐ Unit Prices: ☐ Other: ☐

Cost to be Paid from Allowance: Yes: ☐ No: ☐

Number of sheets attached: 1 attachment, 1 page

Description: Scope of work narrative

Contractor is directed to submit a detailed cost proposal and time impact analysis in accordance with General Conditions Article 10 and Section 25.13, and Contract Section 01 20 00 Cost Computations.

Recommended by: [Click here to enter text.](#) Company: CM Name

Date:

Signature:

Requested by:

Company: ORDA

Date:

Signature:

### Directive to Proceed

Pending submission of a detailed cost proposal and time impact analysis, Contractor is directed to proceed with work immediately and to maintain complete cost records in accordance with Contract Section 01 20 00 Cost Computations. Once costs are submitted by the Contractor and accepted by Owner, a Field Order or Change Order will be issued.

Not to Exceed Amount:

Authorized by: Robert W. Hammond, Director OEPC Company: ORDA

Date:

Signature:

## SECTION 01 51 21

### CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

#### PART 1 GENERAL

##### 1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02 82 13 Disposal of Asbestos-Containing Materials

##### 1.02 PROJECT CONDITIONS

- A. Provide construction facilities and temporary controls necessary for the Work.

##### 1.03 TEMPORARY LIGHT AND POWER

- A. Electric energy will be made available without charge, at source or sources directed, for lighting and for power tools. Power supply for motors rated in excess of 1/2 hp will be made available within the limits of the existing circuitry and usage.
- B. Provide temporary lighting as required to maintain a minimum of 10 foot candles in the work areas.
- C. Provide ground-fault protection for personnel (such as portable plug-in type ground-fault circuit-interrupters) on single phase 15 and 20 ampere receptacle outlets which are in use.
- D. Receptacle outlets and portable cord connectors shall have standard NEMA configuration.
- E. Provide temporary wiring and equipment in conformance with the National Electrical Code.

##### 1.04 TEMPORARY WATER

- A. Water will be made available for the Work without charge at source or sources directed within the limits of the existing supply and usage.
- B. Prevent waste of water.

##### 1.05 TEMPORARY TOILETS

- A. Provide temporary toilet facilities for Contractor's and subcontractors employees engaged on the project. Locate toilets where directed and maintain them in a sanitary condition.

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES*
20 or less	1 toilet

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES*
20 or more	1 toilet and 1 urinal per 40 employees
200 or more	1 toilet and 1 urinal per 50 employees

\*Toilet/Urinal combinations shall count as only one facility.

1. Where water and sewer connections are available, provide water closets, otherwise provide approved chemical or electric toilets.
2. Inside buildings, locate toilet facilities no more than 4 stories or 60 feet above or below, nor more than 500 feet travel on the same level from the work location of any person.
3. Locate toilet facilities no more than 1000 feet from any work location.
  - a. Exception: Mobile crews having readily available transportation to nearby toilet facilities.

#### 1.06 BARRIERS AND ENCLOSURES

- A. Provide barriers during performance of the Work to:
  1. Prevent unauthorized entry to work areas.
  2. Allow for State's occupancy of Site.
  3. Protect existing facilities and adjacent properties from damage.
  4. Protect vehicular and pedestrian traffic.

#### 1.07 TEMPORARY FENCE ENCLOSURE

- A. Provide temporary fence not less than 8 feet in height above grade.
- B. Fabric: #9 gage galvanized steel, or equal gage aluminum, woven together into 2 inch diamond mesh, with both top and bottom edges having a twisted and barbed finish.
- C. Posts, Rails, and Connections: Standard galvanized steel products of an approved manufacturer, of the size and types as required and approved. Provide top and bottom rails between all posts secured with bolted connections.
- D. Gates: Provide access gates for passage of employees and materials, complete with padlock. Fabricate gates with galvanized steel pipe perimeter covered with same fabric specified for fence. Furnish the Director's Representative with 2 keys per gate.
- E. Erection: Set posts 4 feet into the ground and not more than 10 feet apart. Install bottom rail not more than 2 inches above existing grade. Pull fabric taut and wire tightly to posts and rails at not more than 2 feet on center.

#### 1.08 PROTECTION OF WORK AND EXISTING PROPERTY

- A. Protect installed Work and existing construction and finishes during performance of the Work.
- B. Maintain the building in a watertight condition during performance of the Work.

- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at wall projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, and movement of heavy objects by covering them with durable sheet materials.
- F. Protect smoke detectors from airborne dust and debris.
  - 1. At the beginning of each work day, provide protective coverings over smoke detectors in areas where airborne dust and debris will be generated by the Work.
  - 2. At the end of the work day, clean the areas in which the smoke detectors are located by whatever means necessary to assure that airborne dust and debris will not contaminate the smoke detectors, then remove protective coverings.
  - 3. Provide signs, instructions and alternate methods for reporting a fire during the periods that the smoke detectors are covered.
  - 4. Notify the Director's Representative and have procedures approved.
- G. Prohibit traffic or storage upon waterproofed and roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- H. Protect existing trees and plants during performance of the Work unless otherwise indicated. Box trees and plants within the grading limit lines. Do not deposit excavated materials or store building materials around trees or plants. Do not attach guy wires to trees.
- I. Prohibit traffic from landscaped areas.
- J. Cleaning tools of cementitious and other insoluble materials:
  - 1. Do not wash tools in sinks or other sanitary drainage systems. Protect all drainage systems from debris that can clog or damage piping and fixtures.
  - 2. Take all precautions necessary to prevent cementitious and other insoluble materials from flowing into floor drains.
  - 3. Dispose of excess cementitious and other insoluble debris with the other rubbish.

## 1.09 SECURITY

- A. Key Deposits: A \$25 deposit will be required for each key issued by the Venue. Deposits will be refunded upon return of the keys.
- B. Venue Key Regulations:
  - 1. Sign Venue keys out and in on a daily basis unless otherwise directed.
  - 2. Keep keys on person at all times while on the premises. Do not loan or give keys to other persons.
  - 3. Do not remove keys from the premises without written permission from the Director's Representative.
  - 4. Report lost, missing, or stolen keys immediately to the Venue Safety/Security Department. Assume responsibility for cost of necessary key and lock replacement as a result of lost, missing, or stolen keys.



- C. Promptly relock doors and security screens located in access routes, storage areas, and work areas after use.
- D. Restore, by the end of each work day, existing in place safety/security items such as doors, screens, alarm systems components, that required removal, replacement, or adjustment to perform the Work, unless otherwise authorized in writing by the Director's Representative.
- E. Remove all tools and materials from patient occupied work areas when the work areas are not attended by employees and at the end of each work day. Store tools in a locked tool box, cabinet, or shed. Store materials where directed in a location secure from access by patients and clients.

#### **1.10 WATER CONTROLS**

- A. Provide and maintain pumping equipment necessary to keep the work areas free from water. Discharge water into existing storm drainage systems or otherwise disperse as directed.

#### **1.11 FIRE PREVENTION**

- A. Take precautions necessary to prevent fires.
- B. Fuel for cutting and heating torches shall be gas only, and shall be contained in Underwriters Laboratory approved containers.
- C. Furnish and maintain a currently inspected 20 pound capacity multi-class A B C fire extinguisher in the immediate vicinity where welding tools or torches are in use.
- D. Furnish and maintain a currently inspected fire extinguisher of the appropriate class and size whenever the temporary storage of materials changes that areas classification of fire load or life safety.
- E. Do not use flammable liquids, other than those specified, within a building without written approval from the Director's Representative.
- F. Tarpaulins shall be flameproof and shall be securely anchored when attached to scaffolding or when used to enclose any portion of a building.
- G. If required by the nature of the work and facility regulations, the Contractor shall obtain from the facility and pay all costs associated with "Hot Work Permits" including fire watches to execute the work of its contract. Perform hot work in accordance with the Fire Code of New York State and the Hot Work Program approved for the work. Prior to, during and after performing hot work, inspect the hot work area for compliance with the requirements of the permitted Hot Work Program.
  - 1. Post signage "Caution: Hot Work In Progress - Stay Clear" in conspicuous locations warning others before they enter a hot work area where the area is accessible to persons other than the operator of the hot work equipment.
  - 2. See applicable facility permits and conditions bound in the Appendix.

### **1.12 TEMPORARY FIRE PROTECTION**

- A. If the existing building is to be partially occupied during the course of the project, all existing exits, fire walls, fire barriers and fire protection systems shall be continuously maintained in the occupied phases in compliance with the Fire Code of New York State. Comply with NFPA 241 for items not specifically addressed in the Fire Code of New York State.
- B. Those portions occupied by the facility must be available for their use 24 hours a day, seven days a week during the contract period unless otherwise scheduled in these documents.
- C. Prior to removal of existing fire walls, fire barriers and fire protection systems, if such removal is part of the work, install equivalent temporary fire walls, fire barriers and fire protection systems as defined in these documents and as approved by the Director's Representative and/or the facilities representative.
- D. The cost of all labor, fire watches, variances, materials, installations, maintenance and removal of such temporary fire protection systems or modifications to the existing systems are the responsibility of the Contractor. Install permanent fire walls, fire barriers and fire protection systems, if provided as part of the work, as soon as practical.

### **1.13 ACCESS ROADS**

- A. Routes of ingress and egress on the premises to the location of the Work shall be as directed.
- B. Keep designated access roads clear of dirt and debris resulting from the Work.
- C. Provide means of removing mud from vehicle wheels before entering paved roads.

### **1.14 PARKING**

- A. Parking areas shall be where designated by the Director's Representative.
  - 1. Keep designated parking areas clear of dirt and debris resulting from the Work.
  - 2. If requested, register vehicles which are to be parked at the Venue with the Venue Safety/Security Department.
  - 3. Remove ignition key from unattended vehicles and lock doors.

### **1.15 RUBBISH REMOVAL**

- A. Clean up and containerize the rubbish (refuse, debris, waste materials, and removed materials and equipment) resulting from the Work at the end of each work day and leave work areas broom clean, except where more stringent cleaning is specified. Locate containerized rubbish where directed.
- B. Remove rubbish from State property at least once a week and more often if the rubbish presents a hazard. Properly dispose of rubbish.
- C. Burning of rubbish will not be permitted.

- D. Also comply with the requirements of Section 017419.

**1.16 RELOCATION AND REMOVALS**

- A. Should a change in location of any construction facilities and temporary controls be necessary in order to progress the Work properly, remove and relocate such items as directed.
- B. Remove the construction facilities and temporary controls when they are no longer required. Restore permanent facilities used for or connected to temporary facilities to their original condition or better.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01 51 23

### CONSTRUCTION HEAT AND TEMPORARY HEAT

#### PART 1 GENERAL

##### 1.01 CONSTRUCTION HEAT - ALL CONTRACTS

- A. Prior to the time the building or any major part of the building is enclosed, provide construction heat (as differentiated from temporary heat), of a nature as required and approved to accomplish the following:
  - 1. Protect materials and equipment being installed as part of the Contract from freezing.
  - 2. Enable workers to accomplish their respective tasks in a satisfactory manner.
  - 3. Maintain construction schedules.
- B. Do not use electric heaters.

##### 1.02 TEMPORARY HEAT - BUILDING ENCLOSED

- A. General Trades Contract (G):
  - 1. Temporary heat shall be provided under the General Trades Contract (G) for all Contracts related to the Project.
  - 2. Provide temporary heat, starting at such time as directed, when in the opinion of the Director's Representative, the building or any major part of it is enclosed.
    - a. The building, or any part of it, shall be considered enclosed when the exterior walls and roof deck or overhead closures are sufficiently completed to exclude the elements, except for windows, doors, ventilators and similar openings which shall be temporarily sealed weathertight with suitable closures.
    - b. In the event a building under construction is of window wall design, and the window walls are not installed as scheduled, provide temporary weathertight wall closures in sufficient time so as not to delay construction of the building.
  - 3. Include in the contract sum the cost of providing temporary heat for 120 days.
    - a. The actual number of days required for temporary heat shall be as determined by the Director's Representative.
    - b. In the event such determination results in more or less than the specified number of days, the contract sum will be adjusted by a Field Order of Change Order.
    - c. Applicable daily charges for price adjustment (if any) shall be the average daily rate paid during the period of temporary heat, i.e. (total cost of providing temporary heat divided by the number of days). Furnish daily records of temporary heat costs to the Director's Representative, so that necessary price adjustments may be calculated.
  - 4. Temporary heat consists of, but is not limited to, the following:
    - a. Furnishing and operating a sufficient number of temporary heating units to maintain required temperatures.
    - b. Furnishing units of approved manufacture, complete with a combustion chamber and a smoke flue outlet, so designed that all products of combustion are vented through smoke flue piping to the exterior of the building. Do not use electric heaters.
    - c. Furnishing fuel for maintaining temporary heat.
    - d. Maintaining building temperature between 45 and 55 degrees F, unless higher temperatures are required for the installation of specified materials.
    - e. Moving, relocating, and adjusting heating units as required or directed, to protect the Work of all Contracts.

- f. Taking precautions necessary to protect all portions of the building from smoke or gas damage and to prevent hazardous conditions which could result in damage to property or injury to persons.
- 5. In addition:
  - a. Provide and maintain six (6), eight-inch scale direct reading thermometers in the building at locations directed.
  - b. Provide where directed in the building, six (6), seven day, self-contained recording thermometers, for the purpose of recording air temperatures in the building.
    - 1) Thermometers: Model SL4100 by Dickson Data, 920 S. Westwood Ave., Addison, IL 60101, (800) 757-3747, [www.dicksondata.com](http://www.dicksondata.com).
    - 2) Charts: Furnish and deliver to the Director's Representative at the site, a supply of charts and ink, in quantity as required for the duration of temporary heat. Furnish charts of the 7 day type, designed for working temperatures from 0 degrees F to 100 degrees F (Dickson Model 2012).
    - 3) The Director's Representative will maintain operation of the thermometers.
    - 4) Recording thermometers and charts shall become the property of the Owner.

### **1.03 RESPONSIBILITY**

- A. General Trades Contract (G):
  - 1. Assume responsibility for damage due to frost and freezing during the period when temporary heat is required to be provided. Repair damage due to improper equipment, such as stains, smudges, soot or fire.
- B. All Contracts:
  - 1. Progress the Work so that temporary heat can be provided as and when specified, and directed.

### **1.04 TEMPORARY HEAT - OPERATION BY ORDA PERSONNEL**

- A. When, in the opinion of the Director's Representative, the permanent heating system is completed, the Director's Representative will arrange for operation of the heating system in accordance with the provisions of Article 20 of the General Conditions concerning the Owner's occupation and operation. At such time, the Contractor will be relieved of responsibility for temporary heat.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 52 13**  
**ORDA FIELD OFFICE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Provide and maintain a field office comprised of custom built mobile or relocatable office units, new furniture, and new equipment, stair and ramp for the sole use of the Director's Representative and staff. Include temporary services and accessories necessary for use of the items specified.

**1.02 SUBMITTALS**

- A. Shop Drawings:
  - 1. Site Plan: Show location of field office where directed. Indicate holding tank, utility services, connections and accessible stairs and ramps.
- B. Product Data: Catalog sheets, specifications, and installation instructions, for all major items of the field office including furnishings and equipment. Submit within fifteen (15) days after award of Contract.

**1.03 SCHEDULING**

- A. Provide units, ready for occupancy by the Director's Representative and staff, within fourteen (14) days after shop drawings specified above are approved and in a location on the project site as indicated or directed. Do not install the office facility where it would adversely affect any means of exit.

**1.04 QUALITY ASSURANCE**

- A. Accessibility Requirements: Provide fully accessible units including stairs and ramps that comply with ICC/ANSI A117.1 as referenced by the Building Code of New York State.
- B. Provide units and all related utility connections in accordance with the NYS Uniform Fire Prevention and Building Code.
- C. Provide certification insignia from ORDA certifying that the trailer unit is code compliant.

**PART 2 PRODUCTS**

**2.01 MOBILE OR RELOCATABLE OFFICE UNITS**

- A. Manufacturers/Companies:
  - 1. ModSpace, 1620 Route 9, Clifton Park, NY 12065-0511, (518) 371-0384, [www.modspace.com](http://www.modspace.com).
  - 2. Williams Scotsman, Corporate Headquarters, 8211 Town Center Dr., Baltimore, MD 21236, (800) 782-1500, [www.willscot.com](http://www.willscot.com).
  - 3. Anchor Modular Buildings, PO Box 100, Medford, NJ 08055, (866) 396-0227, [www.anchormodular.com](http://www.anchormodular.com).
- B. Number, Approximate Size and Model:
  - 1. One, 60 x 23 feet, double-wide office unit.
- C. Office Unit Requirements:
  - 1. Provide separate rooms as follows: four offices (with plan tables), reception area, plan room area (with full length plan table), general work area and conference room for up to twenty people.
  - 2. Provide a pantry with storage cabinets.
  - 3. Provide space for organized and secure storage of samples.
  - 4. Ceiling Height: 8'-0" minimum.

5. Insulation: Exceed code required minimums for insulation. If wood frame construction, exceed the following values, walls > R - 11, floor > R - 25 and roof > R - 25. Provide code requirements and provided insulation values.
6. Exterior Doors: Minimum 2, minimum 34 inches wide, with key-in-lever locksets (U-factor to exceed 0.6).
7. Windows: Approximately 7 percent of exterior wall area with insect screens (U-factor to exceed 0.6).
8. Complete ducted heating, ventilating, and air conditioning system with sufficient capacity to maintain a summer office temperature of 75 degrees F and a winter office temperature of 70 degrees F.
9. Water Heater: 6 gal minimum.
10. VCT or sheet vinyl floor finish.
11. Interior partitions to be wood 2 x 4 framing with ½" vinyl covered gypsum board.
12. Fluorescent lights in all rooms as required to maintain a minimum of 60-foot candles at desktop level.
13. Bulletin board (4 feet x 6 feet).
14. Toilet room with toilet, grab bars, toilet tissue dispenser, lavatory, built-in medicine cabinet, paper towel dispenser and mirror.
15. Insulated skirting from bottom of units to grade, around entire unit. Skirting is to be 2' x 4' wood framing with 2" rigid insulation type SM and white ventilated vinyl siding to match unit.
16. Electric energy and fuel for the duration of the Contract.
17. Pre-wire unit for data (7 connections each) as shown on approved shop drawings.
18. Shades: Provide standard fabric roller shades or metal slat venetian blinds at all window.

## 2.02 FURNITURE AND EQUIPMENT

### A. Furniture:

1. Four swivel type chairs with arms suitable for use at office desks.
2. Twenty straight back stackable chairs.
3. Four lockable metal office desk, 30 x 66 inches, single pedestal with return type with keys.
4. Plan Tables: Provide built in plan tables at conference area and each office
5. One conference table, 44 x 96 inches.
6. One plan rack, adjustable height, floor supported cantilever type, with plan clamps or plan rack sticks.
7. Bookshelf: Provide built in (or stand alone) bookshelf at each office
8. Dry erase Board: One wall mounted dry erase board at conference area and each office.
9. One Office Supply Cabinet

### B. Office Equipment:

1. One refrigerated bottled water dispenser, (Hot & Cold Type) with cups, bottled water and necessary supplies. Provide water and cups for duration of contract.
2. One microwave oven
3. One toaster oven
4. Sink and countertop.
5. One 15 cubic foot refrigerator, EnergyStar energy efficient model.
6. Fire Extinguisher: Multipurpose Dry-Chemical Type in Steel Container UL-rated 20-A:120-B:C, 20-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
7. One Bunn Model: BUNVP172BLK Coffee maker or equal.



## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install units where directed. Remove wheels and store them where directed.
- B. Provide manufacturer's stair with platform at one exterior door and ramp with platform(s) at one exterior entrance.
- C. Provide parking for eight (8) vehicles and maintain for the duration of the contract including snow removal.
- D. Provide sanitary sewer lines including excavation and backfill from office units to existing sewer (100' max).
- E. Provide water service to office units from nearest available source. Retain and pay for a plumber to run the lines underground below frost line. Include excavation and backfill. (100' max).
- F. Provide electric service to units from nearest available source (100' max). Include 10' above grade 4x4 mast for overhead connections. Retain and pay contractor to do the electrical service and connections.
- G. Fit out interior space

### **3.02 MAINTENANCE AND CLEANING**

- A. Maintain and clean the office units for the duration of this Contract, including the following:
  - 1. Daily removal of rubbish;
  - 2. Daily cleaning of toilet room, including the plumbing fixtures. Replenish toilet room supplies as needed;
  - 3. Weekly mopping of floors;
  - 4. Weekly dusting of offices and other rooms; and
  - 5. Maintenance for lighting, heat, water, sanitary, ventilation, any necessary filter replacements.
- B. Maintain approaches free of mud and snow.
- C. Protect water lines from freezing.

### **3.03 REMOVALS**

- A. Remove the units, furniture, and equipment when directed. Restore permanent facilities used for or connected to field office to their original condition or better.

**END OF SECTION**

## SECTION 01 57 20

### TEMPORARY MAINTENANCE OF SEWER FLOWS AND SEWER SERVICE

#### PART 1 GENERAL

##### 1.01 RELATED WORK SPECIFIED ELSEWHERE

##### 1.02 DESCRIPTION

- A. The Work of this Section consists of operations, equipment, and materials necessary to maintain wastewater flow at all times during sewer rehabilitation and manhole restoration.
1. Conduct operations in such a manner as to insure optimum health and safety.
  2. Provide uninterrupted flow by bypassing sections of sewer and manholes being rehabilitated.
    - a. Maintain traffic on roadways and access to driveways and parking areas during the bypassing operations.
    - b. Provide for diversion of flow at an upstream manhole by plugging if necessary, and direct the flow into an existing downstream manhole or adjacent system.
    - c. Bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during rainfall.
    - d. Sewer surcharging will not be allowed.
    - e. Maintain temporary bypass system in operation until service can be completely restored.
  3. Pump raw sewage back into the sanitary system.
  4. Be completely responsible for the violation of any law, or the creation of a danger to public health, due to laxity in the diversion of flows.

##### 1.03 SUBMITTALS

- A. Submit a plan to the Director's Representative for diversion of flow during sewer rehabilitation and manhole restoration.
1. Make necessary investigations for preparation of the plan. Plan shall cover methods, equipment, work force, and safety measures to properly maintain diversion of flow.
  2. Obtain Director's Representative approval of the plan prior to commencement of any physical rehabilitation work.

#### PART 2 PRODUCTS (Not Applicable)

## **PART 3 EXECUTION**

### **3.01 PLUGGING AND BLOCKING**

- A. Insert a sewer line plug into the line at a manhole upstream of the sewer section in which work is to be performed.
  - 1. Design of the plug shall allow all or any portion of the sewage flow to be released in an emergency.
  - 2. Remove plug and restore normal flow following the specified rehabilitation work.
- B. Flow Control Precautions:
  - 1. When flow in a sewer line is plugged, blocked or bypassed, take sufficient precautions to protect sewer lines from damage due to surcharging.
  - 2. Take precautions to insure that sewage flow control operations do not cause flooding or damage to adjacent property.
  - 3. Repair any damage due to lack of flow control at no cost to the State.

### **3.02 PUMPING AND BYPASSING**

- A. Supply necessary pumps, conduits and other equipment to divert the flow of sewage around the sewer section in which work is to be performed.
- B. Furnish necessary labor, supervision and materials to set up and operate the pumping and bypass system.
- C. Be responsible for sewage spills and sewage back-ups into buildings plus costs and fines associated with the clean-up of sewage spills and sewage back-ups.

### **3.03 SAFETY REQUIREMENTS**

- A. Be familiar with Safe Working Requirements in confined spaces.
- B. Perform gas-free testing prior to entering each manhole, and periodically throughout the workday.
- C. If dangerous, hazardous or explosive gases are detected, remove these by forced ventilation to a level permitting entry in accordance with OSHA regulations.

**END OF SECTION**

## SECTION 01 60 00

### PRODUCT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- 1.2 Products.
- 1.3 Product delivery requirements.
- 1.4 Product storage and handling requirements.
- 1.5 Product options.
- 1.6 Product substitution procedures.

##### 1.2 PRODUCTS

- A. Definition: Product is any material purchased, stored and/or delivered to the Project site to be incorporated into the Work.
- B. Provide products of qualified manufacturers suitable for intended use. Provide products of each type by a single manufacturer unless specified otherwise.
- C. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- D. Provide interchangeable components of the same manufacturer for components being replaced.

##### 1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, and/or damage.

##### 1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground and adequately protected from weather.
- E. The Contractor shall insure all off-site stored products in a bonded off-site storage facility when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, and/or damage.

- I. Arrange storage of products to permit access for inspection by the Owner. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

#### 1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified for One Manufacturer supported by the text “Memorandum of Standardization” are products that are approved for standardization by the Owner’s internal approval process for controlling product uniformity. No substitutions shall be entertained.
- C. Products Specified by Naming One or More Manufacturers with a Provision for substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.
- D. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, provide the specified or indicated product or a comparable product. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Acceptability of the proposed product will be judged based on a detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.

#### 1.6 PRODUCT SUBSTITUTION PROCEDURES

- A. Owner will consider requests for substitutions only within five (5) days after date of Owner-Contractor Agreement. Requests for substitutions shall be made in a timely manner and in conjunction with the Project Schedule so as not to delay the Project. Additionally, the substitution will only be considered when the Engineer is given adequate time to review the submittal and respond without negative impact on the Project Schedule.
- B. Document each request with complete data substantiating compliance of proposed substitution with the Contract Documents.
- C. A request constitutes a representation that the Contractor:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product;
  - 2. Will provide the same warranty for the substitution as for the specified product;
  - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner;
  - 4. Waives claims for additional costs or time extension which may subsequently become apparent; and
  - 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

- D. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision of the Contract Documents.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

**END OF SECTION**

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## SECTION 01 71 23

### FIELD ENGINEERING

#### PART 1 GENERAL

##### 1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01 77 16 Contract Closeout`

##### 1.02 QUALITY ASSURANCE

- A. Employ an independent Land Surveyor, licensed to practice in the State of New York, for the duration of the Work, to certify the accuracy of the survey work.
  - 1. The word "independent" as used above means a person not in the regular employment of the Contractor or having any vested interest in the Contractor's business.

##### 1.03 SUBMITTALS

- A. Submit the name, address, telephone number, and registration number of the Land Surveyor before starting the survey work.
- B. On request, submit documentation verifying accuracy of survey work.
- C. Upon completion of the Work, submit a certificate signed and sealed by the Land Surveyor, stating that the elevations and locations of the Work are in conformance with the Contract Documents.

##### 1.04 PROJECT RECORD DOCUMENTS

- A. Maintain a complete and accurate log of control and survey work as it progresses.
- B. Record location data for control points in sketch form and turn over 6 copies of sketches and computations to the Director's Representative.
- C. Submit Record Documents under provisions of Section 01 77 16.

##### 1.05 TOOLS, EQUIPMENT, AND MATERIALS

- A. Furnish all tools, equipment, and materials required to perform the work of this Section.
- B. Permanent Survey Markers: Berntsen Aluminum Top Security Rod Monument with benchmark aluminum access cover and flat top cap to imprint information.  
Stamp on cap "NEW YORK OLYMPIC REGIONAL DEVELOPMENT AUTHORITY,  
STA. NO., NORTHING, EASTING, AND ELEVATION.

##### 1.06 EXAMINATION

- A. Verify locations of control points prior to starting work.



- B. Promptly notify Director's Representative of any discrepancies discovered.

#### **1.07 CONTROL POINTS**

- A. Control datum for survey is indicated on the Drawings.
- B. Protect control points prior to starting site work and preserve control points during construction.
- C. Promptly report to Director's Representative the loss or destruction of any control point or relocation required because of changes in grades or other reasons.
- D. Replace dislocated control points based on original survey control. Make no changes without prior written notice to the Director's Representative.

#### **1.08 ESTABLISHING CONTROL POINTS**

- A. Prior to clearing or earthwork operations, install permanent survey markers at the coordinate locations shown on the Drawings. Establish and record the exact coordinates of these markers to within one one-hundredth of a foot horizontally.
- B. Reference coordinates and elevations to the horizontal and vertical datum provided for the Contract.
- C. Locate each permanent survey marker from at least 3 points of permanent reference.

#### **1.09 SURVEY REQUIREMENTS**

- A. Utilize recognized engineering survey practices.
- B. Establish a minimum of two permanent survey markers to be used as bench marks for vertical control on the Project site where indicated on the Drawings and referenced to established control points. Record locations, with horizontal and vertical data to within one one-hundredth of a foot, on Project Record Documents.
- C. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
  - 2. Grid or axis for structures.
  - 3. Building foundation, column locations, ground floor elevations.
- D. Verify disturbed layouts by same means.

#### **1.10 FIELD ENGINEERING FOR GENERAL EARTHWORK**

- A. Provide not less than one stake for each 2,500 square feet where rough and finished grades are flatter than one foot of rise per 10 feet of run.

- B. Provide not less than one stake for each 2,000 square feet where rough and finished grades are greater than one foot of rise per 10 feet of run but less than one foot of rise per 4 feet of run.
- C. Provide not less than one stake for each 1,000 square feet where rough and finished grades are greater than one foot of rise per 4 feet of run.
- D. Provide stakes spaced not more than 50 feet apart along centerline of ditches and swales. Provide additional stakes at right angles to centerline, and opposite each centerline stake, to mark bottom and top of slopes.
- E. Mark each stake with the correct finished grade elevation and the appropriate cut or fill at that stake.

#### **1.11 FIELD ENGINEERING FOR DRAINAGE STRUCTURES, PIPES, CULVERTS, AND TUNNELS**

- A. Drainage Structures: Provide stakes marked with inverts. Also mark structure number if indicated on Drawings.
- B. Pipes, Culverts, and Tunnels: Provide stakes at each end marked with inverts.

#### **1.12 FIELD ENGINEERING FOR CHANNELS AND ROADWAY STRUCTURES**

- A. Channels: Provide stakes at centerline of channel at each side of roadway structure.
- B. Roadway Structures: Stake centerline of structural bearing points, footings, anchor bolts, and other features.

#### **1.13 FIELD ENGINEERING FOR ROADWAYS AND PAVING WORK**

- A. Place two offset stakes at each centerline station (50 foot intervals) and at tangent points, radius points, abrupt changes in grade, super-elevation, and other locations necessary to maintain layout and grade control.
- B. Mark each stake with the correct centerline station number, description, offset and cut or fill.
- C. Restore faded or illegible markings.
- D. Provide pins and hubs directly adjacent to the Work at a spacing of 25 feet. Mark pins and affix string lines to provide adequate horizontal and vertical control for paving work.
- E. Immediately following placement of the final paving course and prior to project closeout, re-establish and mark the location of all centerline stations with masonry nails at least 2 inches long. Drive nail heads flush with the pavement surface.
- F. For points of curve and tangent points provide identifying markings at the outside edge of each lane.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

Not Used

**END OF SECTION**

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## SECTION 01 73 29

### REMOVALS, CUTTING, AND PATCHING

#### PART 1 GENERAL

##### 1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01 51 21 Rubbish Removal
- B. Section 02 82 13 Asbestos Abatement

##### 1.02 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to remain the Property of the Owner.

##### 1.03 PROJECT CONDITIONS

- A. Existing Conditions: Do not disturb existing structures, construction, materials or equipment unless required by the Contract.
  - 1. Do not cut, drill or remove structural members such as joists, beams or columns supporting construction that is to remain unless expressly required by the Contract Documents.

#### PART 2 PRODUCTS

##### 2.01 MATERIALS

- A. Match the appearance and performance of existing corresponding materials as closely as practicable, unless otherwise indicated.

#### PART 3 EXECUTION

##### 3.01 EXAMINATION

- A. Prior to cutting, drilling or removal, investigate both sides of the surface involved. Determine the exact location of structural members.
- B. If unforeseen obstructions are encountered, take precautions necessary to prevent damage and obtain instructions from the Director's Representative before proceeding with the Work.

##### 3.02 PREPARATION

- A. Provide temporary shoring and other supports necessary to prevent settlement or other damage to existing construction which is to remain.
- B. Prepare existing surfaces properly to receive and, where required, bond with the Work.

### 3.03 REMOVALS, CUTTING, AND ALTERING

- A. In addition to the items indicated to be removed on the Drawings, remove existing construction superseded by the Work except items such as pipes, conduits, recessed boxes, and ducts which are built into existing construction that is to remain. Cut off and conceal such items at face of remaining construction. Provide cover plates on recessed boxes.
- B. Remove and alter existing construction as required to install and connect the Work to adjacent construction in an approved manner.
- C. Cut and alter existing materials as required to perform the Work. Limit cutting to the smallest amount necessary. Core drill round holes and saw cut other openings where possible.
- D. Perform cutting, drilling, and removals in a manner which will prevent damage to construction which is to remain.
- E. Perform removal of items to remain the property of the Owner with such care as necessary to prevent damage to these items.

### 3.04 PATCHING

- A. Patch existing construction and finishes defaced, damaged, or left incomplete due to alterations and removals. Patching, except as otherwise indicated, shall be limited to the areas which have been cut or altered. Finish patched surfaces to match existing adjacent surfaces as closely as practicable.
- B. Perform patching around items penetrating existing construction in a manner that will maintain the water and fire resistive capability of the existing construction.

OMIT "and cover plates" IN PARAGRAPH BELOW IF NOT APPLICABLE.

- C. Paint patched areas and cover plates to match existing adjacent surfaces as closely as practicable using same type of paint. Painting, except as otherwise indicated, shall be limited to the areas which have been patched.
- D. Where surfaces exposed by removals are to remain as exposed surfaces, paint such areas to match existing adjacent surfaces as closely as practicable using same type of paint.

### 3.05 REINSTALLATION

- A. Where reinstallation of removed items is indicated, reinstall them to a condition equal to or better than their condition before removal.

**END OF SECTION**

## SECTION 01 74 23

### PRE-OCCUPANCY CLEANING

#### PART 1 GENERAL

##### 1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01 77 16 Final Cleaning

#### PART 2 PRODUCTS (Not Used)

#### PART 3 EXECUTION

##### 3.01 PRE-OCCUPANCY CLEANING

- A. Perform the pre-occupancy cleaning when directed by the Director's Representative.
- B. Sequence: Begin pre-occupancy cleaning operations at the top floor and proceed down to the lowest floor. Complete the cleaning required on each floor before proceeding to the next floor.
- C. Perform the pre-occupancy cleaning within the minimum standards specified, including but not limited to the following requirements.
  - 1. Floor Maintenance:
    - a. Do not splash, disfigure, or damage baseboards, walls, stair risers, furniture or equipment during these operations.
    - b. Take proper precautions to advise building occupants of wet and/or slippery floor conditions during the cleaning operations.
    - c. Be responsible for the security of equipment, materials, tools, etc. The Director's Representative (if space is available) will assign storage area(s) for the neat storage of tools and equipment.
    - d. Sweeping and Damp Mopping:
      - 1) Thoroughly sweep the floors to remove visible dirt and debris. Remove all visible paint marks, wads of gum, tar and similar substances from the floor surface.
      - 2) After sweeping and damp mopping operations, all floors shall be clean and free of dirt streaks; no dirt shall be left in corners, behind radiators, under furniture, behind doors, on stair landings and treads. Entrances and all similar areas shall be swept clean of all dirt and trash. No dirt shall be left where sweepings have been picked up. There shall be no dirt, trash or foreign matter under desks, tables, chairs, etc.
  - e. Wet Mopping and Scrubbing:
    - 1) Properly prepare the floors, thoroughly sweep to remove all visible dirt and debris. Remove all paint spots, wads of gum, tar and similar substances from the floor surface. On completion of the mopping and scrubbing, the floors shall be clean and free of dirt, water streaks, mop marks, string, etc., properly rinsed, and

dry mopped to present an overall appearance of cleanliness. All surfaces shall be dry and corners and cracks clean after the wet mopping or scrubbing. Scrubbing shall be accomplished by machine or by hand with a brush.

f. Floor Finishing:

- 1) Proper preparation of a floor, prior to refinishing, is considered the most important procedure in floor maintenance. Therefore, special attention must be given to the following requirements: Sweep entire floor area with treated dust cloth to control airborne dust and apply the proper stripping solution or synthetic disinfectant detergents to the floor; scrub with a floor scrubbing machine or agitate with a mop to remove old finish and/or old wax, soap film, dirt and stains; pick up dirty solution with a mop, squeegee or wet vacuum and thoroughly rinse with clean water and dry.
- 2) Apply floor finish in even coats. The number of coats applied will depend on the type and condition of the floor, but shall not be less than 2 coats.
- 3) Take special care when applying the floor finish, do not splash or coat the baseboard, walls, furniture or equipment.

g. Machine scrub concrete floors and wash with a germicidal cleaner, finish with 2 coats of sealer.

h. Machine scrub vinyl floor tile and wash and strip and refinish with 2 coats of sealer and 2 coats of finish as per EPA guidelines on asbestos hazard reduction.

i. Machine scrub ceramic and quarry tile flooring and wash with a germicidal type cleaner, rinse with clean water and wipe with a well-wrung mop.

j. Vacuum carpeting thoroughly.

k. Coat vinyl floors in Geriatric program and living areas with a floor finish that is slip resistant and that results in little or no shine when dry, such as Johnson's complete or equivalent.

1. Use Hilliard 341 on non-conductive floors, or equivalents.

2. Dusting: Do not move dust from spot to spot, but remove directly from the areas in which it lies by the most effective means such as appropriately treated dusting cloths, vacuum tools, etc. When doing high cleaning, dust shall not be allowed to fall from high areas onto furniture and equipment below. The following conditions shall exist after the completion of each dusting task:

- a. There shall be no dust streaks.
- b. Corners, crevices, moldings, and ledges shall be free of all dust.
- c. There shall be no oils, spots or smudges on dusted surfaces caused by dusting tools.
- d. When inspected by a flashlight, there shall be few traces of dust on any surface.

3. Damp Wiping: Use a clean damp cloth or sponge to remove all dirt, spots, streaks and smudges from walls, doors (both wood and metal), glass and other specified surfaces. When dry, the surfaces shall have a polished appearance. The wetting solution shall contain an appropriate cleaning agent. When damp wiping in toilet areas, a multi-purpose (disinfectant-deodorizer) cleaner shall be used.



4. Bright Metal Polishing: Polish bright metal by damp wiping and drying with a suitable cloth. If a polished appearance is not thereby produced, apply the appropriate metal polish.
5. Windows and Glass:
  - a. Wash and clean all interior and exterior glass, with the inside and outside cleaning of windows to be performed on the same day.
  - b. After each washing operation, all glass shall be clean and free of dirt, grime, streaks, excessive moisture and shall not be cloudy.
  - c. Window sills, sash and woodwork about interior glass and other such surroundings shall be thoroughly wiped free of drippings and other water marks.
  - d. Cleaners shall use pads to protect window sills when placing cleaning materials on them and all such pads and/or cloths necessary to protect the property shall be furnished by the Contractor. Window sills are not to be utilized in lieu of ladders and/or step ladders.
  - e. Extreme care shall be taken in opening any and all windows, when opening them for cleaning, assume full responsibility for damage to glass and painted surfaces.
6. Spot Cleaning: Following this operation, smudges, marks or spots shall have been removed from the designated areas without causing unsightly discoloration.
7. Trash Removal:
  - a. Collect and remove all refuse, debris, rubbish and trash throughout the entire building. Unless otherwise directed by the Director's Representative all collected matter shall be deposited in dumpsters of sanitation trucks provided by the Contractor, and removed from the site.
  - b. Collect and remove all refuse, debris, rubbish and trash from the interior of the air handling unit enclosures under each window or wherever located. Vacuum the interior of each unit. This will require the removal and replacement of cover plates. Personnel will be made available to demonstrate the proper procedure for the removal and replacement of the cover plates.
8. Ceilings: Vacuum acoustic ceilings, taking care not to damage them. Vacuum painted plaster ceilings and spot clean where required. Wash entire ceiling if stain results.
9. Fixtures and Equipment:
  - a. Thoroughly scour, wash and disinfect all equipment and fixtures, including, but not limited to toilet bowls, seats, urinals, wash basins, mirrors, shelving, dispensers, receptors, slop sinks, water fountains, kitchen equipment, refrigerators and booth partitions, various dispensers, walk-in refrigerators, and lockers.
  - b. Plumbing fixtures (drinking fountains, wash basins, urinals, toilets, etc.) shall be thoroughly washed, using a germicidal solution, and dried, leaving no dust, spots, streaks or stains, rust, mold, encrustation or excess moisture. The walls and floor adjacent to fixtures shall be free of spots, drippings and water marks. Drinking fountains shall be kept free of trash, ink, coffee grounds, etc., and nozzles free from encrustation.
  - c. Light fixtures, including glass and plastic lenses, ceiling and wall-mounted lights, cover panels, side panels, louvers, fixture frames and lamps, shall be vacuumed and cleaned with a damp cloth.
  - d. Supply vents, exhaust grilles and room fan coil units shall be thoroughly vacuumed and cleaned.

10. Walls:
- Dust and spot clean painted and vinyl-covered walls. In areas where spot cleaning will produce color differences, the entire wall shall be washed, cleaned and wiped dry.
  - Scrub ceramic tile walls with a germicidal cleaner, rinse and wipe dry.
  - Vacuum brick and concrete interior walls and all adhered debris shall be removed in accordance with guidelines established by the Structural Clay Products Institute, the National Concrete Institute and the National Concrete Masonry Association.
11. Wood and Metal Doors: Remove protective tape from doors, frames and signage and kickplates. Remove all tape and adhesive residues. Clean and polish all unpainted metal on doors, including, but not limited to, trim, hardware, kickplates, hand plates and door knobs. Wood doors shall be thoroughly cleaned and oiled and wiped dry.
12. Elevators: Clean all surfaces in the interior of the car including hoistway doors and services of the corridors on the side of the elevator and all bright metal surfaces polished. All resilient tiles shall be cleaned and spray buffed. Dust and damp wipe elevator cab doors, wall and bright work. Scrub and wash elevator cab floors using germicidal detergent.
13. Stairwells: Sweep all stairs clean. Remove all paint spots, wads of gum, tar and similar substances and wash with a germicidal cleaner. Vacuum brick and/or concrete block walls, remove spots, stains, etc. and wash and dry (wipe or blow dry).
14. Porches/Entrances: Thoroughly sweep, vacuum and wash porches and entrances with a germicidal cleaner.
15. Other:
- Overhead items, such as louvers, grilles, pipes, molding, etc., shall be dusted, vacuumed and spot cleaned.
  - Metal surfaces such as hardware, frames, cover plates, stainless steel counters and sinks, corner guards, conveyors, etc., shall be cleaned with a damp cloth and polished where required.
  - Furniture and equipment shall be wiped clean using special care, be responsible for damage to this equipment. Where the workers see a piece of equipment too delicate or have doubt regarding how to proceed, they will request further instructions from the Director's Representative.
  - For all operations where furniture or equipment is moved, no chairs, waste baskets or other similar items shall be stacked on desks, tables or window sills. Upon completion of work, all furniture and equipment must be returned to its original position.
  - Under no circumstances shall any product or procedure be used that may leave a non-conductive film.
  - Notify the Venue Safety Department prior to entering the building(s) and immediately following leaving the building(s) each work day, in order to deactivate and re-activate any building alarm systems.
16. Safety Standards: Conform to all Federal, State and Local Codes and Safety Standards and to the best practices of the trade.

#### END OF SECTION

## SECTION 01 77 16

### CONTRACT CLOSEOUT

#### PART 1 GENERAL

##### 1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Other provisions pertaining to this Section are included in Article 9 of the General Conditions.

##### 1.02 CONTRACT CLOSEOUT INSPECTIONS

- A. The following 3 inspections will be made for each completion date in addition to the normal inspections to ensure that all Contract requirements are met and that the Work is complete and acceptable. The purpose of each of these inspections is to furnish the Contractor a written list of Contract exceptions, omissions, and incomplections so that the Work can be progressed to timely completion in accordance with the Contract Documents.
  - 1. Detailed Inspection: The "Detailed Inspection" will be made when the Work is substantially complete. A copy of the detailed inspection list will be furnished to the Contractor. When this inspection progresses over any length of time, copies of the list will be furnished as the inspection progresses so that the Contractor may proceed with the required Work without delay.
  - 2. Final Inspection: The Contractor will be advised by letter of the date and time of final inspection. A copy of the final inspection list containing all incomplete or unsatisfactory items and the time allowed to complete the Work will be furnished to the Contractor.
  - 3. Joint Inspection for Physical Completion: The joint inspection for physical completion may be made to verify completion of the exception items listed on the final inspection list so that the physical completion date (defined in the General Conditions) may be established.

##### 1.03 FINAL CLEANING

- A. Perform final cleaning prior to joint inspection for physical completion. Leave the premises in a neat, unobstructed condition, the work areas broom clean (except where more thorough cleaning is specified), and everything in perfect repair and adjustment.
- B. Clean site; sweep paved areas, rake clean landscaped surfaces.
- C. Remove tools, equipment, waste and surplus materials, rubbish, and construction facilities from the premises as soon as possible upon completion of the Work.
- D. Should beneficial occupancy be provided prior to physical completion, cleaning as provided for in this section 1.03 must be performed prior to beneficial occupancy and this cleaning shall be in addition to the final cleaning required prior to joint inspection for physical completion.

#### 1.04 PROJECT RECORD DOCUMENTS

- A. Maintain on site, 2 sets of the following record documents; record actual revisions to the Work:
1. Contract Drawings.
  2. Project Manual.
  3. Addenda.
  4. Change Orders and other modifications to the Contract.
  5. Reviewed shop drawings, product data, and samples.
  6. Manufacturer's instructions for assembly, installation, and adjustment.
- B. Store record documents separate from documents used for construction.
- C. Record information concurrent with construction progress, not less than weekly. Ensure entries are complete and accurate, enabling future reference by Owner.
- D. Specifications: Legibly mark and record at each product section a description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
  2. Product substitutions or alternates utilized.
  3. Changes made by Addenda and modifications.
- E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish (first) (main) floor datum.
  2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  4. Field changes of dimension and detail.
  5. Details not on original Contract Drawings.
- F. Upon completion of the work, create electronic versions of the project record documents. Documents are to be scanned into PDF Format.
1. The scanned images are to be put on a compact disc (CD) using ISO 9660 format. Name the electronic files with the same name as the drawing. Create a folder on the CD for each trade and one for Shop Drawings.
  2. Label the CD with the project number, name, and title as it appears on the project manual cover. If there is more than one CD include notation to that effect on the label; i.e., 1 of 3, 2 of 3, 3 of 3. The Project record documents and CD(s) are to be turned over to the Director's Representative.
- G. Applications for progress payments will not be approved if the record documents are not kept current. Application for final payment will not be approved until the project record documents are delivered to the Director's Representative.

#### 1.05 OPERATION AND MAINTENANCE DATA

- A. Prepare 2 sets comprised of 8-1/2 x 11 inch text pages bound in capacity expansion binders with durable plastic covers identified with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when

multiple binders are required. Prepare a printed Table of Contents for each volume, with each product or system description identified. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titles clearly printed under reinforced laminated plastic tabs:

Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, subcontractors, and major equipment suppliers.

Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:

1. Significant design criteria.
2. List of equipment.
3. Parts list for each component.
4. Operating instructions.
5. Maintenance instructions for equipment and systems.
6. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

Part 3: Project documents and certificates, including the following:

1. Shop drawings and product data.
2. Air and water balance reports.
3. Certificates.
4. Photocopies of warranties.

B. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with the Director's comments. Revise content of documents as required prior to final submittal.

C. Submit 2 volumes prior to final Application for Payment.

#### **1.06 WARRANTIES**

A. Furnish warranty certification and copies of warranties that extend beyond the one year period required by the General Conditions. Warranties submitted without warranty certification will not be accepted.

1. Warranty Certification: Written certification from the warrantor that invoices for installation, service, supplies, and warranty fees have been paid in full to persons or firms due payment, and that the warranty is in effect and non-retractable due to any of the specified conditions.

B. Prepare printed Table of Contents and assemble warranty certifications and warranty copies in a binder with a durable plastic cover.

C. Deliver the binder to the Director's Representative prior to final Application for Payment.

D. Applications for final payment will not be approved until the warranty certification and warranty documents are delivered to the Director's Representative.

#### **1.07 SPARE PARTS AND MAINTENANCE MATERIALS**

- A. Label and deliver spare parts, maintenance items, and extra materials to the Site. Place in locations as directed.
  - 1. Include "NOT FOR WARRANTY REPAIRS" on the labels.
  - 2. Obtain receipt prior to final payment.
- B. Do not use the spare parts and maintenance materials required by the Contract Documents to remedy defects during the one-year period described in Paragraph 9.8 of the General Conditions except when approved otherwise by authorized Facility Representative. In such cases, replace items used.
- C. Furnish the names, business addresses, and telephone numbers of fully equipped authorized service organizations to the Director's Representative.
- D. Applications for final payment will not be approved until these items are delivered to the Director's Representative.

## **PART 2 PRODUCTS**

Not Used

## **PART 3 EXECUTION**

Not Used

**END OF SECTION**

## SECTION 01 91 13

### GENERAL COMMISSIONING REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section specifies the Contractor's responsibilities in the commissioning process. Commissioning requires the participation of the Contractor to ensure that all systems are operating in a manner consistent with the Contract Documents.
- B. The commissioning process integrates the traditionally separate functions of system documentation, equipment startup, performance testing, and training. Commissioning during the construction phase is intended to achieve the following specific objectives in accordance with the Contract Documents:
  - 1. Verify and document that applicable equipment and systems are installed according to the manufacturer's recommendations, contract requirements, and industry standards and that they receive adequate operational checkout by installing contractors.
  - 2. Verify and document proper performance of equipment and systems.
  - 3. Verify and document that O&M documentation is complete.
  - 4. Verify and document that the Venue operating personnel are properly trained.
- C. The systems and equipment to be commissioned are listed in this Section. The Contractor's general commissioning requirements and coordination are detailed in this Section. Specific requirements for commissioning of each system or piece of equipment are detailed in the specification Section for the individual systems or pieces of equipment. A detailed description of the overall commissioning process is included in the Appendix.
- D. The commissioning process does not reduce the responsibility of the Contractor to provide finished and fully functional systems and equipment.

##### 1.02 SYSTEMS TO BE COMMISSIONED

- A. The following systems will be commissioned in the Project. Specific requirements for the commissioning of each system are included in the related specification Section.
  - 1. HVAC Work Contract:
    - a. Air Handling Units
    - b. Boiler and Packaged Controls
    - c. Air-Cooled Chiller
    - d. Temperature Control System
    - e. Exhaust Systems
    - f. Unit Heaters
    - g. HVAC Piping
    - h. Pumps
    - i. Ductwork Distribution System
    - j. Variable Air Volume Boxes
    - k. Variable Speed Drives
    - l. Testing and Balancing



2. Plumbing Work Contract:
    - a. Domestic Hot Water System (fed from heating boilers)
  3. Electrical Work Contract:
    - a. Lighting Fixtures
    - b. Lighting Controls and Occupancy Sensors
- B. Example Commissioning Documents: Example Pre-Functional Checklists and Functional Test Procedures are provided following the specification Sections of equipment and systems that are scheduled to be commissioned. These documents are included to provide the Contractor examples of the type of documentation that will be required as part of the commissioning process. Equipment and system specific Pre-Functional Checklists and Functional Test procedures will be developed by the Commissioning Authority based on approved submittals, and then will be provided to the Contractors.

### 1.03 DEFINITIONS

- A. Acceptance Phase: Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review, and training occurs.
- B. Approval: Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes in accordance with the Contract Documents.
- C. Commissioning Authority (CA): An independent agent responsible for the direction and coordination of the commissioning activities. The CA responsible to the Director's Representative.
- D. Commissioning Plan: An overall plan that provides the structure, schedule, and coordination planning for the commissioning process.
- E. Commissioning Team: The members of the commissioning team consist of the Commissioning Authority, the Director's Representative, the Contractor, the architect and design engineers. The Owner and the Venue's building or plant operator/engineer also may be members of the commissioning team.
- F. Deferred Functional Tests: Functional tests that are performed after substantial completion, due to partial occupancy, seasonal requirements, design or other site conditions that prevent the test from being performed prior to substantial completion.
- G. Deficiency: A condition in the installation or function of a component, piece of equipment, or system that is not in compliance with the Contract Documents.
- H. Factory Testing: Testing of equipment on-site or at the factory by factory personnel.
- I. Functional Performance Test (FT): Test of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The CA develops the functional test procedures in sequential written form. The CA coordinates, oversees and documents the actual testing. The Contractor performs the functional tests. FTs are performed after prefunctional checklists and startup are complete.

- J. Phased Commissioning: Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues in order to minimize the total construction time. Commissioning shall be provided for each phase according to the schedule for that phase. Some repetition and/or remobilization may be required.
- K. Prefunctional Checklist (PC): A list of items to inspect and component tests to conduct to verify proper installation of equipment prior to initiating functional testing.
- L. Startup: The initial starting or activating of dynamic equipment, including executing prefunctional checklists.

#### **1.04 COORDINATION**

- A. The CA is hired by, and works for, the Director. The CA directs and coordinates the commissioning activities. All members of the commissioning team shall work together to fulfill their contractual responsibilities and meet the objectives of the Contract Documents.
- B. The CA will work with the Contractor according to established protocols to schedule the commissioning activities. The Contractor shall integrate all commissioning activities into the approved progress schedule. All parties will address scheduling problems and make necessary notifications and changes in a timely manner in order to expedite the commissioning process and maintain the approved progress schedule.

#### **1.05 COMMISSIONING PROCESS**

- A. Commissioning Plan. The commissioning plan provides guidance in the execution of the commissioning process. Following the initial commissioning scoping meeting the CA will update the plan which is then considered the “final” plan, although it may be revised as the project progresses.
- B. Commissioning Process. The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur. A more detailed description of the commissioning process can be found in the Appendix.
  - 1. Commissioning during construction begins with a scoping meeting conducted by the CA where the commissioning process is reviewed with the Commissioning Team.
  - 2. Additional meetings will be required throughout construction, scheduled by the Director’s Representative, to plan, scope, coordinate, and schedule future activities and to resolve problems. When possible, commissioning meetings will be scheduled immediately following construction meetings.
  - 3. Equipment documentation is submitted to the CA during the submittal process, including detailed start-up procedures.
  - 4. The CA works with the Contractor to develop startup activity lists and startup documentation. The CA provides prefunctional checklists to be completed by the Contractor during the startup process.
  - 5. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels. In each case prefunctional checklists are completed, submitted, and approved before functional testing begins.

6. The Contractor executes and documents the prefunctional checklists, and provides notification to the Director's Representative and the CA. The Contractor performs startup and initial checkout. The CA documents that the checklists and startup were completed according to the approved plans.
7. The CA develops specific equipment and system functional performance test procedures. The Contractor reviews the procedures and submits suggestions or comments. Procedures are finalized by the CA.
8. The procedures are executed by the Contractor, under the direction of the CA.
9. Items of non-compliance in material, workmanship, or setup are corrected and retested at the Contractor's expense. The Contractor is responsible for providing all resources, manpower, and materials necessary to rectify deficiencies as per requirements of the approved schedule.
10. The O&M documentation prepared by the Contractor is reviewed for completeness by the CA.
11. Commissioning is completed before Substantial Completion.
12. The CA reviews, pre-approves and coordinates the training provided by the Contractor and verifies that it was completed.
13. Deferred testing is conducted, as specified or required.

## 1.06 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor's commissioning responsibilities are as follows (all references apply to commissioned systems and equipment only):
  1. Construction and Acceptance Phase:
    - a. Attend the commissioning scoping meeting and other necessary meetings scheduled by the Director's Representative to facilitate the commissioning process.
    - b. Facilitate the coordination of the commissioning work by the CA, and with the CA ensure that commissioning activities are being scheduled into the approved progress schedule.
    - c. Provide detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, factory test reports, and full warranty information, including all responsibilities of the Director to keep the warranty in force. The installation, start-up and checkout materials that are actually shipped with the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CA. The CA may request further documentation necessary for the commissioning process.
    - d. In each purchase order or subcontract written, include requirements for submittal data, O&M data, commissioning tasks and training.
    - e. Ensure that all subcontractors execute their commissioning responsibilities according to the Contract Documents and approved progress schedule.
    - f. Assist in the process of writing detailed test procedures by clarifying the operation and control of commissioned equipment.
    - g. Review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during the tests.
    - h. Develop a full start-up and testing plan using manufacturer's start-up procedures and the prefunctional checklists from the CA for all commissioned equipment. Submit to the CA for review and approval prior to startup.

- i. During the startup and initial checkout process, execute all portions of the prefunctional checklists for all commissioned systems and equipment. Verify that system installations include all ports, gages, thermometers, access doors, valves, etc., required for specified functional performance testing.
  - j. Provide all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment.
  - k. Perform and clearly document all completed startup and system operational checkout procedures, providing a copy to the CA.
  - l. Address incomplete Work before functional performance testing.
  - m. Provide skilled technicians to execute startup of equipment and to execute the functional performance tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
  - n. Provide skilled technicians to perform functional performance testing under the direction of the CA for specified equipment. Provide Manufacturer's Representative as required and as specified in the Specification. Assist the CA in interpreting the monitoring data, as necessary.
  - o. Correct deficiencies (differences between specified and observed performance) as directed by the Director's Representative.
  - p. Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions. Provide a copy of the O&M manuals and submittals of commissioned equipment to the CA for review and approval.
  - q. Provide training as specified.
  - r. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.
2. Warranty Period.
- a. Execute seasonal or deferred functional performance testing in accordance with the specifications
  - b. Correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

## **PART 2 - PRODUCTS**

### **2.01 TEST EQUIPMENT**

- A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Contractor.
- B. Specified special equipment, tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment shall be provided by the Contractor, and turned over to the Venue at the completion of the Work.
- C. Datalogging equipment and software required to test equipment will be provided by the Contractor, but shall not become the property of the Director's Representative.

- D. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. All equipment shall be calibrated according to the manufacturer's recommended intervals. Calibration tags shall be affixed or certificates readily available.

## **PART 3 - EXECUTION**

### **3.01 MEETINGS**

- A. Scoping Meeting. Prior to the commencement of construction, the CA will schedule, plan and conduct a commissioning scoping meeting with the Commissioning Team.
- B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CA as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with the Contractor, appropriate sub-contractors and suppliers, the Owner's Representative, and the Director's Representative.

### **3.02 START-UP, PREFUNCTIONAL CHECKLISTS, AND INITIAL CHECKOUT**

- A. Prefunctional checklists and initial checkout shall ensure that the equipment and systems are hooked up and operational. Each piece of equipment receives full prefunctional checkout. No sampling strategies are used. The prefunctional testing for a given system must be successfully completed prior to formal functional performance testing of systems or equipment.
- B. Start-up and Initial Checkout Plan. The CA shall assist the commissioning team members responsible for startup of any equipment in developing detailed start-up plans for all equipment. The primary role of the CA in this process is to ensure that there is written documentation that each of the manufacturer's recommended procedures have been completed.
- C. Execution of Prefunctional Checklists and Startup.
  - 1. Four weeks prior to startup, the Contractor shall schedule startup and checkout with the Director's Representative.
  - 2. The Contractor shall execute startup and provide the CA with a signed and dated copy of the completed start-up and prefunctional tests and checklists.

### **3.03 FUNCTIONAL PERFORMANCE TESTING**

- A. Development of Test Procedures. Using the requirements in the specifications, the CA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. The Contractor shall provide assistance to the CA in developing the procedures. Prior to testing, the CA shall provide a copy of the test procedures to the Contractor who shall review the tests for feasibility, safety, equipment and warranty protection.
- B. Functional performance testing shall document that each system is operating in accordance with the Contract Documents. During the testing process, areas of deficient performance shall be identified. Deficiencies shall be corrected by the Contractor and functional testing shall be re-scheduled. The Contractor shall be responsible for all costs associated with re-testing for functional performance.

- C. Each system shall be operated through all modes of operation. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc., shall also be tested.
- D. Test Methods. Each function and test shall be performed under conditions that simulate actual conditions as closely as possible. The Contractor shall execute the test and shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc., necessary to execute the test according to the specified conditions. At the completion of the test, the Contractor shall return all building equipment and systems affected by these temporary modifications to their pre-test condition.

### **3.04 OPERATION AND MAINTENANCE MANUALS**

- A. Standard O&M Manuals. The specific content and format requirements for the standard O&M manuals are detailed in Section 01 77 16 Contract Closeout.
- B. The Contractor shall compile and prepare commissioning documentation for all equipment and systems and include this information in the O&M manuals.

### **3.05 TRAINING**

- A. The Contractor shall be responsible for coordinating, scheduling, and documenting that all required training has been completed successfully.
- B. The Contractor shall have the following training responsibilities:
  - 1. Provide a training plan two weeks before the planned training.
  - 2. Provide comprehensive orientation and training in the understanding of the systems and the operation and maintenance of each piece of equipment.
  - 3. Training shall normally start with classroom sessions followed by hands-on training on each piece of equipment.
  - 4. The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
  - 5. Training shall include:
    - a. Use of the printed installation, operation and maintenance instruction material included in the O&M manuals.
    - b. A review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shut-down, and any emergency procedures.
    - c. Discussion of relevant health and safety issues and concerns.
    - d. Discussion of warranties and guarantees.
    - e. Common troubleshooting problems and solutions.
    - f. Explanatory information included in the O&M manuals and the location of all plans and manuals in the Venue.
    - g. Discussion of any peculiarities of equipment installation or operation.

### **3.06 DEFERRED TESTING**

- A. Unforeseen Deferred Tests. If any check or test cannot be completed due to Project conditions, required occupancy condition or other deficiency, execution of checklists and functional testing may be delayed upon approval of the Director's Representative. These tests will be conducted in the same manner as the seasonal tests as soon as possible.
- B. Seasonal Testing. Seasonal testing (tests delayed until weather conditions are closer to the system's design conditions) shall be completed as part of this contract. Make any final adjustments to the O&M manuals and as-builts resulting from information gained during testing.

**END OF SECTION**



## SECTION 024119

### SELECTIVE DEMOLITION

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused.

- B. Related Requirements:

1. Section 01 10 02 "Summary of Work – Multiple Prime Contract" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 01 73 29 "Removals, Cutting and Patching" for cutting and patching procedures.
3. Section 02 82 13 "Asbestos Abatement" for hazardous material removal work scope.
4. Section 31 10 00 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of selective demolition.

##### 1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse including cleaning and reinstall where indicated.
- C. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

##### 1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

### 1.05 PRE-INSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.
1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review structural load limitations of existing structure.
  3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment and facilities needed to make progress and avoid delays.
  4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  5. Review areas where existing construction is to remain and requires protection.

### 1.06 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, including environmental protection during the structural removals processes. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  2. Coordination for shutoff, capping and continuation of utility services.
- C. Pre-demolition Photographs or Video: As soon as discovered, document existing suspect conditions of adjoining construction to remain that might be misconstrued as damage caused by demolition operations. Forward to Architect for review prior to proceeding further with additional work in the area of concern.

### 1.07 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
1. Before selective demolition, Owner will remove the following items:
    - a. Furniture, appliances, kitchen items, maintenance items, office supplies and personal items, including all trash and stored items throughout the building.
  2. Removals related to fixtures, including heating and electrical equipment as indicated on the Drawings shall be the responsibility of the Contractor.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

- C. Hazardous Materials: Present in building to be selectively demolished. A report on the presence of hazardous materials by Artic Enterprises, Inc. dated October 25, 2021, is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
  - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
  - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified in Section 028213.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

## **1.08 COORDINATION**

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations for the site.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video as noted under Informational Submittals paragraph.
  - 1. Inventory and record the condition of items to be removed and reinstalled. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

### **3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to be Removed, Relocated or Abandoned: Locate, identify, disconnect and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Arrange to shut off utilities with utility companies.
  - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  - 3. Disconnect, demolish and remove plumbing systems, HVAC systems, equipment and components indicated on Drawings to be removed.
    - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect and make equipment operational.
    - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

### **3.03 PROTECTION**

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  - 4. Comply with requirements for temporary enclosures, dust control and heating specified in Section 01 50 01 "Construction Facilities and Temporary Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

### 3.04 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  5. Maintain fire watch during and for at least two hours after flame-cutting operations.
  6. Maintain adequate ventilation when using cutting torches.
  7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  10. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### **3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS**

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."
  - 1. Removal methods shall not gouge or excessively mar subfloor. Leave subfloors in a condition that will accept new specified floor finishes with minimal prep by flooring installer(s).
- E. Roofing: Schedule removals for periods when rain is not forecasted to the greatest extent possible. Remove no more existing roofing than what can be covered with temporary closure or reroofed to maintain building interior watertight and weathertight.
  - 1. Remove existing shingles, underlayment, and flashings to the wood deck within the specific areas as indicated on the Drawings.

### **3.06 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage in adjacent areas.
- B. Burning: Do not burn demolished materials.

### **3.07 CLEANING**

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

### **3.08 SELECTIVE DEMOLITION SCHEDULE**

- A. Remove: All items as indicated on the Drawings, including the supporting hardware.
- B. Remove and Reinstall: Time clock as indicated on the Drawings.
- C. Existing to Remain: All items not noted to be removed.

END OF SECTION 024119

**SECTION 028213  
ASBESTOS ABATEMENT**

**PART 1 – GENERAL**

**1.01 RELATED DOCUMENTS**

- A. All provisions, terms, and conditions of the Contract including all specifications, drawings, addenda, and other contract documents.

**1.02 DEFINITIONS**

- A. Many key words appear throughout the design documents and New York State Department of Labor (NYSDOL) Industrial Code Rule 56 (NYCRR PART 56).

**1.03 PRE-BID CONFERENCE**

- A. A pre-bid conference and walk-through will be conducted at the project site. The Contractor shall address any questions about the work during the pre-bid conference.

**1.04 SCOPE OF WORK**

- A. The following table summarizes the asbestos abatement scope of work:

BASE BID	
SCOPE OF WORK	QUANTITY
AA-1 ABATE ACM TRANSITE CEILING PANELS IN LOCATIONS AS NOTED ON HM100.	(APPROXIMATELY 40 SF)



BASE BID	
SCOPE OF WORK	QUANTITY
AA-2 ABATE NON-FRIABLE EXTERIOR ACM CAULK (ON WINDOWS, DOORS, WOOD SIDING AND TRIM) FROM LOCATIONS AS NOTED ON HM101. THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DISPOSAL OF THE ENTIRE COMPONENT (WINDOW/DOOR/WOOD SIDING, ETC.) THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH OWNER'S REPRESENTATIVE AND OTHER TRADES FOR DE-ENERGIZING ANY EQUIPMENT PRIOR TO INSTALLATION OF ANY CRITICAL BARRIERS REQUIRED TO CONDUCT ABATEMENT. THE ABATEMENT CONTRACTOR ACKNOWLEDGES THAT MULTIPLE MOBILZATIONS MAY BE REQUIRED TO CONDUCT THIS WORK. THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR PROVIDING HARWALL/WEATHER TIGHT BARRIERS AT ABATEMENT LOCATIONS.	(APPROXIMATELY 400 LINEAR FEET/12.5 SQUARE FT)

#### 1.05 GENERAL CONDITIONS

- A. The Contractor acknowledges that other portions of the building will remain active and occupied (in areas not scheduled for work) for the duration of the abatement project. Due to the location and nature of the project, the Contractor shall be responsible to controlling any leakage from the RWA to avoid damage to the spaces below. Any damages resulting from leakage shall be the Contractor's responsibility.
- B. The Contractor acknowledges that due to the nature of the area, limited staging areas exist and access to site requires advance notification with all parties.
- C. The Contractor acknowledges that the quantities of ACM are approximate and shall be field-verified. Variations of  $\pm 20\%$  in the quantities indicated shall be acknowledged by the Contractor and shall be reflected in their price.
- D. The Contractor's pricing shall include costs for all labor, materials, equipment, asbestos project notifications and fees, building permits and fees, insurance, bonding (if required), waste transportation and disposal, overhead and profit, and all other costs necessary to complete the work as specified.
- E. The Contractor shall submit any questions about the work of this project during the pre-bid phase in writing to the designated Owner's representative. By submitting a proposal, the Contractor acknowledges that he/she has reviewed, understands and can execute the scope of work described within.

- F. By accepting the contract for this work, the Contractor agrees that all work shall be conducted in accordance with all applicable state and federal regulations including ICR 56 and any NYSDOL-approved asbestos project variance.
- G. All work shall be performed in accordance with the project design specifications and all applicable federal, state, and local regulations. When conflicts occur between the project design documents and federal, state, and/or local regulations, the most stringent requirement shall apply. The Contractor shall comply with the following, except where more stringent requirements are shown or specified:
1. Federal Regulations:
    - a. OSHA 29 CFR Part 1910.1001 - Asbestos
    - b. OSHA 29 CFR Part 1910.1200 - Hazard Communication
    - c. OSHA 29 CFR Part 1910.134 - Respiratory Protection
    - d. OSHA 29 CFR Part 1910.145 - Specification for Accident Prevention Signs and Tags
    - e. OSHA 29 CFR Part 1926 - Construction Industry
    - f. OSHA 29 CFR Part 1926.1101 - Asbestos, Tremolite, Anthophyllite, and Actinolite
    - g. OSHA 29 CFR Part 1926.500 - Guardrails, Handrails, and Covers
    - h. USEPA 40 CFR Part 61, Subpart A - General Provisions
    - i. USEPA 40 CFR Part 61, Subpart M - Asbestos NESHAP
    - j. USEPA 40 CFR Part 763, Subpart E, Asbestos Hazard Emergency Response Act (AHERA)
  2. New York State Regulations:
    - a. NYSDOL 12 NYCRR Part 56 - "Asbestos" as amended 3/21/2007
    - b. NYSDEC 6 NYCRR Parts 360 and 364 - Waste Disposal & Transportation
    - c. NYSDOH 10 NYCRR Part 73 - Asbestos Safety Program Requirements
  3. All Local Regulations
  4. Standards and Guidance Documents:
    - a. American National Standard Institute (ANSI) Z88.2-80, Practices for Respiratory Protection
    - b. ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems
    - c. USEPA 560/585-024, Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book)
    - d. USEPA 530-SW-85-007, Asbestos Waste Management Guidance
  5. All applicable federal, state, and local building and fire codes.
- H. The Contractor accepts that multiple means of clearance criteria will be utilized for final clearance criteria based on the applicable regulatory requirements. At a minimum Project Monitor Visual inspections and Clearance Air Sampling will be utilized to determine satisfactory completion of the asbestos abatement work of this project. If ACM debris falls within the building, then air sampling will be required in accordance with ICR 56 and NYSDOL SSV.

#### **1.06 OWNER RESPONSIBILITIES**

- A. The Owner shall be responsible for:

1. Moving items out of areas affected by the work.
2. Providing electric and water sources, (but no equipment to access) at the project site.
3. Providing identification of existing utilities, de-energizing existing systems
4. Hiring an independent, third-party asbestos project monitoring/air sampling firm.

## **1.07 CONTRACTOR RESPONSIBILITIES**

### **A. The Contractor shall be responsible for:**

1. Performing the asbestos abatement work in accordance with all applicable federal, state, and local regulations including, but not limited to, all New York State, United States Environmental Protection Agency (USEPA), and Occupational Safety and Health Administration (OSHA) codes, rules, regulations, and standards. Where conflicts occur between federal, state, and local regulations, the most stringent shall apply. As such, the Contractor shall include all necessary costs in their price to complete the work in a legal and safe manner.
2. Providing supervisors and workers who are competent, trained, and medically fit to conduct the asbestos abatement work as well as all materials and equipment necessary to satisfactorily complete the work.
3. Collection and analysis of personal air samples of his employees as required by the applicable OSHA standards. The third-party asbestos project monitoring/air sampling firm shall not be responsible for the collection, shipping/delivery, or analysis of the Contractor's personal air samples on this project.
4. Completing the project as specified by the design documents. The Contractor accepts that the asbestos abatement work is not complete until satisfactory final visual inspections are conducted, and clearance air testing results are deemed to be acceptable, as applicable.
5. Packaging, transporting, and disposing of all asbestos waste generated by the work in accordance with all applicable federal, state, and local regulations.
6. Ensuring regulated work area security during the project, so that unauthorized personnel do not enter regulated work areas.
7. Providing emergency plans and emergency telephone numbers to on-site abatement personnel. The emergency plans and telephone numbers shall be kept on site at all times during the project.
8. Obeying the Owner's policies and procedures pertaining to work on-site.
9. Ensuring that no employee of his company speaks to the media without written permission from the Owner.
10. Complying with the contractual requirements set forth by the Owner.
11. Posting a notice at all building entrances notifying all persons of the Contractor's intent to conduct asbestos abatement work 10 days prior to starting the work following approval of the content by the Owner & Owner's Representative.
12. Notifying the NYSDOL and USEPA about the asbestos abatement work and paying the applicable fees.
13. Contractor shall follow the direction of the Owner/Owner's Representative pertaining to schedule, health/safety issues, and other site activities. The Contractor shall be responsible for the legal means and methods of performing the work in accordance with the contract.

14. The Contractor shall not interrupt power to any other area of the building because of his/her activities. Under no circumstances shall equipment be utilized that may impact/overload existing power. The Contractor shall coordinate all equipment usage with the Owner to avoid damage.

#### **1.08 PERSONAL PROTECTIVE EQUIPMENT**

- A. The Contractor shall be responsible for providing his personnel with adequate personal protective equipment to perform the work on this project as per the applicable federal and state regulations.
- B. The Contractor will be responsible for collecting OSHA personal asbestos samples for their workers on this project. Representative samples shall be taken daily and sample results shall be posted at the personal decontamination unit within 48 hours of collection. The Contractor is responsible for providing their employees with adequate respiratory protection based upon the sample results received.
- C. Street clothing is not permitted inside regulated work areas during abatement activities.
- D. The Contractor is responsible for providing the Project Designer, the Project Monitor, and state and federal inspectors with personal protective equipment (PPE). This may include some or all of the following: protective clothing, respirators, high efficiency particulate air (HEPA) cartridges, hard hats, gloves, eye protection, and rubber disposable boots.

#### **1.09 SUBMITTALS**

- A. Qualification Submittals - The Owner/Owner's Representative may undertake investigations as necessary to select the most qualified contractor for this project. The following information shall be submitted electronically to the Owner prior to contract award:
  1. Contractor's Asbestos Handling License issued by the NYSDOL.
  2. A notarized statement, signed by an officer of the company, containing the following information:
    - a. Any federal, state, or local regulatory agency citations, violations, notices, orders to comply, or penalties recorded against the asbestos abatement contractor in the last three years.
    - b. Any claims or legal proceedings in which the Contractor has been involved in the past three years.
    - c. Any Occupational Safety and Health Administration (OSHA) fines and/or citations, and a list of OSHA recordable accidents per year for the last three years.
    - d. Any asbestos related projects where a contract has been terminated, including project name, client, dates, and reasons for termination.
  3. A minimum of five (5) project references for projects similar in nature to this project that have been self-performed and completed in the past three (3) years including the project name and location, scope of work, client, and contact person's name, telephone number, and e-mail address.

B. Pre-Abatement Submittals - The Contractor shall submit the following information electronically (in PDF format) to the Owner at least 10 days prior to starting the work:

1. Contractor's Asbestos Handling License issued by the NYSDOL.
2. NYSDOL Asbestos Project Notification.
3. USEPA Notification of Demolition & Renovation.
4. Asbestos Project Notice to be posted at the building prior to the start of the work as required by ICR 56-3.6.
5. New York State Department of Environmental Conservation (NYSDEC) Waste Transporter Permit.
6. NYSDEC landfill permit where asbestos waste from the site will be disposed.
7. Project schedule showing phases of work for each regulated work area including, but not limited to, mobilization, work area preparation, abatement/removal, cleanings, work area dismantlement, and demobilization.
8. NYSDOL-approved asbestos project variance to be used on the project, if applicable.
9. Wastewater discharge permit required by state, county, or local municipality. If a permit is not required or will not be obtained, submit a written statement describing how wastewater from this project will be collected and disposed.
10. Safety Data Sheets (SDS) for all chemicals, solvents, products, and materials utilized.
11. Manufacturer's specifications/certifications for all materials and equipment utilized on the project.
12. Written notifications to local fire, rescue, and emergency agencies informing them of the nature and schedule of the work at the site.
13. Emergency Egress Routes shall be posted at centralized locations on each floor of the building.
14. List of contact persons and emergency phone numbers for Contractor personnel to be posted at the project site.
15. Asbestos abatement personnel/worker documentation, including valid:
  - a. NYSDOL Asbestos Handling Certificates.
  - b. NYSDOH 2832 Asbestos Training Certificates.
  - c. Medical examinations/evaluations.
  - d. Respirator fit test certifications.
  - e. OSHA 10-Hour Construction Safety Training certificates, if applicable.
16. The Contractor shall not proceed with any work until the pre-abatement submittals have been received in full and approved by the Owner & Owner's representative(s). The Owner bears no responsibility for schedule delays associated with incomplete submissions.

C. Abatement Submittals - The Contractor shall submit the following information electronically (in PDF format) to the Owner during the project:

1. OSHA personal air sampling data. Neither the Owner nor the Consultant is responsible for the interpretation of these results. The intent is only to show that the Contractor is collecting these samples as required by OSHA.
2. A daily list of the personnel on-site accompanied by their NYSDOL Asbestos Handling Certificate number.

- D. Post-Abatement/Closeout Submittals - Before final payment is made, the Contractor shall submit the following information electronically to the Owner within 30 days after completion of the project:
1. Copies of all waste disposal manifests, disposal logs, and weight tickets. All original waste disposal records shall be submitted directly to the Owner/Owner's Representative by the Contractor.
  2. Copy of supervisor's daily project log as required by ICR 56-7.3 documenting all pertinent events that occur throughout the project and including the following:
    - a. Elevated air sampling results shall be noted along with the time of the work cessation, results of barrier and negative air system inspection, and a summary of any necessary repairs and the required cleaning(s).
    - b. Manometer readings to be documented twice per work shift, if applicable.
    - c. Daily (including days without work shifts) inspection results of negative-air ventilation system and any necessary repairs, if applicable.
    - d. Daily (including days without work shifts) inspections of HVAC system positive pressurization and any necessary repairs, if applicable.
    - e. Daily (including days without work shifts) inspection results of barriers and any necessary repairs, if applicable. Inspections shall be twice per work shift on days with scheduled work.
    - f. Daily testing of barriers and enclosures as per ICR 56-8.2(f) and any necessary repairs, if applicable.
    - g. Daily cleaning of enclosures to be documented at the end of each work shift, if applicable.
    - h. Results of each visual inspection and time of each intermediate completion, if applicable.
    - i. Results of visual inspection by Supervisor and Project Monitor for each asbestos abatement work area prior to clearance air sampling.
  3. Entry/exit logs for each asbestos abatement work area.
  4. Final NYSDOL and USEPA project notifications, and any asbestos project variances, if applicable.
  5. Any other submittal requested by Arctic Enterprises or the Owner/Owner's Representative.
- E. The Owner/Owner's Representative shall ensure that the Contractor has met all the contractual obligations to close out this project. Failure to provide all the requested project closeout documentation may result in the delay of payment by the Owner to the Contractor. The Contractor shall not be entitled to any additional compensation or finance charges caused by their failure to submit the requested closeout information in a timely manner.

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS & EQUIPMENT**

- A. The Contractor shall be responsible for:
1. Providing all materials and equipment necessary to complete the work.



2. Providing safe and reliable materials and equipment.
3. Providing personal protective equipment for all abatement personnel.
4. Providing HEPA-filtered air filtration devices and HEPA vacuums.
5. Providing continuous negative air pressure within regulated work areas for the duration of the project, as applicable.
6. Utilizing barrier tape and danger signs to keep unauthorized personnel away from the work area. Danger signs shall contain the following language:

DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD

7. Utilizing airless sprayers to limit airborne dust in regulated work areas.
  8. Utilizing flame-retardant 6-mil polyethylene sheeting for the construction of abatement work areas, decontamination units, and the lining of waste containers.
  9. Utilizing 6-mil polyethylene bags for the containerization of all asbestos wastes.
  10. Utilizing duct tape or approved equivalent to seal polyethylene sheeting and waste disposal bags.
  11. Utilizing electrical equipment and power cords in compliance with all applicable OSHA standards.
  12. Utilizing Ground Fault Interrupters (GFIs) or Ground Fault Circuit Interrupters (GFCIs) on all power sources.
- B. Any miscellaneous products not covered in this specification must have written approval from the Owner/Owner's Representative or ARCTIC ENTERPRISES, prior to use on-site.
- C. Any miscellaneous products used at the site must be accompanied by manufacturer's product information and a (material) safety data sheet (SDS). This information must be submitted to the Owner/Owner's Representative prior to the products arriving on site. The Contractor may not proceed until the products have been approved for use by the Owner/Owner's Representative or Arctic Enterprises.

## **PART 3 – EXECUTION**

### **3.1 UTILITIES**

- A. All water and electrical service connections/installations shall be installed in accordance with all applicable federal, state, and local codes, rules, and regulations.
- B. The Contractor shall coordinate with the Owner be responsible for the maintenance of all electrical cords and water hoses and keeping them in a secure location to prevent unnecessary tripping and/or slipping hazards.
- C. The Contractor shall temporarily shut down/de-energize, isolate/seal, modify, and/or alter existing mechanical/HVAC, electrical, plumbing, and any other related systems, services, and utilities at



the site as required by the applicable regulations prior to the start of the asbestos abatement work. All such work shall be carefully coordinated with the Owner/Owner's Representative.

- D. Existing mechanical/HVAC, electrical, plumbing, and all other building systems, services, and utilities within regulated work areas that are to remain in operation shall be adequately protected by the Contractor during the work.
- E. The Contractor's activities shall not interrupt power supply to other areas of the building. Use of any equipment for abatement activities must be coordinated with the Owner to avoid any damage to existing systems.

### **3.2 DECONTAMINATION FACILITIES**

- A. All personal and waste decontamination facilities shall be constructed, installed, or otherwise provided by the Contractor to meet the requirements of ICR 56 and shall be deemed adequate by the Project Monitor prior to the commencement of any asbestos abatement preparation work.
- B. The personal decontamination unit shall be equipped with one shower per six (6) full-shift abatement workers.
- C. Decontamination units shall be cleaned/sanitized at the beginning, during, and end of each work shift. Accumulations of dirt/debris in decontamination units shall not be permitted.

### **3.3 PRE-CLEANING**

- A. The Contractor shall request a visual inspection by the Project Monitor to ensure that all locations scheduled to receive critical barriers are clean and free of debris prior to the installation of critical barriers.

### **3.4 CRITICAL & ISOLATION BARRIERS**

- A. The Contractor shall install critical barriers and isolation barriers in accordance with ICR 56.
- B. Temporary hard-wall barriers to complete containments/enclosures and establish regulated work areas shall be constructed using the following framing, sheathing, sealing, and plasticizing criteria:
  - 1. Isolation barrier partitions shall be constructed of wood or metal framing in all openings greater than 32 square feet except, where any one dimension is one foot or less, framing is not required. Existing walls or framing may be used to support isolation barrier partition framing and sheathing.
  - 2. Plywood or oriented strand board (OSB) sheathing of at least 3/8-inch thickness shall be fastened to the regulated work area side of the barrier partition.
  - 3. Edges of the isolation barrier partition at the floor, ceiling, walls, and fixtures and seams within the partition sheathing shall be sealed to form an airtight seal.
  - 4. The regulated work area side of isolation barrier partitions shall be covered with two (2) layers of 6-mil fire-retardant plastic sheeting with staggered joints and sealed airtight.

- C. Smoke testing shall be conducted by the Contractor prior to the start of abatement activities and at least once a day thereafter until satisfactory clearance air sampling results have been obtained to ensure the effectiveness of all critical barriers, isolation barriers, personal and waste decontamination system enclosures, and regulated work area enclosures. Negative air pressure ventilation units shall be in operation during this testing. Testing of barriers and enclosures is not required on days when there are no Phase IIB or cleaning activities scheduled. Test results, observations and any modifications shall be documented in the daily project log by the asbestos abatement supervisor.
- D. The Contractor shall inspect all barriers at least twice daily - before the start of and following the completion of each day's abatement activities. Inspections are also required on days when there is no Phase II work or support activities scheduled. Inspections and observations shall be documented in the daily project log by the asbestos abatement supervisor.

### 3.5 ASBESTOS HANDLING & CLEANING

- A. The Contractor shall conduct all asbestos abatement activities in accordance with ICR 56 or an approved asbestos project variance.
- B. All asbestos materials shall be removed using wet methods. Dry removal, sweeping, wire brushing, use of pressurized water/pressurized air, or other inappropriate techniques will not be permitted.
- C. Airless sprayers shall be utilized to control airborne asbestos fiber concentrations.
- D. The Contractor is responsible for taking appropriate measures to reduce nuisance noise from migrating to other areas of site.
- E. Regulated Asbestos-Containing Material (RACM) Waste shall be immediately bagged and be transported to the waste decontamination enclosure. Waste bags shall then be cleaned in the waste decontamination enclosure, double-bagged, labeled, and transported to the waste dumpster, trailer, etc.
- F. Waste bag transfer shall take place inside a cart that has been lined with two (2) layers of 6-mil polyethylene. This cart shall be covered by polyethylene during any waste transfer activities and be labeled with appropriate asbestos signage.
- G. Waste generated as part of this project that will be disposed of as "Construction & Demolition" Debris shall be handled in accordance with all applicable requirements. All waste exiting the RWA is subject to Project Monitor visual inspection regarding cleanliness, regardless of its intended method of waste shipment (RACM or C & D Debris).
- H. The Contractor shall be responsible for providing the Project Monitor / Air Sampling Technician with access to the regulated work area in accordance with all applicable safety regulations including ladders, lifts, etc. The Contractor shall also provide the Project Monitor / Air Sampling Technician with access to the decontamination unit and hot water on as requested.

### **3.6 WASTE DISPOSAL**

- A. The Contractor shall ensure that all asbestos waste/debris is sufficiently wet prior to being bagged/containerized for disposal.
- B. Bags, drums, or other acceptable packages/containers used for Regulated asbestos waste shall be labeled with appropriate asbestos waste generator tags/labels.
- C. Two 6-mil polyethylene bags or two (2) layers of 6-mil plastic sheeting shall be utilized for the disposal of all asbestos waste.
- D. A daily count of asbestos waste bags, drums, containers, etc. shall be recorded by the asbestos abatement supervisor. This count shall be provided to the Project Monitor each day.
- E. All asbestos waste generated by the work shall be sent to a properly permitted landfill or disposal facility as either Regulated Asbestos Waste or Construction Demolition Debris. Appropriate Waste manifests shall accompany all asbestos-containing material waste that is removed from the site. Original waste manifests shall be submitted directly to the Owner/Owner's Representative.
- F. Vehicles used for the transport of all asbestos waste shall bear all appropriate permit tags, markings, and placards.

### **3.7 INSPECTIONS**

- A. The Contractor shall not interfere, impede, or delay any inspections by the Owner/Owner's Representative, Project Designer, Project Monitor, or any federal, state, or local inspectors.
- B. The Contractor shall request inspections from the Project Monitor at the following intervals, as applicable to the project:
  - 1. Upon completion of the decontamination system enclosure(s).
  - 2. Upon completion of the preparation of the work area.
  - 3. Upon completion of the abatement process.
  - 4. Upon completion of teardown/dismantling activities.
- C. The asbestos abatement supervisor shall be responsible for adequately documenting inspections in the daily project log.

### **3.8 ASBESTOS PROJECT MONITORING/AIR SAMPLING**

- A. The Contractor shall not include any costs in their price for project monitoring or air sampling. The Contractor will not be responsible for the selection or payment of the Project Monitoring/Air Sampling firm.
- B. The Project Monitor/Air Sampling Technician will be responsible for the following:
  - 1. Conducting air sampling during the asbestos abatement phase of the project (as applicable).

2. Conducting a visual inspection for completeness of abatement and completeness of cleanup as per the provisions of the current ASTM Standard E1368 - "Standard Practice for Visual Inspection of Asbestos Abatement Projects." An entry shall be made into the daily project log by both the asbestos abatement supervisor and the individual performing the inspection, detailing the findings of the visual inspection. The full name and NYSDOL asbestos handling certificate number of the certified individual performing the inspection shall also be documented in the supervisor's daily project log.

C. Project Monitor Qualifications

1. The Project Monitor shall have valid certification and associated documentation. The Contractor understands that a Project Monitor has been retained by the Owner to oversee the asbestos abatement project and that the Owner has authorized the Project Monitor to stop the Contractor's work if the Contractor is not following the contract documents, design documents, applicable codes, rules, and regulations, and/or a NYSDOL-approved asbestos project variance. Work shall only be permitted to commence if allowed by the Owner/Owner's Representative and the Project Designer after corrective actions have been made. The Contractor acknowledges that it is their responsibility to follow all applicable rules and regulations pertaining to asbestos abatement and failure to do so may result in lost time and/or dismissal from site at no cost to the Owner, Project Designer, or Project Monitor. The Contractor shall not be compensated for any lost time, labor, materials, etc., due to inappropriate action.

**END OF SECTION**

## **APPENDIX A**

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### **Definitions**

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## SUBPART 56-2

### DEFINITIONS

**56-2.1 Terms.** As used in or in connection with this Part, the following terms mean:

- (a) **Abatement.** Any portion of an asbestos project that includes procedures to control fiber release from asbestos containing material. This includes removal, encapsulation, enclosure, repair, or handling of asbestos material that may result in the release of asbestos fiber.
- (b) **Accepted Methods/Methodologies.** Procedures, regulations, or standards, which are published by recognized standards organizations (e.g. NIOSH, ASTM, ANSI), or are included within federal, state or local governmental regulations (e.g. OSHA, USEPA).
- (c) **Active Project.** A project becomes active when construction of the personal decontamination unit is required to be commenced, or when ACM, PACM or asbestos material is disturbed, whichever comes first, and is considered active until completion of Phase IID, unless, in response to a written request, permission is granted by the Department of Labor Engineering Services Unit to suspend the work on the project for a specified time period.
- (d) **Additional Contractual Work.** Additional asbestos abatement work not originally included within the NYS DOL asbestos project notification.
- (e) **Adequately Wet.** Sufficiently mix or penetrate a material with amended water to prevent the release of visible emissions. If visible emissions are observed coming from asbestos-containing material, then the material has not been adequately wetted.
- (f) **Aggressive Air Sampling.** An accepted method of sampling in which mechanical equipment is used before and during the sampling period to stir up settled dust/asbestos fibers.
- (g) **Agricultural Building/Structure.** A building/structure which is or was used exclusively for agricultural or horticultural activity. This definition does not include converted structures or buildings currently used for residential purposes or the processing or retail merchandising of agricultural or horticultural commodities.
- (h) **Airlock.** A system for permitting entrance and exit, while restricting air movement, between a contaminated area and an uncontaminated area.
- (i) **Air Sampling.** The process of measuring the fiber content of a known volume of air collected during a specific period of time, using accepted methodologies.

- (j) **Ambient Air Sampling.** A method of sampling by which an air sample is collected outside the regulated abatement work area, and is collected without the use of aggressive air sampling techniques.
- (k) **Amended Water.** Water to which a surfactant has been added.
- (l) **Approved Asbestos Safety Training Program.** A program, approved by the New York State Commissioner of Health, providing training in the various disciplines that may be involved in an asbestos project.
- (m) **Asbestos.** Any naturally occurring hydrated mineral silicate separable into commercially usable fibers, including chrysotile (serpentine), amosite (cummingtonite-grunerite), crocidolite (riebeckite), tremolite, anthophyllite and actinolite.
- (n) **Asbestos Abatement Contractor.** An asbestos contractor who performs abatement during an asbestos project or employs persons performing such abatement.
- (o) **Asbestos Abatement Contractor Daily Project Log.** A bound daily narrative journal maintained by the asbestos abatement contractor, which contains a synopsis of all pertinent events that occur throughout Phase II of the asbestos project.
- (p) **Asbestos Containing Material (ACM).** Any material containing greater than one percent (1%) of asbestos, also known as **Asbestos Material**.
- (q) **Asbestos Contractor.** The State, any political subdivision of the State, a public authority or any other governmental agency or instrumentality thereof, self-employed person, company, unincorporated association, firm, partnership or corporation and any owner or operator thereof, which engages in any portion of an asbestos project, or employs persons engaged in any portion of an asbestos project.
- (1) **Exception:** Property owners or prime contractors who hire asbestos contractors, but do not, themselves, direct or control the work.
- (r) **Asbestos Control Bureau.** Asbestos Control Bureau, Division of Safety and Health, New York State Department of Labor.
- (s) **Asbestos Handler (Worker).** Any person who performs the duties described in Section 56.3.2(d)(1) of this Part.
- (t) **Asbestos Handling Certificate.** A certificate issued by the Commissioner in any of the categories set forth in Section 56-3.2(d) of this Part.
- (u) **Asbestos Handling License.** A license issued by the Commissioner pursuant to Section 56-3.1 of this Part.



- (v) **Asbestos Material.** Any material containing greater than one percent (1%) of asbestos, also known as **Asbestos Containing Material (ACM)**.
- (w) **Asbestos Project.** Work that involves the removal, encapsulation, enclosure, repair or disturbance of friable or non-friable asbestos, or any handling of asbestos material that may result in the release of asbestos fibers. For the purpose of compliance with this Part, an asbestos project shall include any disturbance of asbestos fibers, and the planning, asbestos survey (as per Subpart 56-5.1), design, background air sampling, inspection, air sampling and oversight of abatement work, cleanup, and the handling of all asbestos material subject to abatement, as well as the supervising of such activities. Installation of friable ACM shall also be considered an asbestos project. An asbestos project starts with Phase I when the planning, asbestos survey, and design work begins or is required to begin. The project shall not be considered completed until Phase II D is complete. (See Table 1 Below).

**Table 1**

**ASBESTOS PROJECT PHASES OF WORK**

<b>Phase I</b> (Prior to Asbestos Abatement Contractor Mobilization) Pre-Abatement		<b>Phase II</b> Start-----Abatement-----End			
<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Asbestos Survey, Planning & Design	Background Air Sampling	Regulated Abatement Work Area(s) Preparation & Enclosure Construction	Asbestos Handling including, Gross Removal or Abatement, Initial Cleans and Waste Removal	Final Cleaning & Clearance Air Samples	Final Waste Removal From Site
Start-----Asbestos Project-----End					

- (1) Where any work is subcontracted, only that part of the work involving asbestos shall be deemed to be an asbestos project.
- (2) Asbestos projects include Large asbestos projects, Small asbestos projects, Minor asbestos projects, incidental disturbance asbestos projects and emergency projects as defined elsewhere in this Part. For purposes of licensing, certification, notification, air sampling and asbestos survey requirements, asbestos projects shall include in-plant operations.

- (i) **Large asbestos project.** An asbestos project involving the removal, disturbance, enclosure, encapsulation, repair or handling of 160 square feet or more of ACM, PACM or asbestos material or 260 linear feet or more of ACM, PACM or asbestos material.
- (ii) **Small asbestos project.** An asbestos project involving the removal, encapsulation, enclosure, repair, disturbance or any handling of more than 10 and less than 160 square feet of ACM, PACM or asbestos material or more than 25 and less than 260 linear feet of ACM, PACM or asbestos material.
- (iii) **Minor asbestos project.** An asbestos project involving the removal, disturbance, repair, encapsulation, enclosure or handling of 10 square feet or less of ACM, PACM or asbestos material, or 25 linear feet or less of ACM, PACM or asbestos material.
- (x) **Asbestos Project Air Sampling Technician.** An individual who performs the duties described in Section 56-3.2(d)(3) of this Part.
- (y) **Asbestos Survey.** A thorough inspection for and identification of all PACM, suspect ACM, or asbestos material throughout the building/structure or portion thereof to be demolished, renovated, remodeled, or repaired. (See Subpart 56-5)
- (z) **Asbestos Waste.** ACM, PACM, asbestos material or asbestos contaminated objects requiring disposal pursuant to applicable laws or regulations. This includes RACM as well as Category I and II Non-Friable ACM.
- (aa) **Authorized Visitor.** Any party on an asbestos project, who has to enter the asbestos project restricted area or regulated abatement work area for emergency purposes or regulatory compliance inspections. Examples include the building/structure owner, his or her agent or representative, utility company representatives, the Commissioner or his or her agents, and personnel of any regulatory agency having jurisdiction over the project. Visitors shall comply with all applicable requirements of OSHA 29 CFR 1926.
- (ab) **Background Air Sampling.** A method used to determine airborne fiber concentrations in the area where abatement work is to be conducted, prior to starting Phase II A of the asbestos project.
- (ac) **Barriers.** Critical Barriers and Isolation Barriers.
- (ad) **Building/Structure.** A structure wholly or partially enclosed within exterior walls and a roof, intended to afford shelter to persons, animals or property; or a structure used as a conveyance for utilities, vehicular traffic or pedestrians (e.g. bridge, tunnel, manhole, subsurface conduits).
- (ae) **Building/Structure Owner.** The State, any political subdivision of the State, a public authority or any other governmental agency or instrumentality thereof,

person, company, unincorporated association, firm, partnership or corporation in whom legal title to the premises is vested unless the premises are held in land trust, in which instance building/structure owner means the person in whom beneficial title is vested.

- (af) **Building/Structure Owner's Authorized Representative.** A licensed asbestos contractor firm contractually responsible for execution of any building owner's responsibility, as required by this Part, during any phase of an asbestos project at the building owner's building/structure.
- (ag) **Bulk Sampling.** Accepted methods for collecting samples of suspect materials for appropriate analyses by NYS ELAP approved laboratories, to determine asbestos content.
- (ah) **Category I Non-Friable ACM.** NESHAP classification - Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products, containing more than one percent (1%) asbestos, that when dry, can not be crumbled, pulverized, or reduced to powder by hand pressure.
- (ai) **Category II Non-Friable ACM.** NESHAP classification - Any material, excluding Category I Non-Friable ACM, containing more than one percent (1%) asbestos, that when dry, can not be crumbled, pulverized, or reduced to powder by hand pressure.
- (aj) **Class I Asbestos Work.** OSHA term meaning activities involving the abatement of Thermal Systems Insulation (TSI), and surfacing ACM and PACM.
- (ak) **Class II Asbestos Work.** OSHA term meaning activities involving the abatement of ACM which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- (al) **Class III Asbestos Work.** OSHA term meaning Repair and Maintenance operations, where no more than a minor quantity of ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.
- (am) **Class IV Asbestos Work.** OSHA term meaning Maintenance and Custodial Activities during which employees contact but do not disturb ACM or PACM and activities to clean up non-ACM dust, waste and debris resulting from Class I, II and III activities.
- (an) **Clean Room.** An uncontaminated area or room, which is a part of the personal decontamination enclosure, with provisions for storage and changing of persons' street clothes and protective equipment.
- (ao) **Cleanup.** The utilization of HEPA-vacuuuming or wet cleaning or both to control and eliminate accumulations of asbestos material and asbestos waste material.

- (ap) **Clearance Air Sampling.** An accepted method of air sampling used upon completion of final cleaning, during Phase IIC of an asbestos project. This method consists of using aggressive air sampling techniques to dislodge and stir up remaining asbestos fibers, then air samples are collected for appropriate analysis to determine representative airborne fiber concentrations.
- (aq) **Commissioner.** The Commissioner of the New York State Department of Labor.
- (ar) **Containment.** The negative-pressurized enclosure within the restricted area, which establishes the regulated abatement work area and surrounds the location where the asbestos abatement is actually taking place.
- (as) **Critical Barrier.** Barriers that seal off all openings to or within the defined regulated abatement work area, including but not limited to operable windows and skylights, doorways, ducts, grills, diffusers and any other penetrations to surfaces adjacent to or within the regulated abatement work area.
- (at) **Curtained Doorway.** An assembly which consists of at least three (3) overlapping sheets of 6-mil fire retardant plastic over an existing or temporarily framed doorway, used to separate the chambers within the decontamination system enclosures and to inhibit airflow if the negative air ventilation system shuts down.
- (au) **Decontamination System Enclosure.** A series of connected rooms, usually attached to the regulated abatement work area, for the decontamination of persons, materials and equipment.
- (av) **Demolition.** The wrecking or removal of any load-supporting structural member of a building or structure.
- (aw) **Department.** The New York State Department of Labor.
- (ax) **Disturbance.** Any activities that disrupt the matrix of ACM or PACM, or generate debris, visible emissions or airborne asbestos fibers from ACM or PACM. This includes moving of friable asbestos containing material from one place to another.
- (ay) **Emergency.** An unexpected, unanticipated or unforeseen occurrence, including but not limited to, a steam, chemical, gas or water line rupture, a boiler failure, a building/structure collapse, or act of nature which may pose:
- (1) an imminent danger to the health and safety of the public; or
  - (2) an asbestos-related risk to the health and safety of the public from release of asbestos fibers.
- (az) **Emergency Asbestos Project.** An asbestos project which is necessary to respond to an emergency.

- (ba) **Encapsulant (Sealant) or Encapsulating Agent.** A liquid material, which can be applied to asbestos material and which prevents the release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together and to the substrate (penetrating encapsulant). See **Sealant**.
- (bb) **Encapsulation.** Abatement consisting of the coating or spraying of asbestos material with an encapsulant (sealant) or encapsulating agent.
- (bc) **Enclosure.** Abatement consisting of the construction of airtight walls, ceilings and floors between the asbestos material and the building/structure environment, or around surfaces coated with asbestos material, or any other appropriate procedure as determined by the Department, which prevents the release of asbestos fibers.
- (bd) **EPA.** The United States Environmental Protection Agency.
- (be) **Equipment Room.** A contained area or room which is part of the personal decontamination system enclosure with provisions for the storage of contaminated clothing and equipment.
- (bf) **Fiber (Asbestos Fiber).** Generally, a slender or elongated structure, which results from the break up of ACM, PACM or asbestos material. However, the definition of an asbestos fiber is also dependent upon the approved accepted method of air sampling and analysis utilized for the specific phase of the asbestos project.
- (bg) **Fixed Object.** Equipment, furniture or other item that is affixed, as a whole, to a floor, ceiling, wall or other building structure or system.
- (bh) **Friable.** Any material that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure, or is capable of being released into the air by hand pressure.
- (bi) **Glovebag.** A manufactured impervious bag-like enclosure constructed of at least six (6) mil transparent plastic, seamless at the bottom, with inward-projecting long sleeve glove(s), which may also contain an inward-projecting water-wand sleeve, an internal tool pouch, and an attached, labeled receptacle or portion for asbestos waste. The glovebag is constructed and installed to surround the object or area to be decontaminated and contain all asbestos fibers released during the abatement process.
- (bj) **Glovebag Technique.** A method for removing asbestos material from heating, ventilating, and air conditioning (HVAC) ducts, piping runs, valves, joints and elbows, and other non-planar surfaces, by use of a glovebag.
- (bk) **Glue.** A material used as an adhesive, such as the material used to hold tiles to a surface. See **Mastic**.

- (bl) **HEPA-Filter.** A high efficiency particulate air filter capable of trapping and retaining 99.97 percent of all mono-dispersed particles of 0.3 microns in diameter or larger.
- (bm) **HEPA-Vacuum Equipment.** Vacuuming equipment designed for abatement, with a high efficiency particulate air filtration system.
- (bn) **Holding Area.** A chamber in the waste decontamination enclosure utilized for temporary storage of containerized ACM waste, prior to transfer to waste transport vehicle.
- (bo) **Incidental Disturbance.** The unintentional disturbance of, ACM, PACM, or asbestos material.
- (bp) **Incidental Disturbance Asbestos Project.** The cleanup, repair or encapsulation of less than 10 square feet or less than 25 linear feet of incidentally disturbed ACM, PACM or asbestos material.
- (bq) **Inspector.** Any person who performs the duties described at Section 56-3.2(d)(4) of this Part.
- (br) **Intact.** Asbestos material that has not crumbled, been pulverized, or otherwise been damaged or disturbed, and the material's matrix has not noticeably deteriorated.
- (bs) **Intermediate Portions of a Project.** The discrete abatement segments that will take place where non-continuous interim notifications are required, as per Section 56-3.4(b)(4)(v), for large asbestos projects
- (bt) **Isolation Barriers.** Installed temporary hardwall barriers that complete the containment enclosure and establish the regulated abatement work area.
- (bu) **Lockdown Encapsulant.** A thinned out bridging encapsulant used for lockdown purposes to assist with cleanup as per this Part.
- (bv) **Management Planner.** Any person who performs the duties described at Section 56-3.2 (d) (9) of this Part.
- (bw) **Mastic.** A pasty material used as an adhesive.
- (bx) **Mounted Object.** Equipment, furniture, or other item that is attached, in whole or in part, to a floor, ceiling, wall or other building structure or system or to a fixed object.
- (by) **Movable Object.** Equipment, furniture or other item that is not attached or affixed, in whole or in part, to a floor, ceiling, wall or other building structure or system or to a fixed object.



- (bz) **Multi-employer Work Sites.** Any demolition, renovation, remodeling or repair project work site, which includes work covered by this part, where more than one employer is reasonably expected to be on-site during the project.
- (ca) **Multiple Abatement.** The abatement of more than one type of ACM within the same containment.
- (cb) **Negative Air Pressure Equipment.** A local exhaust system, capable of maintaining air pressure within a containment at a lower pressure than the air pressure outside of such containment, and which provides for HEPA filtration of all air exhausted from the containment.
- (cc) **NESHAP.** National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).
- (cd) **NIOSH.** The National Institute for Occupational Safety and Health.
- (ce) **Non-Asbestos Material.** Any material documented to contain one percent (1%) or less of asbestos.
- (cf) **Non-Friable.** Any material that when dry, can not be crumbled, pulverized, or reduced to powder by hand pressure, and is not capable of being released into the air by hand pressure.
- (cg) **Non-Friable Organically Bound (NOB) Asbestos Material.** Non-friable asbestos materials embedded in flexible-to-rigid asphalt or vinyl matrices, including but not limited to flooring materials, adhesives, mastics, asphalt shingles, roofing materials and caulks.
- (ch) **Occupied Area.** Any frequented portion of the work site where abatement is not taking place.
- (ci) **Operations and Maintenance Worker.** Any person who performs the duties described at Section 56-3.2 (d) (5) of this Part.
- (cj) **OSHA.** The Occupational Safety and Health Administration.
- (ck) **Outside Air.** The air immediately outside the building or structure in which an asbestos project is performed.
- (cl) **Person.** Any natural person.
- (cm) **Personal Air Sampling.** Air sampling located in a worker's breathing zone.
- (cn) **Personal Decontamination System Enclosure.** An area designated for controlled passage of all persons to and from the regulated abatement work area.



- (co) **Personal Protective Equipment (PPE).** Disposable work suits or coveralls, head covering, eye protection, footwear, gloves and appropriate NIOSH-approved respirators with appropriate NIOSH-approved filters.
- (cp) **Plasticize.** To cover floors, walls, ceilings or other surfaces with 6-mil fire-retardant plastic sheeting.
- (cq) **Presumed Asbestos Containing Material (PACM).** All Thermal System Insulations and Surfacing Materials found in buildings constructed no later than 1980. PACM is considered to be ACM unless proven otherwise by appropriate bulk sampling and laboratory analyses.
- (cr) **Project Air Sampling.** Area air sampling conducted in accordance with Subpart 56-4 of this Part during the course of the asbestos project.
- (cs) **Project Designer.** Any person who performs the duties described at Section 56-3.2(d)(7) of this Part.
- (ct) **Project Monitor.** Any person who performs the duties described at Section 56-3.2(d)(8).
- (cu) **Public.** Any natural person except:
- (1) A person engaged in an asbestos project;
  - (2) An authorized visitor;
  - (3) Police, fire, or other public safety personnel.
- (cv) **Receptor.** Any opening, which could admit asbestos fibers into a structure if not properly protected. Examples include but are not limited to operable windows, doors, vents, air intakes or exhausts of any mechanical device within a building or structure.
- (cw) **Regulated Abatement Work Area.** The portion of the restricted area where abatement work actually occurs. For tent work areas, the interior of each tent is a regulated abatement work area. For OSHA Class I and Class II asbestos abatement, the interior of the restricted area containment enclosure is the regulated abatement work area. For exterior non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or containment enclosures, the entire restricted area surrounding the abatement location is considered to be the regulated abatement work area.
- (cx) **Regulated Asbestos-Containing Material (RACM).** Friable ACM or PACM, Category I Non-friable ACM that has become friable or has been or will be subjected to sanding, grinding, cutting or abrading, or Category II Non-friable ACM that has a high probability of becoming or has become crumbled,

pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

- (cy) **Remodel.** For purposes of this code, remodel shall mean the same as renovation.
- (cz) **Remote Decontamination System Enclosure.** Decontamination systems that are not attached to the regulated abatement work area but are within the work site.
- (da) **Removal.** Abatement, consisting of operations where ACM, PACM or asbestos material is removed or stripped from structures or substrates. This includes demolition operations.
- (db) **Renovation.** The altering of an existing building/structure, or a portion of building/structure components or systems, including the stripping, removal or abatement of ACM from a building or structure. Operations in which load-supporting structural members are wrecked or taken out are demolitions.
- (dc) **Repair (Asbestos).** Abatement, consisting of corrective action for a Minor Asbestos Project using required work practices to control fiber release from damaged ACM, PACM or asbestos material.
- (dd) **Repair.** The replacement, overhaul, rebuilding, reconstructing or reconditioning of any part of a building/structure component or system with like or similar material or parts, due to damage or excessive wear.
- (de) **Respiratory Protection.** NIOSH-approved respirators with appropriate NIOSH-approved filters.
- (df) **Restricted Area.** A restricted area established and marked for the abatement portion of an asbestos project. This area shall include, but not be limited to asbestos project regulated abatement work areas and any contiguous decontamination facilities, adjoining staging areas where work materials, debris or waste from such work may accumulate, remote decontamination areas, and waste storage areas (dumpsters, trailers, etc.).
- (dg) **Restricted Asbestos Handler (Allied Trades).** Any person who performs the duties described at Section 56-3.2 (d) (2) of this Part.
- (dh) **Satisfactory Clearance Air Sampling Results.** See Subpart 56-4.
- (di) **Sealant.** An encapsulating agent. A material which can be applied to asbestos containing material which prevents the release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together and to the substrate (penetrating encapsulant).

- (dj) **Sequential Abatement.** The abatement of different types of asbestos containing material within a common regulated abatement work area in a priority order. (See Section 56-8.6)
- (dk) **Shower Room.** A room between the clean room and the equipment room in the personal decontamination enclosure with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.
- (dl) **Supervisor.** Any person who performs the duties described at Section 56-3.2 (d) (6) of this Part.
- (dm) **Suspect Miscellaneous ACM.** Any suspect asbestos-containing material that is not PACM, such as floor tiles, ceiling tiles, mastics/adhesives, sealants, roofing materials, cementitious materials, etc. A listing of typical suspect miscellaneous ACM can be found in Subpart 56-5. All suspect miscellaneous ACM must be assumed to be ACM, unless proven otherwise by appropriate bulk sampling and laboratory analyses.
- (dn) **Surfacing Material.** Material that is sprayed-on, troweled-on, or otherwise applied to surfaces (such as acoustical or finish plaster on ceilings and walls, and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes).
- (do) **Surfactant.** A chemical wetting agent added to water to reduce the surface tension of the water and improve its penetration for added mitigation of airborne fiber release.
- (dp) **Tent.** A fire retardant polyethylene enclosure that includes walls, ceiling and a floor as required to remove ACM, PACM or asbestos material.
- (dq) **Thermal System Insulation.** Insulation material applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat gain or loss.
- (dr) **Variance (Site-specific).** Relief in accordance with Section 30 of the Labor Law from specific sections of Industrial Code Rule 56 for a specific project.
- (ds) **Variance (Applicable) (AV).** Blanket relief in accordance with Section 30 of the Labor Law from specific sections of Industrial Code Rule 56 for a particular type of project.
- (dt) **Visible Emission.** Any emission of particulate material that can be seen without the aid of instruments.
- (du) **Washroom.** A room between the regulated abatement work area and the holding area in the waste decontamination system enclosure, where equipment and waste containers are wet cleaned or HEPA-vacuumed.

- (dv) **Waste Decontamination System Enclosure.** An area, consisting of a washroom and a holding area separated from each other by airlocks, designated for the controlled transfer of materials and equipment from the regulated abatement work area.
- (dw) **Waste Staging Area.** The area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the regulated abatement work area.
- (dx) **Wet Cleaning.** The process of eliminating asbestos contamination from surfaces, equipment or other objects by using cloths, mops, or other cleaning tools that have been saturated with amended water.
- (dy) **Work Site.** Building, structure, parcel of land or premises where an asbestos project takes place.

## **APPENDIX B**

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### **Arctic Company & Personnel Licensure**

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**New York State – Department of Labor**

Division of Safety and Health  
License and Certificate Unit  
State Campus, Building 12  
Albany, NY 12240

**ASBESTOS HANDLING LICENSE**

Arctic Enterprises, Inc.  
Ste100A  
222 Teall Ave  
  
Syracuse, NY 13210

FILE NUMBER: 14-75469  
LICENSE NUMBER: 75469  
LICENSE CLASS: FULL  
DATE OF ISSUE: 04/07/2021  
EXPIRATION DATE: 04/30/2022

Duly Authorized Representative – Janette Van Wie:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.



Amy Phillips, Director  
For the Commissioner of Labor



## ASBESTOS CERTIFICATION



The following letter codes (as shown on the handling certificate) represent the corresponding asbestos classifications.

A - Asbestos Handler	D - Asbestos Inspector	G - Asbestos Supervisor
B - Allied Trades	E - Management Planner	H - Asbestos Project Monitor
C - Air Sampling Technician	F - Operations & Maintenance	I - Asbestos Project Designer



## SECTION 031000

### CONCRETE FORMING AND ACCESSORIES

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Form-facing material for cast-in-place concrete.
  - 2. Shoring, bracing, and anchoring.

##### 1.03 DEFINITIONS

- A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.
- B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review the following:
    - a. Special inspection and testing and inspecting agency procedures for field quality control.
    - b. Construction, movement, contraction, and isolation joints
    - c. Forms and form-removal limitations.
    - d. Anchor rod and anchorage device installation tolerances.

##### 1.05 ACTION SUBMITTALS

- A. Product Data: For each of the following:
  - 1. Exposed surface form-facing material.

2. Concealed surface form-facing material.
3. Forms for cylindrical columns.
4. Form ties.
5. Form-release agent.

## **1.06 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For testing and inspection agency.
- B. Research Reports: For insulating concrete forms indicating compliance with International Code Council Acceptance Criteria AC308.
- C. Minutes of preinstallation conference.

## **1.07 QUALITY ASSURANCE**

- A. Testing and Inspection Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.
  1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
  2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

### **2.02 FORM-FACING MATERIALS**

- A. As-Cast Surface Form-Facing Material:
  1. Provide continuous, true, and smooth concrete surfaces.
  2. Furnish in largest practicable sizes to minimize number of joints.
  3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:
    - a. Plywood, metal, or other approved panel materials.
    - b. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

- 1) APA HDO (high-density overlay).
  - 2) APA MDO (medium-density overlay); mill-release agent treated and edge sealed.
  - 3) APA Structural 1 Plyform, B-B or better; mill oiled and edge sealed.
  - 4) APA Plyform Class I, B-B or better; mill oiled and edge sealed.
- B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.
1. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces without spiral or vertical seams not exceeding specified formwork surface class.
1. Provide forms with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

### 2.03 RELATED MATERIALS

- A. Reglets: Fabricate reglets of not less than 0.022-inch- (0.55-mm-) thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.
- D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
1. Furnish units that leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
  2. Furnish ties that, when removed, leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.
  3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

## PART 3 - EXECUTION

### 3.01 INSTALLATION OF FORMWORK

- A. Comply with ACI 301 (ACI 301M).
- B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M) and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.
- C. Limit concrete surface irregularities as follows:
  - 1. Surface Finish-1.0: ACI 117 Class D, 1 inch (25 mm).
  - 2. Surface Finish-2.0: ACI 117 Class B, 1/4 inch (6 mm).
- D. Construct forms tight enough to prevent loss of concrete mortar.
  - 1. Minimize joints.
  - 2. Exposed Concrete: Symmetrically align joints in forms.
- E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.
  - 1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
  - 2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
  - 3. Install keyways, reglets, recesses, and other accessories, for easy removal.
- F. Do not use rust-stained, steel, form-facing material.
- G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.
  - 1. Provide and secure units to support screed strips
  - 2. Use strike-off templates or compacting-type screeds.
- H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.
  - 1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
  - 2. Locate temporary openings in forms at inconspicuous locations.
- I. Chamfer unless noted otherwise, exterior corners and edges of permanently exposed concrete.
- J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches (305 mm).

- K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.
1. Determine sizes and locations from trades providing such items.
  2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.
- L. Construction and Movement Joints:
1. Construct joints true to line with faces perpendicular to surface plane of concrete.
  2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  3. Place joints perpendicular to main reinforcement.
  4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.
    - a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  6. Space vertical joints in walls as indicated on Drawings.
    - a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
- M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.
1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
  2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.
- N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### **3.02 INSTALLATION OF EMBEDDED ITEMS**

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
5. Clean embedded items immediately prior to concrete placement.

### **3.03 REMOVING AND REUSING FORMS**

- A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
  1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
  2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work.
  1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
  2. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.
  1. Align and secure joints to avoid offsets.
  2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

### **3.04 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
  1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.

USOPCTC Renovation Project  
Belleayre Administration Building and Gondola  
Storage Building Contract  
PIN: BEL.21.006

031000 - 7

2. Inspect insulating concrete forms for shape, location, and dimensions of the concrete member being formed.

END OF SECTION 031000

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**SECTION 032000**  
**CONCRETE REINFORCING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Steel reinforcement bars.
  2. Welded-wire reinforcement.

**1.03 ACTION SUBMITTALS**

- A. Product Data: For the following:
1. Each type of steel reinforcement.
  2. Bar supports.
  3. Mechanical splice couplers.
- B. Shop Drawings: Comply with ACI SP-066:
1. Include placing drawings that detail fabrication, bending, and placement.
  2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
- C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.
1. Location of construction joints is subject to approval of the Architect.

**1.04 INFORMATIONAL SUBMITTALS**

- A. Qualification Statements: For testing and inspection agency.
- B. Welding certificates.
1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M

C. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:
  - a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
2. Mechanical splice couplers.

D. Field quality-control reports.

E. Minutes of preinstallation conference.

**1.05 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
  1. Store reinforcement to avoid contact with earth.

**PART 2 - PRODUCTS**

**2.01 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

**2.02 REINFORCEMENT ACCESSORIES**

- A. Joint Dowel Bars: ASTM A615/A615M, Grade 60 (Grade 420), plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
  - a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.
- C. Mechanical Splice Couplers: ACI 318 (ACI 318M) same material of reinforcing bar being spliced; tension-compression type.
- D. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch (1.2908 mm) in diameter.
  1. Finish: Plain unless otherwise noted.

## **2.03 FABRICATING REINFORCEMENT**

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Protection of In-Place Conditions:
  1. Do not cut or puncture vapor retarder.
  2. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

### **3.02 INSTALLATION OF STEEL REINFORCEMENT**

- A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.
- B. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- D. Accurately position, support, and secure reinforcement against displacement.
  1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
  2. Do not tack weld crossing reinforcing bars.

- E. Preserve clearance between bars of not less than 1 inch (25 mm), not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.
- F. Provide concrete coverage in accordance with ACI 318 (ACI 318M).
- G. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- H. Splices: Lap splices as indicated on Drawings.
  - 1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches (610 mm), whichever is greater.
  - 2. Stagger splices in accordance with ACI 318 (ACI 318M).
  - 3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.
  - 4. Weld reinforcing bars in accordance with AWS D1.4/D1.4M, where indicated on Drawings.
- I. Install welded-wire reinforcement in longest practicable lengths.
  - 1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."
    - a. For reinforcement less than W4.0 or D4.0, continuous support spacing shall not exceed 12 inches (305 mm).
  - 2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches (50 mm).
  - 3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
  - 4. Lace overlaps with wire.

### 3.03 JOINTS

- A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  - 1. Place joints perpendicular to main reinforcement.
  - 2. Continue reinforcement across construction joints unless otherwise indicated.
  - 3. Do not continue reinforcement through sides of strip placements of floors and slabs.
- B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

### 3.04 INSTALLATION TOLERANCES

- A. Comply with ACI 117 (ACI 117M).

**3.05 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Inspections:
  - 1. Steel-reinforcement placement.
  - 2. Steel-reinforcement mechanical splice couplers.
  - 3. Steel-reinforcement welding.

END OF SECTION 032000

## SECTION 033000

### CAST-IN-PLACE CONCRETE

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.
- B. Related Requirements:
  - 1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form liners, insulating concrete forms, and waterstops.
  - 2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.

##### 1.03 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixtures.
    - c. Ready-mix concrete manufacturer.
    - d. Concrete Subcontractor.

2. Review the following:
  - a. Special inspection and testing and inspecting agency procedures for field quality control.
  - b. Construction joints, control joints, isolation joints, and joint-filler strips.
  - c. Semirigid joint fillers.
  - d. Vapor-retarder installation.
  - e. Anchor rod and anchorage device installation tolerances.
  - f. Cold and hot weather concreting procedures.
  - g. Concrete finishes and finishing.
  - h. Curing procedures.
  - i. Forms and form-removal limitations.
  - j. Shoring and reshoring procedures.
  - k. Methods for achieving specified floor and slab flatness and levelness.
  - l. Concrete repair procedures.
  - m. Concrete protection.
  - n. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)
  - o. Protection of field cured field test cylinders.

#### **1.05 ACTION SUBMITTALS**

**A. Product Data:** For each of the following.

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Silica fume.
6. Performance-based hydraulic cement
7. Aggregates.
8. Admixtures:
  - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
9. Fiber reinforcement.
10. Vapor retarders.
11. Curing materials.
12. Joint fillers.
13. Repair materials.

**B. Design Mixtures:** For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Durability exposure class.



4. Maximum w/cm.
5. Slump limit.
6. Air content.
7. Nominal maximum aggregate size.
8. Synthetic micro-fiber content.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Intended placement method.
11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
  - a. Location of construction joints is subject to approval of the Architect.

D. Samples: For vapor retarder.

E. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:

1. Concrete Class designation.
2. Location within Project.
3. Exposure Class designation.
4. Formed Surface Finish designation and final finish.
5. Final finish for floors.
6. Curing process.
7. Floor treatment if any.

## 1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.
2. Ready-mixed concrete manufacturer.
3. Testing agency: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Fiber reinforcement.
4. Curing compounds.
5. Bonding agents.
6. Adhesives.
7. Vapor retarders.
8. Semirigid joint filler.

9. Joint-filler strips.
10. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Silica fume.
6. Performance-based hydraulic cement.
7. Aggregates.
8. Admixtures:

- a. Permeability-Reducing Admixture: Include independent test reports, indicating compliance with specified requirements, including dosage rate used in test.

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Research Reports:

1. For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.
2. For sheet vapor retarder/termite barrier, showing compliance with ICC AC380.

F. Preconstruction Test Reports: For each mix design.

G. Field quality-control reports.

H. Minutes of preinstallation conference.

**1.07 QUALITY ASSURANCE**

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.
- D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
  1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

#### **1.08 PRECONSTRUCTION TESTING**

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.
  1. Include the following information in each test report:
    - a. Admixture dosage rates.
    - b. Slump.
    - c. Air content.
    - d. Seven-day compressive strength.
    - e. 28-day compressive strength.

#### **1.09 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with ASTM C94/C94M and ACI 301 (ACI 301M).

#### **1.10 FIELD CONDITIONS**

- A. Cold-Weather Placement: Comply with ACI 301 (ACI 301M) and ACI 306.1 and as follows.
  1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  2. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).
  3. Do not use frozen materials or materials containing ice or snow.
  4. Do not place concrete in contact with surfaces less than 35 deg F (1.7 deg C), other than reinforcing steel.
  5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M), and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F (35 deg C).
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

## **PART 2 - PRODUCTS**

### **2.01 CONCRETE, GENERAL**

- A. ACI Publications: Comply with ACI 301 (ACI 301M) unless modified by requirements in the Contract Documents.

### **2.02 CONCRETE MATERIALS**

- A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain each type of admixture from single source from single manufacturer.

- B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II.
2. Fly Ash: ASTM C618, Class C or F.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.

- C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:

- a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.
- b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.
- c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. (2.37 kg/cu. m) for moderately reactive aggregate or 3 lb./cu. yd. (1.78 kg/cu. m) for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301 (ACI 301M).

2. Maximum Coarse-Aggregate Size:

- a. Footings and foundation walls: 1-1/2 inches nominal.
- b. Coarse Aggregate shall be crushed limestone.

3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C260/C260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
  2. Retarding Admixture: ASTM C494/C494M, Type B.
  3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
  5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
- F. Water and Water Used to Make Ice: ASTM C94/C94M, potable.

## **2.03 VAPOR RETARDERS**

- A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 10 mils (0.25 mm) thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

## **2.04 CURING MATERIALS**

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.
  1. Color:
    - a. Ambient Temperature Below 50 deg F (10 deg C): Black.
    - b. Ambient Temperature between 50 deg F (10 deg C) and 85 deg F (29 deg C): Any color.
    - c. Ambient Temperature Above 85 deg F (29 deg C): White.
- D. Water: Potable or complying with ASTM C1602/C1602M.
- E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

## 2.05 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 in accordance with ASTM D2240.
- C. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:
  - 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

## 2.06 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.
  - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
  - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
  - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand, as recommended by underlayment manufacturer.
  - 4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested in accordance with ASTM C109/C109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.
  - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
  - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
  - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
  - 4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested in accordance with ASTM C109/C109M.

## 2.07 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301 (ACI 301M).
  - 1. Use a qualified testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  - 1. Fly Ash: 25 percent.
  - 2. Combined Fly Ash and Pozzolan: 25 percent.
  - 3. Slag Cement: 50 percent.
  - 4. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- D. Admixtures: Use admixtures in accordance with manufacturer's written instructions.
  - 1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, parking structure slabs, concrete required to be watertight, and concrete with a w/cm below 0.50.
  - 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
  - 5. Use permeability-reducing admixture in concrete mixtures where indicated.

## 2.08 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Normal-weight concrete.
  - 1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
  - 2. Slump Limit: 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
  - 3. Maximum w/c Ratio: 0.50.
  - 4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch (38-mm) nominal maximum aggregate size.
- B. Foundation Walls and Piers: Normal-weight concrete.
  - 1. Minimum Compressive Strength: 4500 psi (27.6 MPa) at 28 days.



2. Slump Limit: 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture at Project site, plus or minus 1 inch (25 mm).
3. Maximum w/cm: 0.45.
4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2 inch (38-mm) nominal maximum aggregate size.

C. Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 4500 psi (31 MPa) at 28 days.
2. Slump Limit: 5 inches (125 mm), plus or minus 1 inch (25 mm).
3. Maximum w/cm: 0.45.
4. Minimum Cementitious Materials Content: 520 lb/cu. yd. (309 kg/cu. m).
5. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2 inch (38-mm) nominal maximum aggregate size.

## 2.09 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
  2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
  3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verification of Conditions:

1. Before placing concrete, verify that installation of forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
1. Daily access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
  4. Security and protection for test samples and for testing and inspection equipment at Project site.

### **3.03 INSTALLATION OF EMBEDDED ITEMS**

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
  3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

### **3.04 INSTALLATION OF VAPOR RETARDER**

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.
1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
  2. Face laps away from exposed direction of concrete pour.
  3. Lap vapor retarder over footings and grade beams not less than 6 inches (150 mm), sealing vapor retarder to concrete.
  4. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.
  5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
  6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
  7. Protect vapor retarder during placement of reinforcement and concrete.

- a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches (150 mm) on all sides, and sealing to vapor retarder.

### 3.05 JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
  1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
  2. Place joints perpendicular to main reinforcement.
    - a. Continue reinforcement across construction joints unless otherwise indicated.
    - b. Do not continue reinforcement through sides of strip placements of floors and slabs.
  3. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  5. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
  6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints as indicated and as follows.
  1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.
- D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
  2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
  3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

### 3.06 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
  2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
1. If a section cannot be placed continuously, provide construction joints as indicated.
  2. Deposit concrete to avoid segregation.
  3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
  4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301 (ACI 301M).
    - a. Do not use vibrators to transport concrete inside forms.
    - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer.
    - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
    - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Do not place concrete floors and slabs in a checkerboard sequence.
  2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  3. Maintain reinforcement in position on chairs during concrete placement.
  4. Screed slab surfaces with a straightedge and strike off to correct elevations.
  5. Level concrete, cut high areas, and fill low areas.

6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

### **3.07 FINISHING FORMED SURFACES**

#### **A. As-Cast Surface Finishes:**

1. ACI 301 (ACI 301M) Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
  - a. Patch voids larger than 1-1/2 inches (38 mm) wide or 1/2 inch (13 mm) deep.
  - b. Remove projections larger than 1 inch (25 mm).
  - c. Tie holes do not require patching.
  - d. Surface Tolerance: ACI 117 (ACI 117M) Class D.
  - e. Apply to concrete surfaces not exposed to public view.
2. ACI 301 (ACI 301M) Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
  - a. Patch voids larger than 3/4 inch (19 mm) wide or 1/2 inch (13 mm) deep.
  - b. Remove projections larger than 1/4 inch (6 mm).
  - c. Patch tie holes.
  - d. Surface Tolerance: ACI 117 (ACI 117M) Class B.
  - e. Locations: Apply to concrete surfaces exposed to public view, and are to receive a rubbed finish or be covered with a coating or covering material applied directly to concrete.

#### **B. Related Unformed Surfaces:**

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

### **3.08 FINISHING FLOORS AND SLABS**

- #### **A.**
- Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

#### **B. Float Finish:**

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.

2. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 (ACI A117M) tolerances for conventional concrete.
3. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155 (ASTM E1155M), for a randomly trafficked floor surface:

a. Slabs on Ground:

- 1) Specified overall values of flatness,  $F_F$  35; and of levelness,  $F_L$  25; with minimum local values of flatness,  $F_F$  24; and of levelness,  $F_L$  17.

D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.

1. Coordinate required final finish with Architect before application.
2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

**3.09 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS**

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.

3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

### 3.10 CONCRETE CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
  1. Comply with ACI 301 (ACI 301M) and ACI 306.1 for cold weather protection during curing.
  2. Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M) for hot-weather protection during curing.
  3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h (1 kg/sq. m x h), calculated in accordance with ACI 305.1,) before and during finishing operations.
- B. Curing Formed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:
  1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
  2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
  3. If forms remain during curing period, moist cure after loosening forms.
  4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
    - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
    - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
    - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
    - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
      - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
      - 2) Maintain continuity of coating and repair damage during curing period.
- C. Curing Unformed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:
  1. Begin curing immediately after finishing concrete.
  2. Interior Concrete Floors:
    - a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
      - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.



- a) Lap edges and ends of absorptive cover not less than 12-inches (300-mm).
  - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
- 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive.
  - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
  - b) Cure for not less than seven days.
- 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
  - a) Water.
  - b) Continuous water-fog spray.
- b. Floors to Receive Curing Compound:
  - 1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
  - 2) Recoat areas subjected to heavy rainfall within three hours after initial application.
  - 3) Maintain continuity of coating, and repair damage during curing period.
  - 4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

### 3.11 TOLERANCES

- A. Conform to ACI 117 (ACI 117M).

### 3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.
  - 1. Defer joint filling until concrete has aged at least one month.
  - 2. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints.
- D. Overfill joint, and trim joint filler flush with top of joint after hardening.

### 3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete:
  - 1. Repair and patch defective areas when approved by Architect.
  - 2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete.
    - a. Limit cut depth to 3/4 inch (19 mm).
    - b. Make edges of cuts perpendicular to concrete surface.
    - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
    - d. Fill and compact with patching mortar before bonding agent has dried.
    - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
    - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
    - b. Compact mortar in place and strike off slightly higher than surrounding surface.
  - 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces:
  - 1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
    - a. Correct low and high areas.
    - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  3. After concrete has cured at least 14 days, correct high areas by grinding.
  4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
    - a. Finish repaired areas to blend into adjacent concrete.
  5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
    - a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
    - b. Feather edges to match adjacent floor elevations.
  6. Correct other low areas scheduled to remain exposed with repair topping.
    - a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations.
    - b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  7. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete.
    - a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around.
    - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
    - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
    - d. Place, compact, and finish to blend with adjacent finished concrete.
    - e. Cure in same manner as adjacent concrete.
  8. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar.
    - a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
    - b. Dampen cleaned concrete surfaces and apply bonding agent.
    - c. Place patching mortar before bonding agent has dried.
    - d. Compact patching mortar and finish to match adjacent concrete.
    - e. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

### 3.14 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.
- B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
  2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
  3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
    - a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:
      - 1) Project name.
      - 2) Name of testing agency.
      - 3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
      - 4) Name of concrete manufacturer.
      - 5) Date and time of inspection, sampling, and field testing.
      - 6) Date and time of concrete placement.
      - 7) Location in Work of concrete represented by samples.
      - 8) Date and time sample was obtained.
      - 9) Truck and batch ticket numbers.
      - 10) Design compressive strength at 28 days.
      - 11) Concrete mixture designation, proportions, and materials.
      - 12) Field test results.
      - 13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
      - 14) Type of fracture and compressive break strengths at seven days and 28 days.
- C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

D. Inspections:

1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Batch Plant Inspections: On a random basis, as determined by Architect.
6. In-Field Reinforcing Steel Inspection: Includes verification of placement tolerances, splicing procedures, size and Grade, Stability (chairs and spacers), cleanliness, and condition of protective coating.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
  - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M:
  - a. One test at point of placement for each truck.
  - b. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete:
  - a. One test for each truck.
4. Concrete Temperature: ASTM C1064/C1064M:
  - a. One test hourly when air temperature is 40 deg F (4.4 deg C) and below or 80 deg F (27 deg C) and above, and one test per truck.
5. Compression Test Specimens: ASTM C31/C31M:
  - a. Cast and laboratory cure two sets of two 6-inch (150 mm) by 12-inch (300 mm) or 4-inch (100 mm) by 8-inch (200 mm) cylinder specimens for each composite sample.
  - b. Cast, initial cure, and field cure two sets of two standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C39/C39M.
  - a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days.
  - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa) if specified compressive strength is 5000 psi (34.5 MPa), or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi (34.5 MPa).
  8. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
  9. Additional Tests:
    - a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
    - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.
      - 1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 (ACI 301M), section 1.6.6.3.
  10. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
  11. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 (ASTM E1155M) within 24 hours of completion of floor finishing and promptly report test results to Architect.

### 3.15 PROTECTION

- A. Protect concrete surfaces as follows:
1. Protect from petroleum stains.
  2. Diaper hydraulic equipment used over concrete surfaces.
  3. Prohibit vehicles from interior concrete slabs.
  4. Prohibit use of pipe-cutting machinery over concrete surfaces.
  5. Prohibit placement of steel items on concrete surfaces.
  6. Prohibit use of acids or acidic detergents over concrete surfaces.

END OF SECTION 033000

**SECTION 051200**  
**STRUCTURAL STEEL FRAMING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Structural steel.
2. Shrinkage-resistant grout.

**1.02 DEFINITIONS**

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

**1.03 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

**1.04 ACTION SUBMITTALS**

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Anchor rods.
4. Threaded rods.
5. Shop primer.
6. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.



3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
  4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
  5. Identify members not to be shop primed.
- C. Delegated Design Submittal: For structural-steel connections indicated on Drawings to comply with design loads, include analysis data.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer, fabricator, and testing agency.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Mill test reports for structural-steel materials, including chemical and physical properties.
- E. Product Test Reports: For the following:
  1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
  2. Direct-tension indicators.
  3. Tension-control, high-strength, bolt-nut-washer assemblies.
- F. Survey of existing conditions.

#### **1.06 QUALITY ASSURANCE**

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).
- B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
  1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
  2. Clean and relubricate bolts and nuts that become dry or rusty before use.
  3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Comply with applicable provisions of the following specifications and documents:
  1. ANSI/AISC 303.
  2. ANSI/AISC 360.
  3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."
- B. Connection Design Information:
  1. Fabricator's experienced steel detailer shall select or complete connections in accordance with ANSI/AISC 303.
    - a. Select and complete connections using schematic details indicated and ANSI/AISC 360.
    - b. Use Allowable Stress Design; data are given at service-load level.

### **2.02 STRUCTURAL-STEEL MATERIALS**

- A. W-Shapes: ASTM A992/A992M.
- B. Channels, Angles, M-Shapes, S-Shapes: ASTM A36/A36M.
- C. Plate and Bar: ASTM A36/A36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade B structural tubing.
- E. Steel Pipe: ASTM A53/A53M, Type E or Type S, Grade B.
  1. Weight Class: Standard unless otherwise noted.
  2. Finish: Black except where indicated to be galvanized.

- F. Welding Electrodes: Comply with AWS requirements.

## 2.03 BOLTS AND CONNECTORS

- A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325 (Grade A325M), Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH (ASTM A563M, Class 10S), heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1 (Type 8.8-1), compressible-washer type with plain finish.
- B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490 (Grade A490M), Type 1, heavy-hex steel structural bolts[ or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH (ASTM A563M, Class 10S), heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
1. Direct-Tension Indicators: ASTM F959/F959M, Type 490-1 (Type 10.9-1), compressible-washer type with plain finish.
- C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH (ASTM A563M, Class 10S), heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
1. Finish: Plain.

## 2.04 RODS

- A. Unheaded Anchor Rods: ASTM F1554, Grade 36.
1. Configuration: As indicated.
  2. Nuts: ASTM A563 (ASTM A563M) heavy-hex carbon steel.
  3. Plate Washers: ASTM A36/A36M carbon steel.
  4. Washers: ASTM F436 (ASTM F436M), Type 1, hardened carbon steel.
  5. Finish: Plain.
- B. Headed Anchor Rods: ASTM F1554, Grade 36, straight.
1. Nuts: ASTM A563 (ASTM A563M) heavy-hex carbon steel.
  2. Plate Washers: ASTM A36/A36M carbon steel.
  3. Washers: ASTM F436 (ASTM F436M), Type 1, hardened carbon steel.
  4. Finish: Plain.
- C. Threaded Rods: ASTM A36/A36M.

1. Nuts: ASTM A63 (ASTM A563M) heavy-hex carbon steel.
2. Washers: ASTM F436 (ASTM F436M), Type 1, hardened carbon steel.
3. Finish: Plain.

## **2.05 PRIMER**

### **A. Steel Primer:**

1. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

## **2.06 SHRINKAGE-RESISTANT GROUT**

- ### **A. Nonmetallic, Shrinkage-Resistant Grout:** ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

## **2.07 FABRICATION**

- ### **A. Structural Steel:** Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.
1. Camber structural-steel members where indicated.
  2. Fabricate beams with rolling camber up.
  3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
  4. Mark and match-mark materials for field assembly.
  5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- ### **B. Thermal Cutting:** Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- ### **C. Bolt Holes:** Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.
- ### **D. Finishing:** Accurately finish ends of columns and other members transmitting bearing loads.
- ### **E. Cleaning:** Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 3.
- ### **F. Holes:** Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

## **2.08 SHOP CONNECTIONS**

- A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
  1. Joint Type: Snug tightened unless noted otherwise.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
  1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

## **2.09 SHOP PRIMING**

- A. Shop prime steel surfaces, except the following:
  1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
  2. Surfaces to be field welded.
  3. Surfaces of high-strength bolted, slip-critical connections.
  4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
  5. Galvanized surfaces unless indicated to be painted.
- B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards:
  1. SSPC-SP 2 or, if more stringent, as required.
- C. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
  1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
  2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

## **2.10 SOURCE QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
  2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
  3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M.
  4. Prepare test and inspection reports.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

### **3.03 ERECTION**

- A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.
- B. Baseplates Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
1. Set plates for structural members on wedges, shims, or setting nuts as required.
  2. Weld plate washers to top of baseplate.

3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
  4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.
- C. Maintain erection tolerances of structural steel within ANSI/AISC 303.
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.
  2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

### **3.04 FIELD CONNECTIONS**

- A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.
1. Joint Type: Snug tightened unless otherwise noted.

### **3.05 REPAIR**

- A. Touchup Painting:
1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
    - a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
  2. Cleaning and touchup painting are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."



### **3.06 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:
1. Verify structural-steel materials and inspect steel frame joint details.
  2. Verify weld materials and inspect welds.
  3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
1. Bolted Connections: Inspect and test bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
  2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

END OF SECTION 051200

**SECTION 061000**  
**ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

A. Section Includes:

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Shear wall panels.
4. Wood blocking, cants, and nailers.
5. Plywood backing panels.

B. Related Requirements:

1. Section 061533 "Wood Patio Decking" for elevated decks.
2. Section 061600 "Sheathing" for sheathing, subflooring, and underlayment.
3. Section 061613 "Insulating Sheathing" for insulated sheathing.
4. Section 061753 "Shop-Fabricated Wood Trusses" for wood trusses made from dimension lumber.

**1.3 DEFINITIONS**

- A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) size or greater but less than 5 inches nominal (114 mm actual) size in least dimension.
- C. Exposed Framing: Framing not concealed by other construction.
- D. OSB: Oriented strand board.
- E. Timber: Lumber of 5 inches nominal (114 mm actual) size or greater in least dimension.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
  3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.
  4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.
- C. Plan layout drawings for engineered wood products, including member designations and spacings, bridging/blocking sizes and locations.
- D. Layout plans and/or reference to contract drawing sections/details indicating locations and model numbers of metal framing anchors.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
1. Wood-preservative-treated wood.
  2. Fire-retardant-treated wood.
  3. Engineered wood products.
  4. Power-driven fasteners.
  5. Post-installed anchors.
  6. Metal framing anchors.

#### 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that

periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

- B. Manufacturer of prefabricated wall panels shall be certified by the Structural Building Components Association (SBCA) and participate in their QC wall panel program for wall panel production.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

## PART 2 - PRODUCTS

### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
  - 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
  - 1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

### 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
  2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
- D. Application: Treat items indicated on Drawings, and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
  5. Wood floor plates that are installed over concrete slabs-on-grade.

## 2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
1. Treatment shall not promote corrosion of metal fasteners.
  2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.

3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664 and design value adjustment factors shall be calculated according to ASTM D6841. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by testing agency.
- E. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not bleed through, contain colorants, or otherwise adversely affect finishes.
- F. Application: Treat items indicated on Drawings, and the following:
1. Framing for raised platforms.
  2. Concealed blocking.
  3. Framing for non-load-bearing partitions.
  4. Framing for non-load-bearing exterior walls.
  5. Roof construction.
  6. Plywood backing panels.

#### 2.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.
1. Application: Interior partitions not indicated as load bearing.
  2. Species:
    - a. Hem-fir (north); NLGA.
    - b. Southern pine or mixed southern pine; SPIB.
    - c. Spruce-pine-fir; NLGA.
    - d. Hem-fir; WCLIB, or WWPA.
    - e. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
    - f. Northern species; NLGA.
    - g. Eastern softwoods; NeLMA.
    - h. Western woods; WCLIB or WWPA.
- B. Load-Bearing Partitions: No. 2 grade.

1. Application: Exterior walls and interior load-bearing partitions.
2. Species (Studs):
  - a. Douglas fir-larch; WCLIB or WWPA.
  - b. Spruce-pine-fir; NLGA.
  - c. Hem-fir; WCLIB or WWPA.
  - d. Douglas fir-larch (north); NLGA.
3. Species (Top and Bottom Plates):
  - a. Southern pine; SPIB.
  - b. Mixed southern pine; SPIB.
  - c. Spruce-pine-fir; NLGA.

C. Ceiling Joists: No. 2 grade.

1. Species:
  - a. Douglas fir-larch; WCLIB or WWPA.
  - b. Spruce-pine-fir; NLGA.
  - c. Hem-fir; WCLIB or WWPA.
  - d. Douglas fir-larch (north); NLGA.

D. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade.

1. Species:
  - a. Douglas fir-larch; WCLIB or WWPA.
  - b. Spruce-pine-fir; NLGA.
  - c. Hem-fir; WCLIB or WWPA.
  - d. Douglas fir-larch (north); NLGA.

E. Exposed Framing: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

1. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 ENGINEERED WOOD PRODUCTS

- A. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.
- B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559.



1. Extreme Fiber Stress in Bending, Edgewise: 2600 psi (17.9 MPa) for 12-inch nominal- (286-mm actual-) depth members.
2. Modulus of Elasticity, Edgewise: 2,000,000 psi (13 700 MPa).

C. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559.

1. Extreme Fiber Stress in Bending, Plank orientation: 2400 psi (16.5 MPa) for 12-inch nominal- (286-mm actual-) depth members.
2. Modulus of Elasticity, Edgewise: 1,800,000 psi (12 400 MPa).

## 2.6 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Cants.
4. Furring.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Western woods; WCLIB or WWPA.

C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
4. Eastern softwoods; No. 2 Common grade; NeLMA.
5. Northern species; No. 2 Common grade; NLGA.
6. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

## 2.7 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

## 2.8 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
  - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193, or ICC-ES AC308 as appropriate for the substrate.
  - 1. Material (Interior Application): Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
  - 2. Material (Exterior Application): Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F738M and ASTM F836M, Grade A1 or A4).
- E. Partition Wall Top Place Anchor: Simpson SDPW Deflection Screw for use at non load bearing partitions as indicated in contract documents.

## 2.9 METAL FRAMING ANCHORS

- A. Allowable design loads, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

- B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 (Z180) coating designation.
  - 1. Use for interior locations unless otherwise indicated.
- C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.
  - 1. Use for wood-preserved-treated lumber and where indicated.
- D. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
  - 1. Use for exterior locations and where indicated.

## 2.10 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).
- D. Adhesives for Gluing, Furring, and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.
- E. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chlorpyrifos as its active ingredient.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels,
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- G. Do not splice structural members between supports unless otherwise indicated.
- H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
- I. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
  - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
  - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
  - 3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
  - 4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
- J. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- K. Comply with AWPAC M4 for applying field treatment to cut surfaces of preservative-treated lumber.
  - 1. Use inorganic boron for items that are continuously protected from liquid water.
  - 2. Use copper naphthenate for items not continuously protected from liquid water.

- L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. Table 2304.10.1, "Fastening Schedule," in 2020 Building Code of New York State unless otherwise noted.
  - 2. ICC-ES evaluation report for fastener.
- M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- N. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
  - 1. Comply with approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
  - 2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.

### 3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

### 3.3 INSTALLATION OF WOOD FURRING

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring horizontally and vertically at 24 inches (610 mm) o.c.
- C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal- (19-by-38-mm actual-) size furring vertically at 16 inches (406 mm) o.c.

### 3.4 INSTALLATION OF WALL AND PARTITION FRAMING

- A. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.
1. For exterior walls, provide wood studs sized and spaced as indicated.
  2. For interior partitions and walls, provide wood studs sized and spaced as indicated.
  3. Provide continuous horizontal blocking at midheight of partitions more than 96 inches (2438 mm) high, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.
- B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.
- C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches (1200 mm) and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches (1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1800 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.
  2. For load-bearing walls, provide jamb studs and headers as indicated.

### 3.5 INSTALLATION OF FLOOR JOIST FRAMING

- A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38 mm) of bearing on wood or metal, or 3 inches (76 mm) on masonry. Attach floor joists as follows:
1. Where supported on wood members, by using metal framing anchors.
  2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.
- B. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1200 mm).
- C. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than one-third depth of joist; do not locate closer than 2 inches (50 mm) from top or bottom.
- D. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist at ends of joists unless nailed to header or band.

- E. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist over supports.
- F. Provide solid blocking between joists under jamb studs for openings.
- G. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.
  - 1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.
- H. Provide bridging of type indicated below, at intervals of 96 inches (2438 mm) o.c., between joists.
  - 1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal- (19-by-64-mm actual-) size lumber, double-crossed and nailed at both ends to joists.
  - 2. Steel bridging installed to comply with bridging manufacturer's written instructions.

### 3.6 INSTALLATION OF CEILING JOIST AND RAFTER FRAMING

- A. Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.
  - 1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate, and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal- (19-by-184-mm actual-) size or 2-by-4-inch nominal- (38-by-89-mm actual-) size stringers spaced 48 inches (1200 mm) o.c. crosswise over main ceiling joists.
- B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
  - 1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against valley rafters.
  - 2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against hip rafter.
- C. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.



### 3.7 INSTALLATION OF STAIR FRAMING

- A. Provide stair framing members of size, space, and configuration indicated or, if not indicated, to comply with the following requirements:
1. Size: 2-by-12-inch nominal (38-by-286-mm actual) size, minimum.
  2. Material: Laminated-veneer lumber or solid lumber.
  3. Notching: Notch rough carriages to receive treads, risers, and supports; leave at least 3-1/2 inches (89 mm) of effective depth.
  4. Spacing: At least three framing members for each 36-inch (914-mm) clear width of stair.
  5. Connect each end of stringers to landings with pre-engineered metal connector/hanger.
- B. Provide stair framing with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

### 3.8 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

**SECTION 061533**  
**WOOD PATIO DECKING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Composite plastic decking and stair treads.
2. Railings for composite decks.

B. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for patio deck foundations.
2. Section 06 10 00 "Rough Carpentry" for patio deck framing.

**1.02 DEFINITIONS**

- A. Boards: Lumber of less than 2 inches nominal (38 mm actual) in thickness and 2 inches nominal (38 mm actual) or greater in width.

**1.03 ACTION SUBMITTALS**

A. Product Data:

1. For plastic decking and railing components. Include installation instructions.

B. Samples:

1. Plastic Decking: Not less than 24 inches (600 mm) long, showing the range of variation to be expected in appearance of decking, including surface texture.
2. Railing Components: Section of top rail not less than 12 inches (300 mm) long.

**1.04 INFORMATIONAL SUBMITTALS**

A. Evaluation Reports: For the following, from ICC-ES:

1. Plastic decking.
2. Decking and railing post fasteners.

- B. Manufacturer Certification: Submit signed documentation that rail system, connection hardware and fasteners have been manufactured to comply with the specified structural performance.

## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials under cover and protected from weather and contact with damp or wet surfaces. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- B. Handle and store plastic lumber to comply with manufacturer's written instructions.

## **1.06 WARRANTY**

- A. Special Decking Warranty: Manufacturer agrees to repair or replace components of deck and rail assemblies that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Splitting, splintering, decay or other structural failure related to weathering.
    - b. Inconsistent finish failure that results in a spotty appearance of decking.
  - 2. Warranty Period: Ten years from date of Substantial Completion.
- B. Special Railing Warranty: Manufacturer agrees to repair or replace components of deck and rail assemblies that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Deterioration of painted metal finishes beyond normal weathering.
    - b. Structural failure including bending and attachment failures.
  - 2. Warranty Period: 25 years from date of Substantial Completion.
  - 3. Finish Warranty Period: Ten years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
    - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).

- b. Infill load and other loads need not be assumed to act concurrently.

## 2.02 COMPOSITE PLASTIC DECKING AND STAIR TREADS

- A. Plastic Lumber, General: Products acceptable to authorities having jurisdiction with current model code evaluation reports that show compliance with building code in effect for Project for indicated type of construction.
1. Allowable loads and spans, as documented in evaluation reports or in information referenced in evaluation reports, are not to be less than design loads and spans indicated.
- B. Composite Plastic Lumber: Solid shapes made from a mixture of cellulose fiber and polyethylene or polypropylene.
1. Basis of Design: Trex, Transcend decking.
  2. Decking Standard: ICC-ES AC109 or ICC-ES AC174.
  3. Decking Size: 0.94 by 5.5 inches (24 by 140 mm) actual.
  4. Configuration: Provide product with grooved long edges designed for fastening with concealed decking fasteners.
  5. Surface Texture: Woodgrain.
  6. Color: Island Mist.

## 2.03 RAILINGS

- A. Aluminum Railing Members:
1. Basis of Design: Trex Signature aluminum railing system.
  2. Design:
    - a. Posts: 2.5 inches (64 mm) square profile, with cap and base plate with skirt.
    - b. Rails: Square bottom rail and profiled top rail with picket punch-outs.
    - c. Balusters (Pickets): Square profile tubing at 4-inch (100 mm) oc.
      - 1) Orient balusters (pickets) vertical at sloped top and bottom rail locations.
    - d. Handrails: Round profile complying with ADA requirements.
      - 1) Provide all necessary post (wall) mount brackets.
      - 2) Provide post return rail profile at locations as shown on Drawings.
    - e. Provide all connectors, brackets, endcaps, hardware and fasteners as necessary for a complete assembly.
- B. Railing Height: 36 inches (914 mm) nominal.
- C. Color: Black.

## **2.04 MISCELLANEOUS**

- A. Provide pressure treated wood cleats as necessary to support composite stair treads.
1. Lumber: Match stringer framing species and grade.
  2. AWWA U1: Use Category UC3b.
  3. Do not use chemicals containing arsenic or chromium.
  4. Dry material to 19 percent maximum moisture content after treatment.

## **2.05 FASTENERS**

- A. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
1. Use stainless steel fasteners.
- B. Power-Driven Fasteners: ICC-ES AC70.
- C. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.

## **2.06 CONCEALED DECKING FASTENERS**

- A. Provide the following hardware as supplied by deck manufacturer to provide concealed attachment of composite decking to deck-framing:
1. Starter Clips: Black-oxide-coated, stainless-steel clips designed to be fastened to deck framing with stainless-steel screws and secure deck material with bent clip that engages grooved edge of deck board.
  2. Deck Splines: Black-oxide-coated, corrosion-resistant metal or plastic splines that fit in grooves routed into the sides of decking material and are fastened to deck framing with stainless-steel screws. Splines provide uniform spacing of decking material.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Clean substrates of projections and substances detrimental to application.

### **3.03 INSTALLATION, GENERAL**

- A. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit work to other construction; scribe and cope as needed for accurate fit.
- B. Install plastic lumber to comply with manufacturer's written instructions.
- C. Secure deck to framing with screw attached deck splines and clips per manufacturer direction.
- D. Install plastic lumber railing assemblies to comply with manufacturer's written instructions. Make all connections secure as necessary to resist a 200 pound (91 kg) applied load acting at any point along the full length of top rail in any direction.
- E. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.

### **3.04 INSTALLATION OF STAIR TREADS**

- A. Attach stair treads to framing by installing cleats as necessary to support treads and screw attaching treads to carriages per manufacturer direction.
- B. Countersink face fastener heads at treads or use concealed clip hardware. Extend treads over carriages and finish ends square. Ease all cut edges.

### **3.05 INSTALLATION OF RAILINGS**

- A. Posts: Secure base plate to decking and stair treads using fasteners as supplied by rail manufacturer as necessary to comply with performance requirements. Install post cap and base skirt to conceal base plate and fasteners.
- B. Rail Infill Assemblies: Fasten rail assemblies, consisting of top and bottom rails and balusters (pickets), to posts using fasteners as supplied by rail manufacturer
- C. Handrails:
  - 1. Secure wall brackets to posts and attach handrails to brackets using fasteners as supplied by rail manufacturer as necessary to comply with performance requirements. Install post return rail to maintain a continuous gripping surface extending 12 inches (305 mm) beyond the top and bottom of ramp/stair as indicated.
  - 2. Secure wall brackets to face of exterior wall at spacing as directed by rail manufacturer. Attach handrails to brackets using fasteners as supplied by rail manufacturer as necessary to comply with performance requirements. Coordinate bracket spacing to bypass windows. Extend rails 12 inches (305 mm) beyond ramp top and bottom.

END OF SECTION 061533

## SECTION 061600

### SHEATHING

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Roof sheathing.
  - 2. Floor sheathing
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for plywood backing panels.
  - 2. Section 061613 "Insulating Sheathing."

##### 1.03 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preserved treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
- B. Evaluation Reports: For the following, from ICC-ES:
  - 1. Wood-preserved-treated plywood.

##### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

#### PART 2 - PRODUCTS

##### 2.01 WOOD PANEL PRODUCTS

- A. Thickness: As indicated.



- B. Factory mark panels to indicate compliance with applicable standard.

## **2.02 PRESERVATIVE-TREATED PLYWOOD**

- A. Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

- C. Application: Treat items indicated on Drawings.

## **2.03 ROOF SHEATHING**

- A. Plywood Sheathing: Either DOC PS 1 or DOC PS 2, Exposure 1 sheathing.

1. Span Rating: Not less than 40/20.  
2. Nominal Thickness: As indicated.

- B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1 sheathing.

1. Span Rating: Not less than 40/20.  
2. Nominal Thickness: As indicated.

## **2.04 FLOOR SHEATHING**

- A. Untreated Sheathing:

1. AdvanTech Exposure 1 Single-Floor panels by Huber Engineered Woods, LLC.  
a. Performance Category: 23/32.  
b. Nominal Thickness: As indicated.  
c. Edge Detail: Tongue and groove.  
d. Surface Finish: Fully sanded face.

- B. Pressure Treated Sheathing:

1. Plywood Combination Subfloor-Underlayment: DOC PS 1, Exterior, Structural I, C-C Plugged single-floor panels  
a. Span Rating: Not less than 32.  
b. Nominal Thickness: Not less than 23/32 inch (18.3 mm).

- c. Edge Detail: Tongue and groove.
- d. Surface Finish: Fully sanded face.

## **2.05 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

## **2.06 MISCELLANEOUS MATERIALS**

- A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.
- B. Panel Sheathing Clips: Galvanized, 20 ga. Size to fit panel thickness.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION, GENERAL**

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
  - 1. Table 2304.10.1, "Fastening Schedule," in the ICC's 2018 International Building Code unless noted otherwise.
  - 2. ICC-ES evaluation report for fastener.
- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the day when rain is forecast.

### **3.02 WOOD STRUCTURAL PANEL INSTALLATION**

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
1. Floor Sheathing:
    - a. Glue and nail to wood framing.
    - b. Space panels 1/8 inch (3 mm) apart at edges and ends.
  2. Roof Sheathing:
    - a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
    - b. Space panels 1/8 inch (3 mm) apart at edges and ends.
    - c. Install 2 panel sheathing clips between abutting roof sheathing panels between supports.

END OF SECTION 061600

**SECTION 061613**  
**INSULATING SHEATHING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section Includes: Insulating wall sheathing with integral water-resistive barrier.
- B. Related Requirements:
1. Section 061000 "Rough Carpentry" for equipment wood backing panels.
  2. Section 061600 "Sheathing" for non-insulated wood panel products.
  3. Section 072100 "Insulation" for board insulation installed over substrates.

**1.3 REFERENCES**

- A. American Society of Mechanical Engineers (ASME): [www.asme.org](http://www.asme.org)
1. ASME B18.6.1 - Wood Screws (Inch Series)
- B. ASTM International (ASTM): [www.astm.org](http://www.astm.org)
1. ASTM A153/A153M - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
  2. ASTM C1289 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
  3. ASTM D779 - Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method
  4. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics
  5. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
  6. ASTM E96/E 96M - Test Methods for Water Vapor Transmission of Materials
  7. ASTM E331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
  8. ASTM E2357 - Test Method for Determining Air Leakage of Air Barrier Assemblies
  9. ASTM F1667 - Specification for Driven Fasteners: Nails, Spikes, and Staples
  10. ASTM G154 - Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
- C. US Department of Commerce (DOC): <http://gsi.nist.gov/global/index.cfm/L1-5/12-44/A-355>

1. DOC PS 2 - Performance Standard for Wood-Based Structural Panels
- D. International Code Council (ICC): [www.iccsafe.org](http://www.iccsafe.org)
  1. ICC IBC - International Building Code
- E. ICC Evaluation Service, Inc. (ICC-ES): [www.icc-es.org](http://www.icc-es.org)
  1. ICC-ES AC12 - Acceptance Criteria for Foam Plastic Insulation
  2. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers
  3. ICC-ES AC116 - Acceptance Criteria for Nails and Spikes
  4. ICC-ES AC148 - Acceptance Criteria for Flexible Flashing Materials
  5. ICC-ES AC201 - Acceptance Criteria for Staples
  6. ICC-ES AC269 - Acceptance Criteria for Racking Shear Evaluation of Proprietary Sheathing Materials attached to Light-Frame Wall Construction or Code-Complying Sheathing Attached to Light-Framed Walls with Proprietary Fasteners
  7. ICC-ES AC310 - Acceptance Criteria for Water-Resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers
  8. ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections
  9. ICC-ES NER-272 - Power Driven Staples and Nails for Use in All Types of Building Construction

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of sheathing product specified.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Evaluation Reports: From ICC-ES, for wood sheathing and seam tape.
- B. Product Certifications: From manufacturer, indicating that sheathing products comply with ICC-ES AC269 and ICC-ES AC310.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Warranty: Executed copy of manufacturer special warranties.

#### **1.7 QUALITY ASSURANCE**

- A. Provide wall sheathing products meeting requirements for water-resistive barrier in accordance with ICC-ES AC310.
- B. Provide wall sheathing products meeting requirements of ICC-ES AC269.

## **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with manufacturer's written instructions for protection of sheathing products from weather prior to installation.

## **1.9 WARRANTY**

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which sheathing manufacturer agrees to repair or replace sheathing products that demonstrate deterioration or failure under normal use due to manufacturing defects within warranty period specified, when installed according to manufacturer's instructions.
  - 1. Warranty Period for Sheathing: 30 years following date of Substantial Completion.
  - 2. Warranty Conditions: Special warranties exclude deterioration or failure due to structural movement resulting in stresses on sheathing products exceeding manufacturer's written specifications, or due to air or moisture infiltration resulting from cladding failure or mechanical damage.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Basis-of-Design Product: Provide sheathing products manufactured by Huber Engineered Woods LLC, Charlotte NC; Phone: (800) 933-9220; Website: [www.zipsystem.com](http://www.zipsystem.com).

### **2.2 PERFORMANCE REQUIREMENTS**

- A. Air-Barrier Assembly Air Leakage: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa), per ASTM E2375.
- B. Water-Vapor Permeance, Facer: Minimum 12 perms (689 ng/Pa x s x sq. m), ASTM E96/E96M.
- C. Weather Exposure: Manufacturer warranty applies for maximum allowable exposure period of 180 days.

### **2.3 MATERIALS**

- A. Oriented Strand Board: DOC PS 2, made with binder containing no added urea formaldehyde.
- B. Rigid Foam Plastic Insulating Board: Rigid polyisocyanurate foam core complying with ASTM C1289 Type II, Class 2, and ICC-ES AC12, with coated glass fiber facers on both sides, with the following characteristics:
  - 1. Nominal Density: 2.0 pcf (32 kg/cu. m).
  - 2. Compressive Strength, ASTM D1621: Not less than 20 psi (150 kPa).
  - 3. Vapor Permeance, ASTM E96/E96M: Less than 1.0 perm.

4. Edge Configuration: Square finished.

## 2.4 COMPOSITE INSULATING WALL SHEATHING

- A. Composite Insulating Wall Sheathing: Oriented-strand-board Exposure 1 sheathing 7/16 inch (11.1 mm) thick, with factory-laminated water-resistive barrier exterior facer, and with rigid foam plastic insulating board laminated to interior face.
  1. Basis-of-Design Product: Huber Engineered Woods LLC; ZIP System R Sheathing.
  2. Span Rating and Performance Category of Sheathing Layer: Not less than 24/16; 7/16 Performance Category.
  3. Thickness: 1-1/2 inch (38 mm).
  4. Thermal Resistivity R Value 6.6 deg F x h x sq. ft./Btu x in. at 75 deg F.
  5. Edge Profile: Square edge.
  6. Exterior Facer: Medium-density, phenolic-impregnated polymer-modified sheet material meeting requirements for ASTM D779 Grade D weather-resistive barrier in accordance with ICC AC38 and AC310, with fastener spacing symbols on exterior facer for 16-inch (406 mm) and 24-inch (610 mm) on center spacing, with the following characteristics:
    - a. Water Resistance of Coatings, ASTM D2247: Pass 14-day exposure test.
    - b. Moisture Vapor Transmission, ASTM E96: Not less than 12 perms.
    - c. Water Penetration, ASTM E331: Pass at 2.86 lbf/sq. ft. (137 Pa).
    - d. Wind Driven Rain, TAS-100: Pass.
    - e. Accelerated Weathering, ASTM G154: Pass.

## 2.5 FASTENERS

- A. Fasteners, General: Size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
  1. Corrosion Resistance: Hot-dip zinc coating, ASTM A153/A 153M or Type 304 stainless steel.
- B. Nails, Brads, and Staples: ICC AC116 and ICC AC201.
- C. Power-Driven Fasteners: ICC-ES-1539 or NER-272.
- D. Wood Screws: ASME B18.6.1.

## 2.6 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIAL

- A. Self-Adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC AC148.
  1. Basis-of-Design Product: Huber Engineered Woods; ZIP System Tape.
  2. Thickness: 0.012 inch (0.3 mm).



## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.

### **3.2 SHEATHING INSTALLATION**

- A. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.
- B. Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture- barrier.
- C. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs.
- D. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:
  - 1. ICC-ES ESR-1539 or ICC-NES NER-272 for power-driven fasteners.
  - 2. For attachment to wood framing:
    - a. Minimum 0.131-inch shank diameter nails with minimum penetration into framing equal to 1-1/2 inches. Nailing attachment pattern to be 3 inch on center spacing at panel edges and 12" on center spacing in the field.
- E. Apply seam tape at all panel seams, penetrations, and facer defects or cracks to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.

END OF SECTION 061613

## SECTION 061753

### SHOP-FABRICATED WOOD TRUSSES

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Wood roof trusses.
  - 2. Wood girder trusses.

##### 1.03 DEFINITIONS

- A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

##### 1.04 ACTION SUBMITTALS

- A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.
- B. Shop Drawings: Show fabrication and installation details for trusses.
  - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required. Locations of trusses to be coordinated to avoid conflict with mechanical/electrical/plumbing systems.
  - 2. Indicate sizes, stress grades, and species of lumber.
  - 3. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 4. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
  - 5. Show splice details and bearing details.
  - 6. Indicate location and types of all truss-to-truss connections. Nailing without connectors for truss-to-truss connections is not acceptable unless substantiated by truss manufacturer.

- C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For metal connector-plate manufacturer, Professional Engineer, and fabricator.
- B. Material Certificates: For dimension lumber specified to comply with minimum specific gravity. Indicate species and grade selected for each use and specific gravity.
- C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.
- D. Evaluation Reports: For the following, from ICC-ES:
1. Metal-plate connectors.
  2. Metal truss accessories.

#### **1.06 QUALITY ASSURANCE**

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
  2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1, and involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
  2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
  3. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.
- B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
1. Design Loads: As indicated.
  2. Maximum Deflection under Design Loads:
    - a. Roof Trusses: Total load vertical deflection of 1/240 of span or 1 inch, whichever is less.
      - 1) Live/snow load vertical deflection of 1/480 of span or 1 inch, whichever is less.
- C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

### **2.02 DIMENSION LUMBER**

- A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
  3. Provide dressed lumber, S4S.
  4. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- B. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry."

### **2.03 METAL CONNECTOR PLATES**

- A. Fabricate connector plates to comply with TPI 1.
- B. Hot-Dip Galvanized-Steel Sheet: ASTM A653/A653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.
  - 1. Use for interior locations unless otherwise indicated.

### **2.04 FASTENERS**

- A. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
- B. Nails, Brads, and Staples: ASTM F1667.

### **2.05 METAL FRAMING ANCHORS AND ACCESSORIES**

- A. Allowable design loads, as published by manufacturer, shall comply with or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 (Z180) coating designation.
  - 1. Use for interior locations unless otherwise indicated.

### **2.06 MISCELLANEOUS MATERIALS**

- A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

### **2.07 FABRICATION**

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

- C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
  - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

## **2.08 SOURCE QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections.
  - 1. Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.
  - 2. Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.
- B. Correct deficiencies in Work that special inspections indicate do not comply with the Contract Documents.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses as indicated; adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- H. Securely connect each truss ply required for forming built-up girder trusses.

1. Anchor trusses to girder trusses as indicated.
- I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
  1. Install bracing to comply with Section 061000 "Rough Carpentry."
  2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- J. Install wood trusses within installation tolerances in TPI 1.
- K. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- L. Replace wood trusses that are damaged or do not comply with requirements.
  1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

### **3.02 REPAIRS AND PROTECTION**

- A. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Repair damaged galvanized coatings on exposed surfaces according to ASTM A780/A780M and manufacturer's written instructions.

### **3.03 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections to verify that temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

END OF SECTION 061753



## SECTION 062023

### INTERIOR FINISH CARPENTRY

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Interior trim, including interior wood door frames.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for blocking not exposed to view.
  - 2. Section 099123 "Interior Painting" for priming of interior finish carpentry.

##### 1.03 DEFINITIONS

- A. MDF: Medium-density fiberboard.
- B. MDO: Plywood with a medium-density overlay on the face.
- C. PVC: Polyvinyl chloride.

##### 1.04 ACTION SUBMITTALS

- A. Product Data: For each type of process and shop-fabricated product. Indicate component materials, dimensions and profiles. Include construction and application details.

##### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation.
  - 1. Store materials within interior weather tight space.
- B. Deliver interior finish carpentry materials only when environmental conditions comply with requirements specified for installation areas. If interior finish carpentry materials must be stored

in other than installation areas, store only where environmental conditions comply with requirements specified for installation areas.

## **1.06 FIELD CONDITIONS**

- A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet-work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
  - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS, GENERAL**

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber on back with grade stamp of grading agency.

### **2.02 INTERIOR TRIM**

- A. Lumber Trim for Opaque Finish (Painted Finish):
  - 1. Species and Grade:
    - a. Alder, aspen, basswood, cottonwood, gum, magnolia, soft maple, sycamore, tupelo or yellow poplar; NHLA - A Finish.
  - 2. Maximum Moisture Content for Softwoods: 15 percent.
  - 3. Finger Jointing: Not allowed.
  - 4. Face Surface: Surfaced (smooth).
  - 5. Door and Window Casing Trim Profile: Square stock. Size as indicated on Drawings.

## **2.03 MISCELLANEOUS MATERIALS**

- A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.
- B. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
- C. Multipurpose Construction Adhesive: Formulation, complying with ASTM D3498, that is recommended for indicated use by adhesive manufacturer.

## **2.04 FABRICATION**

- A. Back out or kerf back side of the following members, unless ends are exposed in finished work:
  - 1. Interior standing and running trim.
  - 2. Door and window casings and frames.
  - 3. Low wall caps.
- B. Ease edges of lumber less than 1 inch (25 mm) in nominal thickness to 1/16-inch (1.5-mm) radius and edges of lumber 1 inch (25 mm) or more in nominal thickness to 1/8-inch (3-mm) radius.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Clean substrates of projections and substances detrimental to application.
- B. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer/fabricator.

### 3.03 INSTALLATION, GENERAL

- A. Do not use materials that are unsound; warped; improperly treated or finished; inadequately seasoned; too small to fabricate with proper jointing arrangements; or with defective surfaces, sizes, or patterns.
- B. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials.
  - 1. Use concealed shims where necessary for alignment.
  - 2. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
  - 3. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
  - 4. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining interior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
  - 5. Coordinate interior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate interior finish carpentry.

### 3.04 INSTALLATION OF STANDING AND RUNNING TRIM

- A. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available.
  - 1. Do not use pieces less than 24 inches (610 mm) long, except where necessary.
  - 2. Stagger joints in adjacent and related standing and running trim.
  - 3. Cope or miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint.
  - 4. Use scarf joints for end-to-end joints.
  - 5. Plane backs of casings to provide uniform thickness across joints where necessary for alignment.
  - 6. Install trim after gypsum-board joint finishing operations are completed.
  - 7. Install without splitting; drill pilot holes before fastening where necessary to prevent splitting.
  - 8. Fasten to prevent movement or warping.
  - 9. Countersink fastener heads on exposed carpentry work and fill holes.

### 3.05 ADJUSTING

- A. Replace interior finish carpentry that is damaged or does not comply with requirements.
  - 1. Interior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
- B. Adjust joinery for uniform appearance.

**3.06 CLEANING**

- A. Clean interior finish carpentry on exposed and semi-exposed surfaces.
- B. Restore damaged or soiled areas and touch up factory-applied finishes if any.

**3.07 PROTECTION**

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
  - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062023

**SECTION 064116**

**PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes:**

1. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.

**B. Related Requirements:**

1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 123661 "Solid Surfacing Countertops."

**1.02 COORDINATION**

- A.** Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

**1.03 ACTION SUBMITTALS**

- A.** Product Data: For each type of product.

**B. Shop Drawings:**

1. Include plans, elevations, sections and attachment details.
2. Show full-size details.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.

**C. Samples for Verification: For the following:**

1. Plastic Laminates: 8 by 10 inches (200 by 250 mm) for each color and pattern required.
2. Thermally Fused Laminate Panels: 8 by 10 inches (200 by 250 mm) for each color.
3. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

**1.04 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For manufacturer.
- B. Product Certificates: For the following:
  - 1. Composite wood products.
  - 2. Thermally fused laminate panels.
  - 3. High-pressure decorative laminate.
  - 4. Adhesives.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Manufacturer of products.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

**1.07 FIELD CONDITIONS**

- A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.



## PART 2 - PRODUCTS

### 2.01 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
- B. Architectural Woodwork Standards Grade: Premium.
- C. Type of Construction: Frameless.
- D. Door and Drawer-Front Style: Flush overlay.
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
  - 1. Basis of Design: Provide laminate as indicated in Finish Legend on Drawings.
- F. Laminate Cladding for Exposed Surfaces:
  - 1. Horizontal Surfaces: Grade HGS.
  - 2. Vertical Surfaces: Grade HGS.
  - 3. Edges: Grade HGS.
  - 4. Pattern Direction: Vertically for doors and fixed panels, horizontally for drawer fronts.
- G. Materials for Semi-exposed Surfaces:
  - 1. Surfaces Other Than Drawer Bodies: Thermally fused laminate panels.
    - a. Edges of Thermally Fused Laminate Panel Shelves: PVC or polyester edge banding.
    - b. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.
  - 2. Drawer Sides and Backs: Solid-hardwood lumber.
  - 3. Drawer Bottoms: Hardwood plywood or thermally fused laminate panels.
- H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
- J. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
  - 1. As indicated by laminate manufacturer's designations on Drawings.

## 2.02 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
  2. Particleboard (Medium Density): ANSI A208.1, Grade M-2-Exterior Glue.
  3. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

## 2.03 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
- B. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 135 degrees of opening, self-closing.
- C. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
- D. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.
- E. Shelf Rests: ANSI/BHMA A156.9, B04013; two-pin plastic with shelf hold-down clip.
- F. Drawer Slides: ANSI/BHMA A156.9.
1. Standard Duty (Grade 1 and Grade 2): Side mount and extending under bottom edge of drawer.
  2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mount.
    - a. Type: Full overtravel extension.
    - b. Material: Aluminum or zinc-plated ball bearing slides.
    - c. Motion Feature: Self-closing mechanism.
  3. General-purpose drawers not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide 75 lb (34 kg) load capacity.
  4. File drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide 100 lb (45 kg) load capacity.
- G. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

- H. Grommets for Cable Passage: 2-inch (51-mm) OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
  - 1. Color: As selected from manufacturer's available options.
- I. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
  - 1. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.
  - 2. Satin Stainless Steel: ANSI/BHMA 630.
- J. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

## **2.04 MISCELLANEOUS MATERIALS**

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesive for Bonding Plastic Laminate: PVA.
  - 1. Adhesive for Bonding Edges: Hot-melt adhesive.

## **2.05 FABRICATION**

- A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

### 3.02 INSTALLATION

- A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.
  - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
  - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
  - 3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips.

### 3.03 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semi-exposed surfaces.

END OF SECTION 064116

**SECTION 071326**

**SELF-ADHERING SHEET WATERPROOFING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Modified bituminous sheet waterproofing.
  2. Molded-sheet drainage panels.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

**1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
  2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, expansion joints, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

**1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

- B. Sample Warranties: For special warranties.

#### **1.06 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

#### **1.07 FIELD CONDITIONS**

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.

1. Do not apply waterproofing in snow, rain, fog, or mist.

- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

#### **1.08 WARRANTY**

- A. Manufacturer's Warranty:

1. Waterproofing Warranty: Manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.

- a. Warranty Period: Five years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Source Limitations for Waterproofing System: Obtain waterproofing materials and molded-sheet drainage panels from single source from single manufacturer.

#### **2.02 MODIFIED BITUMINOUS SHEET WATERPROOFING**

- A. Modified Bituminous Sheet Waterproofing: Minimum 60-mil (1.5-mm) nominal thickness, self-adhering sheet consisting of 56 mils (1.4 mm) of rubberized asphalt laminated on one side to a 4-mil- (0.10-mm-) thick, polyethylene-film reinforcement with release liner on adhesive side.

1. Basis of Design: Carlisle, CCW- Miradri 860/861  
2. Physical Properties:

- a. Tensile Strength, Membrane: 250 psi (1.7 MPa) minimum; ASTM D412, Die C, modified.
  - b. Ultimate Elongation: 300 percent minimum; ASTM D412, Die C, modified.
  - c. Low-Temperature Flexibility: Pass at minus 20 deg F (minus 29 deg C); ASTM D1970/D1970M.
  - d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch (3-mm) movement; ASTM C836/C836M.
  - e. Puncture Resistance: 40 lbf (180 N) minimum; ASTM E154/E154M.
  - f. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D570.
  - g. Water Vapor Permeance: 0.05 perm (2.9 ng/Pa x s x sq. m) maximum; ASTM E96/E96M, Water Method.
  - h. Hydrostatic-Head Resistance: 200 feet (60 m) minimum; ASTM D5385.
3. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

## **2.03 AUXILIARY MATERIALS**

- A. Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
- B. Primer: Liquid primer recommended for substrate by sheet waterproofing material manufacturer.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by sheet waterproofing material manufacturer.
- D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.
- F. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm), predrilled at 9-inch (229-mm) centers.
- G. Protection Course: Provide membrane protection in addition to specified molded sheet drainage panels as required by waterproofing manufacture to maintain the specified warranty coverage.
  1. ASTM D6506, semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners.

## **2.04 MOLDED-SHEET DRAINAGE PANELS**

- A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel with Polymeric Film: Composite subsurface drainage panel acceptable to waterproofing manufacturer and consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 (0.21-mm) sieve



laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per ft. (112 to 261 L/min. per m).

1. Basis of Design: Carlisle, CCW MiraDRAIN 6000/6200.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing.
  1. Verify that concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
  2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D4263.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 PREPARATION**

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Remove grease, oil, bitumen, form-release agents, paints, curing compounds and other penetrating contaminants or film-forming coatings from concrete.
- C. Remove fins, ridges, mortar and other projections.
- D. Fill form tie holes, honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D4258.
  1. Install sheet strips of width according to manufacturer's written instructions and center over treated construction and cracks exceeding a width of 1/16 inch (1.6 mm).
- F. Corners: Prepare, prime and treat inside and outside corners in accordance with manufacturer's instructions.
  1. Install membrane strips centered over vertical inside corners. Install 3/4-inch (19-mm) fillets of liquid membrane on horizontal inside corners.
  2. At footing-to-wall intersections, extend liquid membrane in each direction from corner or install membrane strip centered over corner.
- G. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions.

### **3.03 INSTALLATION OF MODIFIED BITUMINOUS SHEET WATERPROOFING**

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.
  - 1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F (16 deg C).
- D. Apply continuous sheets over already-installed sheet strips, bridging substrate cracks, construction, and contraction joints.
- E. Seal edges of sheet waterproofing terminations with mastic.
- F. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches (150 mm) beyond repaired areas in all directions.
- G. Immediately install protection course with butted joints over waterproofing membrane.
  - 1. Molded-sheet drainage panels may be used in place of a separate protection course to vertical applications when approved by waterproofing manufacturer and installed immediately.

### **3.04 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS**

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

### **3.05 PROTECTION, REPAIR, AND CLEANING**

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 071326

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**SECTION 072100**

**THERMAL INSULATION**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Polyisocyanurate foam-plastic board insulation.
  2. Glass-fiber blanket insulation.
- B. Related Requirements:
1. Section 061600 "Sheathing" for composite foam-plastic and wood sheathing installed directly over wood framing.
  2. Section 092900 "Gypsum Board" for acoustical, sound attenuation blanket insulation.

**1.03 ACTION SUBMITTALS**

- A. Product Data: For the following:
1. Polyisocyanurate foam-plastic board insulation.
  2. Glass-fiber blanket insulation.

**1.04 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- B. Research Reports: For foam-plastic insulation, from ICC-ES.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
1. Do not expose to sunlight except as necessary to install and conceal.
  2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.

3. Quickly complete installation and concealment of foam-plastic board insulation.

## **PART 2 - PRODUCTS**

### **2.01 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION**

- A. Polyisocyanurate Board Insulation, Foil Faced: ASTM C1289, foil faced, Type I, Class 1 or 2.
  1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  2. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
  3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width.

### **2.02 GLASS-FIBER BLANKET INSULATION**

- A. General Requirements:
  1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  2. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
  3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width. Comply with R-values as indicated on Drawings.
- B. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
  1. Use unfaced layer of insulation on cold side of faced insulation within attic space.
- C. Glass-Fiber Blanket Insulation, Kraft Faced: ASTM C665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).
  1. Provide (1) layer of faced insulation and (1) layer of unfaced insulation in attic space. Total R-value of both combined layers to match the indicated R-value performance.

### **2.03 ACCESSORIES**

- A. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
- B. Seam Tape for Foam-Plastic Insulation Board: Pressure-sensitive foil-faced tape recommended by sheathing manufacturer for sealing joints and penetrations in sheathing.
- C. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

### **3.02 INSTALLATION, GENERAL**

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

### **3.03 INSTALLATION OF FOUNDATION WALL INSULATION**

- A. Butt panels together on inside face of foundation wall for tight fit. Extend insulation continuous from top of masonry wall to the depth as indicated on drawings.
- B. Adhesive Installation: Install with adhesive according to manufacturer's written instructions.
- C. Apply seam tape to joints between foam-plastic insulation panels and at penetrating items.

### **3.04 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION**

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
  - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
  - 3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.

4. Attics:
  - a. Install first layer of faced insulation within rafter framing depth. Install second layer of unfaced insulation perpendicular to rafters with adjacent batts snugly butted together.
  - b. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
5. Floor Construction at Vestibules:
  - a. Provide unfaced insulation within framing cavity as indicated.
6. For wood-framed construction, install blankets according to ASTM C1320.
  - a. Lap blanket flange of faced insulation over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
7. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings and seal each continuous area of insulation to ensure airtight installation.
  - a. Exterior Walls: Set units with facing placed toward interior of construction.
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
  2. Maintain continuity of vapor retarder facing at all locations.

### **3.05 INSTALLATION OF INSULATION BOARDS OVER WOOD PANEL SUBSTRATES**

- A. Butt panels together over existing wood sheathing for tight fit. Extend insulation continuous over the entire surface. Terminate tight to opening penetrations and butt tight to adjacent insulating sheathing at new construction.
- B. Installation: Install with adhesive or mechanical fasteners according to manufacturer's written instructions as necessary to hold material in place prior to fiber cement finish panel installation.
- C. Apply seam tape to joints between foam-plastic insulation panels, at penetrating items and at juncture with insulating sheathing.

### **3.06 PROTECTION**

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100



**SECTION 072600**

**VAPOR RETARDERS**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Reinforced-polyethylene vapor retarders installed horizontally below crawl space stone fill layer.

**1.03 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

**1.04 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

**PART 2 - PRODUCTS**

**2.01 POLYETHYLENE VAPOR RETARDERS**

- A. Polyethylene Vapor Retarders: ASTM D4397, 10-mil- (0.25-mm-) thick sheet, with maximum permeance rating of 0.1 perm (5.7 ng/Pa x s x sq. m).

**2.02 ACCESSORIES**

- A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

**PART 3 - EXECUTION**

**3.01 PREPARATION**

- A. Clean substrates of substances that are harmful to vapor retarders, including removing projections capable of puncturing vapor retarders.

### **3.02 INSTALLATION OF VAPOR RETARDERS IN CRAWL SPACES**

- A. Install vapor retarders over prepared grade. Lap joints a minimum of 12 inches (305 mm) and seal with manufacturer's recommended tape. Install second layer over pathways to equipment.
- B. Extend vapor retarder up face of foundation wall and seal top of membrane to wall with manufacturer's recommended tape.
  - 1. Extend a minimum of 4 inches (100 mm) above bottom of foundation wall insulation.
- C. Seal around penetrations such as utilities and columns in order to create a monolithic, airtight membrane at grade surface, perimeter, and all vertical penetrations.

### **3.03 PROTECTION**

- A. Protect vapor retarders from damage until concealed by permanent stone fill layer.

END OF SECTION 072600

## SECTION 073113

### ASPHALT SHINGLES

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Glass-fiber-reinforced asphalt shingles repair material.
  - 2. Underlayment materials.
  - 3. Ridge vents.
- B. Related Requirements:
  - 1. Section 074113 "Standing Seam Metal Roof Panels" for adjacent roofing material including transition flashing between roofing systems.
  - 2. Section 076200 "Sheet Metal Flashing and Trim" for adjacent gutter work.

##### 1.03 DEFINITIONS

- A. Roofing Terminology: See ASTM D1079 for definitions of terms related to roofing Work in this Section.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site in conjunction with work scope as specified in Section 074113 "Standing-Seam Metal Roof Panels".
  - 1. Coordinate work with adjacent metal roofing to provide weathertight valley transitions.
  - 2. Confirm availability of matching shingles for repair work as soon as possible before commencing any roofing removals.

##### 1.05 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Asphalt shingles.
  - 2. Underlayment materials.
  - 3. Ridge vents.
- B. Samples for Initial Selection:

1. For asphalt shingles to match existing material.

#### **1.06 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

#### **1.07 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For asphalt shingles to include in maintenance manuals.
- B. Materials warranties as applicable.

#### **1.08 QUALITY ASSURANCE**

- A. Installer Qualifications: An authorized installer who is trained and approved by manufacturer.

#### **1.09 DELIVERY, STORAGE, AND HANDLING**

- A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.
- B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.
- C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.
- D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

#### **1.10 FIELD CONDITIONS**

- A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.
  1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

#### **1.11 WARRANTY**

- A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
  1. Failures include, but are not limited to, manufacturing details.
  2. Materials Warranty Period: 40 years from date of Substantial Completion, prorated.

- B. Roofing Installer's Warranty: Warranty for weather tight performance of roof to be provided as part of a complete package by the installer of work scope under of Section 074113 "Standing-Seam Metal Roof Panels". Warranty to cover all new roofing scope including ridge vent.

## **PART 2 - PRODUCTS**

### **2.01 SOURCE LIMITATIONS**

- A. Obtain each type of product from single source from single manufacturer.

### **2.02 GLASS-FIBER-REINFORCED ASPHALT SHINGLES**

- A. Asphalt Shingles: ASTM D3462/D3462M, glass-fiber reinforced, mineral-granule surfaced and self-sealing.
1. Match existing shingles for manufacturer, construction, finish and color.
  2. Butt Edge: Match cut of existing.
  3. Strip Size: Manufacturer's standard.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

### **2.03 UNDERLAYMENT MATERIALS**

- A. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils (0.76 mm) thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer in accordance with underlayment manufacturer's written instructions.
1. Source Limitations: Obtain underlayment from single source from single manufacturer.
  2. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F (29 deg C) or lower.

### **2.04 RIDGE VENTS**

- A. Rigid Ridge Vent: Manufacturer's standard, rigid-section, high-density, UV-stabilized plastic ridge vent for use under ridge shingles.
1. Basis of Design: GAF, Cobra Snow-Country ridge vent.
  2. Minimum Net Free Area: 18 sq.in. per lineal foot.
  3. Width: 12 inches (254 mm).
  4. Thickness: 7/8 inch (22 mm).
  5. Features:
    - a. Nonwoven geotextile filter strips.
    - b. External deflector baffles.

## **2.05 ACCESSORIES**

- A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.
- B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.
- C. Roofing Nails: ASTM F1667, aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, sharp-pointed, with a 3/8- to 7/16-inch- (10- to 11-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through sheathing less than 3/4 inch (19 mm) thick.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal.
- D. Underlayment Nails: Aluminum, stainless steel, or hot-dip galvanized-steel wire nails with low-profile metal or plastic caps, 1-inch- (25-mm-) minimum diameter.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through asphalt shingles.
  - 3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION OF UNDERLAYMENT MATERIALS**

- A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.

B. Self-Adhering, Polymer-Modified Bitumen Sheet: Install, wrinkle free, on roof deck.

1. Comply with low-temperature installation restrictions of underlayment manufacturer.
2. Install lapped in direction that sheds water.
3. Valleys:
  - a. Extend from lowest to highest point 18 inches (457 mm) on each side of centerline.
  - b. Remove existing shingles and cut existing underlayment as necessary. Roll back underlayment membrane as required to install new self-adhering sheet tight to roof deck and roll back in place so that sides lap not less than 6 inches (150 mm).
  - c. Lap ends not less than 12 inches (300 mm).
  - d. Roll laps with roller.
4. Ridges: Extend 12 inches (305 mm) on each side without obstructing continuous ridge vent slot. Remove existing shingles as necessary to tap top edge of existing underlayment not less than 4 inches (102 mm).
5. Cover underlayment within seven days. Coordinate scheduling of work with installation of open metal flashing installed under Section 076200 Sheet Metal Flashing and Trim.

**3.03 INSTALLATION OF ASPHALT SHINGLES**

- A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Fasten asphalt shingle strips with a minimum of four roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.
  1. Locate fasteners in accordance with manufacturer's written instructions.
  2. Hand seal self-sealing asphalt shingles to improve the shingles' positive bond by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
  3. When ambient temperature during installation is below 50 deg F (10 deg C), hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
- C. Open Valleys: Cut and fit asphalt shingles at open valleys, trimming upper concealed corners of shingle strips. Provide new shingles to match existing as necessary to complete the work.
  1. Maintain uniform width of exposed open valley from highest to lowest point.
  2. Extend shingle a minimum of 4 inches (102 mm) over valley metal.
  3. Set valley edge of asphalt shingles in a 3-inch- (76-mm-) wide bed of asphalt roofing cement.
  4. Do not nail asphalt shingles to metal open-valley flashings.
- D. Ridge Vents: Provide additional course of shingle as necessary to complete installation of ridge underlayment. Install continuous ridge vents over asphalt shingles in accordance with manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing and seal ridge vent sections watertight.



- E. Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.
1. Fasten with roofing nails of sufficient length to penetrate sheathing.
  2. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION 073113

## SECTION 074113

### STANDING-SEAM METAL ROOF PANELS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:

- 1. Standing-seam metal roof panels and related flashing at Office Building.

- B. Related Sections:

- 1. Section 073113 "Asphalt Shingles" for related roofing materials and scope.
  - 2. Section 074113 "Insulated Metal Roof Panels" for structural roof panel work scope at Gondola examination platform enclosure.

##### 1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative and installers whose work interfaces with or affects metal panels, including installers of additional roof materials and accessories.
  - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review work schedule as necessary to maintain building secure from moisture intrusion.
  - 4. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
  - 5. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
  - 6. Review flashings, special details, drainage, penetrations and condition of other construction that affect metal panels.
  - 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
  - 8. Review temporary protection requirements for metal panel systems during and after installation.
  - 9. Review procedures for repair of metal panels damaged after installation.
  - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### **1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
  - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, ridge condition, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
  - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
- C. Samples for Initial Selection: Provide manufactures standard size format samples of all available colors for each type of metal panel indicated with factory-applied color finishes.
- D. Samples for Verification: For selected color(s), prepared on Samples of size indicated below.
  - 1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For metal panels to include in maintenance manuals.

#### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

#### **1.09 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

#### **1.10 COORDINATION**

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

#### **1.11 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking or puncturing.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: Twenty years from date of Substantial Completion.

- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. Finish Warranty Period: 30 years from date of Substantial Completion.
- C. Special Weathertightness Warranty: Manufacturer's standard enhanced warranty form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies and all associated flashing, including tie-in with existing shingle roofing that fail to remain weathertight, including leaks, within specified warranty period. Manufacturer warranty excludes failure of adjacent shingle roof system to perform.
1. Warranty Period: 20 years from date of Substantial Completion.
- D. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace components of standing seam metal roof panels including adjacent asphalt shingle work scope and juncture between both roofing systems that fail in materials or workmanship within specified warranty period. Roofing Installer warranty includes the watertight integrity of adjacent existing shingle roof system.
1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.01 PERFORMANCE REQUIREMENTS

- A. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for steep-slope roof products.
- B. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
1. Wind Loads: As indicated on Drawings.
  2. Deflection Limits: For wind loads, no greater than 1/240 of the span.
- C. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E1680 or ASTM E283 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).
- D. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

- E. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
  - 1. Fire/Windstorm Classification: Class 1A-90.
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material.

## **2.02 STANDING-SEAM METAL ROOF PANELS**

- A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
  - 1. Aluminum Panel Systems: Comply with ASTM E1637.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
  - 1. Basis of Design: Atas International, Inc. Field Lock panel system indicated on Drawings.
  - 2. Aluminum Sheet: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
    - a. Thickness: 0.040 inch (1.02 mm).
    - b. Surface: Smooth, flat finish.
    - c. Exterior Finish: Three-coat fluoropolymer.
  - 3. Clips: Stainless steel, two-piece floating design to accommodate thermal movement.
    - a. Base Material Thickness: 0.030-inch- (0.762-mm-) minimum.
    - b. Tab Material Thickness: 0.0230-inch- (0.584-mm-) minimum.
  - 4. Joint Type: Double folded.
  - 5. Panel Coverage: 12 inches (305 mm).
  - 6. Panel Height: 1.5 inches (38 mm).

## **2.03 UNDERLAYMENT MATERIALS**

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D1970.
  2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D1970.
- B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

## **2.04 MISCELLANEOUS MATERIALS**

- A. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, fasciae, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
    - a. Ridge closure to accommodate free air movement as indicated on Drawings and allow for differential thermal movement of roof panels and ridge flashing.
    - b. Provide screening as necessary to restrict insect access into attic space.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or pre-molded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- B. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, wall transitions, framed openings, ridges, fasciae and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- C. Gutters and Downspouts: Materials as specified in Section 077100 "Roof Specialties".
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
  2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
  3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.



## 2.05 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
  - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams.
  - 3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  - 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  - 5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
    - a. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than metal being secured.

## 2.06 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are installed to minimize contrast.
- C. Aluminum Panels and Accessories:
  - 1. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - a. Color: As selected by Architect from manufacturer's full available line of options.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
  - 1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking, and that installation is within flatness tolerances required by metal roof panel manufacturer.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION OF UNDERLAYMENT**

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply over entire roof surface, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 7 days.
- B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels as directed by roofing manufacturer.
- C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

### **3.03 INSTALLATION OF STANDING SEAM METAL ROOF PANELS**

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 1. Shim or otherwise plumb substrates receiving metal panels.
  - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  - 3. Install screw fasteners in predrilled holes.
  - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
  - 5. Install flashing and trim as metal panel work proceeds.
  - 6. Install panels full length of slope with no lap joints.
  - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.

B. Fasteners:

1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, flashings, sealants, gaskets, fillers, closure strips and similar items. Provide types indicated or recommended by metal roof panel manufacturers.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

### 3.04 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

### 3.05 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories as required to provide the specified warranty coverage. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

### 3.06 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

### 3.07 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS <Insert name> of <Insert address>, herein called the "Roofing Installer," has performed roofing and associated work ("the work") on the following project:
  - 1. Owner: <Insert name of Owner>.
  - 2. Owner Address: <Insert address>.
  - 3. Building Name/Type: <Insert information>.
  - 4. Building Address: <Insert address>.
  - 5. Area of the Work: <Insert information>.
  - 6. Acceptance Date: <Insert date>.
  - 7. Warranty Period: <Insert time>.
  - 8. Expiration Date: <Insert date>.
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant the work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that, during Warranty Period, Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of the work as are necessary to correct faulty and defective work and as are necessary to maintain the work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to the work and other parts of the building, and to building contents, caused by:
  - a. Lightning;
  - b. Peak gust wind speed exceeding 110 mph (m/s);
  - c. Fire;
  - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
  - e. Faulty construction of chimneys, vents, equipment supports and other edge conditions and penetrations of the work;
  - f. Vapor condensation on bottom of roofing; and
  - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When the work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to the work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of the work.
4. During Warranty Period, if Owner allows alteration of the work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of the alterations, but only to the extent the alterations affect the work covered by this Warranty. If Owner engages Roofing Installer to perform the alterations, Warranty shall not become null and void unless Roofing Installer, before starting the alterations, notified Owner in writing, showing reasonable cause for claim, that the alterations would likely damage or deteriorate the work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a use or service more severe than originally specified, this Warranty shall become null and void on date of the change, but only to the extent the change affects the work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect the work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on the work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of the work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this **<Insert day>** day of **<Insert month>**, **<Insert year>**.

1. Authorized Signature: **<Insert signature>**.
2. Name: **<Insert name>**.
3. Title: **<Insert title>**.

END OF SECTION 074113

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**SECTION 074116**

**INSULATED METAL ROOF PANELS**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Foamed-insulation-core metal roof panels and associated metal flashing and trim.
- B. Related Sections:
  - 1. Section 074113 "Standing-Seam Metal Roof for non-structural roof panel work scope.
  - 2. Section 074213 "Insulated Metal Wall Panels" for structural wall panel work scope.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels.
  - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
  - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
  - 5. Review structural loading limitations of purlins and rafters during and after roofing.
  - 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
  - 7. Review governing regulations and requirements for insurance, certificates and tests and inspections if applicable.
  - 8. Review temporary protection requirements for work during and after installation.
  - 9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.



#### **1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles and finishes for each type of panel and accessory.
- B. Shop Drawings:
  - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
  - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
- D. Delegated-Design Submittal: For roof panels, include analysis reports signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Include calculations to confirm performance of panels and all related fasteners.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For metal panels to include in maintenance manuals.

#### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

#### **1.09 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

#### **1.10 COORDINATION**

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, transitions to wall panels at the perimeter of work and other adjoining work to provide a leakproof, secure and noncorrosive installation.

#### **1.11 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.01 PERFORMANCE REQUIREMENTS

- A. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for low-slope roof products.
- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design roof panels, including attachment to roof framing, as required to resist the specified loads.
- C. Structural Performance Requirements: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E72:
1. Wind Loads: As indicated on Drawings.
  2. Other Design Loads: As indicated on Drawings.
  3. Deflection Limits: For wind loads, no greater than 1/240 of the span.
- D. Air Infiltration: Air leakage of not more than 0.014 cfm/sq. ft. (0.007 L/s per sq. m) when tested according to ASTM E1680 at the following test-pressure difference:
1. Test-Pressure Difference: 12.0 lbf/sq. ft. (575 Pa).
- E. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 at the following test-pressure difference:
1. Test-Pressure Difference: 20.0 lbf/sq. ft. (958 Pa).
- F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 90.
- G. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Fire/Windstorm Classification: Class 1A-90.
- H. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

## 2.02 SOURCE LIMITATIONS

- A. Obtain insulated metal roof and metal wall panels as specified in Section 074213 from a single manufacturer and perform panel installation by the same installer. Warranty work for roof and wall systems shall run concurrently.

## 2.03 FOAMED-INSULATION-CORE METAL ROOF PANELS

- A. General: Provide factory-formed and -assembled metal roof panels fabricated from two sheets of metal with insulation core foamed in place during fabrication with joints between panels designed to form weathertight seals. Include accessories required for weathertight installation.
1. Panel Performance:
    - a. Flatwise Tensile Strength: 30 psi (200 kPa) when tested according to ASTM C297/C297M.
    - b. Humid Aging: Volume increase not greater than 6.0 percent and no delamination or metal corrosion when tested for seven days at 140 deg F (60 deg C) and 100 percent relative humidity according to ASTM D2126.
    - c. Heat Aging: Volume increase not greater than 2.0 percent and no delamination, surface blistering, or permanent bowing when tested for seven days at 200 deg F (93 deg C) according to ASTM D2126.
    - d. Cold Aging: Volume decrease not more than 1.0 percent and no delamination, surface blistering, or permanent bowing when tested for seven days at minus 20 deg F (29 deg C) according to ASTM D2126.
    - e. Fatigue: No evidence of delamination, core cracking, or permanent bowing when tested to a 20-lbf/sq. ft. (958-kPa) positive and negative wind load and with deflection of L/180 for 2 million cycles.
    - f. Autoclave: No delamination when exposed to 2-psi (13.8-kPa) pressure at a temperature of 212 deg F (100 deg C) for 2-1/2 hours.
    - g. Fire-Test-Response Characteristics: Class A according to ASTM E108.
  2. Insulation Core: Modified isocyanurate or polyurethane foam using a non-CFC blowing agent, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.
    - a. Closed-Cell Content: 90 percent when tested according to ASTM D6226.
    - b. Density: 2.0 to 2.6 lb/cu. ft. (32 to 42 kg/cu. m) when tested according to ASTM D1622.
    - c. Compressive Strength: Minimum 20 psi (140 kPa) when tested according to ASTM D1621.
    - d. Shear Strength: 36 psi (250 kPa) when tested according to ASTM C273.
- B. Exposed-Fastener, Foamed-Insulation-Core Metal Roof Panels: Formed with raised, trapezoidal ribs at panel edge and two intermediate stiffening ribs symmetrically spaced between major rib and panel edges; designed for lapping side edges of adjacent panels and mechanically attaching to supports using exposed fasteners at locations and spacing as necessary to resist applied loads. Provide product by same manufacturer as wall panels specified under Section 074213.

1. Basis of Design: Metal Span, LS-36 roof panels.
2. Metallic-Coated Steel Sheet: Facings of zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
  - a. Nominal Thickness: 0.022 inch (0.56 mm).
  - b. Exterior Finish: Two-coat fluoropolymer.
    - 1) Color: As selected by Architect from manufacturer's full range.
  - c. Interior Finish: Siliconized polyester, manufacturer's standard color.
3. Panel Coverage: 36 inches (914 mm).
4. Panel Thickness: 2.0 inches (51 mm) minimum thickness, excluding rib depth.
5. Thermal-Resistance Value (R-Value): 16.58 according to ASTM C1363.

## **2.04 MISCELLANEOUS MATERIALS**

- A. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels.
  1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- B. Flashing and Trim: Provide flashing and trim formed from same material as exterior facings of metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- C. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- D. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
  1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

## 2.05 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major and intermediate ribs, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
  1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  2. Fabricate nonmoving seams in accessories with flat-lock seams.
  3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application but not less than thickness of metal being secured.

## 2.06 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Exterior Facings and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

D. Interior Facings:

1. Siliconized Polyester: Epoxy primer and silicone-modified, polyester enamel topcoat; with a dry film thickness of not less than 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
  1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 INSULATED METAL ROOF PANEL INSTALLATION**

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  1. Shim or otherwise plumb substrates receiving metal panels.
  2. Apply supplemental tape sealers and liquid sealant to panel joints as directed by panel manufacturer to maintain specified weatherproof performance.
  3. Flash and seal metal panels at transition to vertical wall panels. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  4. Install screw fasteners in predrilled holes.
  5. Locate and space fastenings in uniform vertical and horizontal alignment.
  6. Install flashing and trim as metal panel work proceeds.
  7. Install panels full length of roof surface with no end joints in the field of work.



8. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  9. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- D. Lap-Seam, Foamed-Insulation-Core Metal Roof Panels: Fasten insulated metal roof panels to supports with fasteners at locations and spacing recommended by manufacturer to resist applied loads and as indicated on approved shop drawings.
1. Fully engage tongue and groove of adjacent panels. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or applications not true to line.
  2. Provide metal-backed, resilient washers under heads of exposed fasteners bearing on weather side of insulated metal roof panels as required to maintain penetration watertight.
  3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
  4. Provide sealant tape at lapped joints of insulated metal roof panels and between panels and protruding equipment, vents and accessories.
  5. Apply a continuous ribbon of sealant tape to panel side laps and elsewhere as needed to weatherproof panels.
- E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, provide types recommended in writing by metal roof panel manufacturer.
- F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
  2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

### **3.03 ERECTION TOLERANCES**

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

### **3.04 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Water-Spray Test: After installation, test complete area of assembly for water penetration according to AAMA 501.2.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to witness water-spray test and inspect completed metal wall panel installation, including accessories. Report results in writing.
- D. Metal roof panels will be considered defective if they do not pass test and inspections.
- E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- F. Prepare test and inspection reports.

### **3.05 CLEANING AND PROTECTION**

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074116

## SECTION 074213

### INSULATED METAL WALL PANELS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Foamed-insulation-core metal wall panels and associated metal flashing and trim.
- B. Related Requirements:
  - 1. Section 074113 "Standing-Seam Metal Roof Panels" for related work scope.
  - 2. Section 074116 "Insulated Metal Roof Panels" for related structural panel work scope

##### 1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Schedule meeting as indicated in Section 074116 to discuss the work, resolve any issues and coordinate installation of roof and wall panels to provide a weathertight assembly.

##### 1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
  - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
  - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
- C. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include fasteners, closures, and other metal panel accessories.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For metal panels to include in maintenance manuals.

#### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

#### **1.09 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

## 1.10 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

## 1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.01 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E72:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Deflection Limits: For wind loads, no greater than 1/240 of the span.
- B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E283 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).
- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- E. Fire-Test-Response Characteristics: Provide metal wall panels and system components with the following fire-test-response characteristics, as determined by testing identical panels and system components per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.
1. Fire-Resistance Characteristics: Provide materials and construction tested for fire resistance per ASTM E119.
  2. Intermediate-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which wall panel is a part, complies with NFPA 285 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies.
  3. Radiant Heat Exposure: No ignition when tested according to NFPA 268.
  4. Potential Heat: Acceptable level when tested according to NFPA 259.
  5. Surface-Burning Characteristics: Provide wall panels with a flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.

## **2.02 SOURCE LIMITATIONS**

- A. Obtain insulated metal wall and metal roof panels as specified in Section 074116 from a single manufacturer and perform panel installation by the same installer. Warranty work for wall and roof systems shall run concurrently.

## **2.03 FOAMED-INSULATION-CORE METAL WALL PANELS**

- A. General: Provide factory-formed and -assembled metal wall panels fabricated from two metal facing sheets and insulation core foamed in place during fabrication, and with joints between panels designed to form weathertight seals. Include accessories required for weathertight installation.
1. Insulation Core: Modified isocyanurate or polyurethane foam using a non-CFC blowing agent, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.
    - a. Closed-Cell Content: 90 percent when tested according to ASTM D6226.
    - b. Density: 2.0 to 2.6 lb/cu. ft. (32 to 42 kg/cu. m) when tested according to ASTM D1622.
    - c. Compressive Strength: Minimum 20 psi (140 kPa) when tested according to ASTM D1621.
    - d. Shear Strength: 26 psi (179 kPa) when tested according to ASTM C273/C273M.

- B. Exposed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Formed with raised, trapezoidal ribs at panel edge and two intermediate stiffening ribs symmetrically spaced between major rib and panel edges; designed for lapping side edges of adjacent panels and mechanically attaching to supports using exposed fasteners at locations and spacing as necessary to resist applied loads. Provide product by same manufacturer as roof panels specified under Section 074116.
1. Basis of Design: Metal Span, LS-36 wall panels.
  2. Metallic-Coated Steel Sheet: Facings of zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
    - a. Nominal Thickness: 0.022 inch (0.56 mm).
    - b. Exterior Finish: Two-coat fluoropolymer.
      - 1) Color: As selected by Architect from manufacturer's full range.
    - c. Interior Finish: Siliconized polyester, manufacturer's standard color.
  3. Panel Coverage: 36 inches (914 mm) nominal.
  4. Panel Thickness: 2.0 inches (51 mm) minimum thickness, excluding rib depth.
  5. Thermal-Resistance Value (R-Value): 16.58 according to ASTM C1363.

## 2.04 MISCELLANEOUS MATERIALS

- A. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels.
1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- B. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- C. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.



- D. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
  2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
  3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

## 2.05 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major and intermediate ribs, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  2. Fabricate nonmoving seams in accessories with flat-lock seams.
  3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

## 2.06 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories (Exterior Finish):
  - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- D. Interior Facings:
  - 1. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
  - 1. Examine wall framing to verify that girts, angles, channels and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 INSULATED METAL WALL PANEL INSTALLATION**

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 1. Shim or otherwise plumb substrates receiving metal panels.
  - 2. Apply supplemental tape sealers and liquid sealant to panel joints as directed by panel manufacturer to maintain specified weatherproof performance.

3. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  4. Install screw fasteners in predrilled holes.
  5. Locate and space fastenings in uniform vertical and horizontal alignment.
  6. Install flashing and trim as metal panel work proceeds.
  7. Install panels full height of wall surface with no end joints in field of work.
  8. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  9. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior
- C. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal wall panel manufacturer.
1. Seal metal wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer.
  2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- D. Lap-Seam, Foamed-Insulation-Core Metal Roof Panels: Fasten insulated metal roof panels to supports with fasteners at locations and spacing recommended by manufacturer to resist applied loads and as indicated on approved shop drawings.
1. Fully engage tongue and groove of adjacent panels. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or applications not true to line.
  2. Provide metal-backed, resilient washers under heads of exposed fasteners on weather side of insulated metal wall panels as required to maintain penetration watertight.
  3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
  4. Provide sealant tape at lapped joints of insulated metal wall panels and between panels and protruding equipment, vents and accessories.
  5. Apply a continuous ribbon of sealant tape to panel side laps and elsewhere as needed to make panels weathertight.
- E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

- F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
  2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

### **3.03 ERECTION TOLERANCES**

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

### **3.04 CLEANING AND PROTECTION**

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213

**SECTION 074646**

**FIBER-CEMENT SIDING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Fiber-cement siding, soffit and trim at Office Building.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood furring, nailers and blocking.
  - 2. Section 072726 "Fluid-Applied Membrane Air Barrier" for substrate barrier.

**1.03 COORDINATION**

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

**1.04 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.05 ACTION SUBMITTALS**

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles and finishes.
- B. Samples for Verification: For each type, color, texture and material required.
  - 1. 12-inch- (300-mm-) long-by-actual-width Sample of siding.
  - 2. 12-inch- (300-mm-) long-by-actual-width Sample of soffit.
  - 3. 12-inch- (300-mm-) long-by-actual-width Samples of trim and accessories.

**1.06 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For each type of fiber-cement product.

- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fiber-cement siding.
- C. Research/Evaluation Reports: For each type of fiber-cement siding required, from ICC-ES.
- D. Sample Warranty: For special warranty.

#### **1.07 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store packaged materials in original containers with labels intact until time of use.
- B. Store materials on elevated platforms, under cover, and in a dry location.

#### **1.09 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including cracking and deforming.
    - b. Deterioration of materials beyond normal weathering.
  - 2. Warranty Periods:
    - a. Siding and Soffit Material: 30 years from date of Substantial Completion.
    - b. Trim Material: 15 years from date of Substantial Completion.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to reimburse Owner for refinishing the damaged portion of finish within specified warranty period.
  - 1. Deterioration includes, but is not limited to, the following:
    - a. Cracking, checking, peeling, chipping or failure of paint to adhere to substrate.
  - 2. Warranty Period: 15 years from date of Substantial Completion with year 1 being limited to an amount not greater than \$1.00 per sf and subsequent years being prorated.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Source Limitations: Obtain products, including all related accessories, from single source from single manufacturer.

### **2.02 FIBER-CEMENT SIDING**

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less according to ASTM E84.
  - 1. Basis of Design Manufacturer: James Hardie Building Products Inc.
- B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- C. Vertical Siding Pattern: 48-inches (1200-mm) wide by 120-inches (3000-mm) long sheets.
  - 1. Texture: Smooth.
  - 2. Nominal Thickness: Not less than 5/16 inch (8 mm).
  - 3. Provide vertical battens as specified below located at 12-inches (300-mm) o.c.
- D. Cedar Shake Shingles: 48-inches (1200-mm) long by 15-1/4 inches (387-mm) wide.
  - 1. Texture: Rough cedar face.
  - 2. Edge Profile: Straight with 7-inch (175 mm) nominal exposure.
  - 3. Nominal Thickness: Not less than 1/4 inch (6 mm).
- E. Factory Finish: Manufacturer's standard baked-on paint system complying with specified warranty.
  - 1. Color(s): As indicated on Drawings.

### **2.03 FIBER-CEMENT SOFFIT**

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
- B. Nominal Thickness: Not less than 1/4 inch (6 mm).
- C. Pattern: 16-inch (400-mm) minimum width sheets with wood-grain texture.
- D. Ventilation: Provide perforated and unperforated soffit as indicated on Drawings.
  - 1. Free Vent Area of Perforated Soffit: 5 sq. in. per lineal foot minimum.
- E. Factory Finish: Baked-on paint system complying with specified warranty.
  - 1. Color: As indicated on Drawings.



## 2.04 ACCESSORIES

- A. Siding Trim and Accessories, General: Provide starter strips, edge trim, outside and inside corner caps and other items as recommended by siding manufacturer for building configuration.
  - 1. Provide trim and accessories matching color and texture of adjacent siding.
- B. Decorative Accessories: Provide the following fiber-cement decorative accessories as indicated:
  - 1. Corner and Edge Trim: 4/4 trim with smooth finish. Width as indicated on Drawings.
  - 2. Opening Perimeter Trim: 4/4 trim with smooth finish. Width as indicated on Drawings.
  - 3. Fasciae: 4/4 trim with smooth finish. Width as indicated on Drawings.
  - 4. Batten Trim: 3/4-inch (19-mm) thick by 2-1/2 inch (62-mm) wide with smooth finish.
- C. Flashing: Provide aluminum flashing complying with Section 076200 "Sheet Metal Flashing and Trim" at window and door heads and where indicated.
  - 1. Finish for Aluminum Flashing: High-performance organic finish. Color to match adjacent siding and/or trim as applicable.
- D. Fasteners:
  - 1. For fastening to wood, use siding nails or ribbed bugle-head screws of sufficient length to penetrate a minimum of 1 inch (25 mm) into substrate.
  - 2. For fastening fiber cement, use stainless-steel fasteners.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of fiber-cement siding and soffit and related accessories.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

### 3.03 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
  - 1. Do not install damaged components.
  - 2. Install fasteners no more than 24 inches (600 mm) o.c.

- B. Install battens at even spacing as indicated. Batten strip spacing to be laid out to coordinate with fiber cement panel joints to fully conceal joints between adjacent panels.
- C. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.

**3.04 ADJUSTING AND CLEANING**

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 074646

## SECTION 076200

### SHEET METAL FLASHING AND TRIM

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Formed roof-drainage sheet metal fabrications at Administrative and Gondola Buildings.
  - 2. Formed steep-slope roof sheet metal fabrications.
  - 3. Formed wall sheet metal fabrications.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood nailers, curbs and blocking.
  - 2. Section 074113 "Standing-Seam Metal Roof Panels" for materials and installation of sheet metal flashing and trim integral with roofing including wall (apron) flashing.
  - 3. Section 074116 and 074213 for materials and installation of all sheet metal flashing and trim associated with "Insulated Metal Roof and Wall Panels".

##### 1.03 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints and seams to provide leakproof, secure and noncorrosive installation.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site in conjunction with work scope as specified in Section 074113 "Standing-Seam Metal Roof Panels".
  - 1. Coordinate work with adjacent roofing materials to provide weathertight transitions.

##### 1.05 ACTION SUBMITTALS

- A. Product Data: For each of the following
  - 1. Underlayment materials.

2. Sealants.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness and finish for each Project item and location.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints.
8. Include details of edge conditions, including eaves, valleys, rakes and flashings.
9. Include details of special conditions.
10. Include details of connections to adjoining work.
11. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches (1:10).

- C. Samples: For each exposed product and for each color and texture specified, 12 inches (300 mm) long by actual width.

**1.06 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For fabricator.
- B. Sample Warranty: For special warranty.

**1.07 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For sheet metal flashing and trim, including all accessories.
- B. Special warranty.

**1.08 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

**1.09 DELIVERY, STORAGE, AND HANDLING**

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.
  1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
  2. Protect stored sheet metal flashing and trim from contact with water.

- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

## **1.10 WARRANTY**

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material.

### **2.02 SHEET METALS**

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

- B. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
1. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    2. Color: As selected by Architect from manufacturer's full range.
    3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).
- C. Stainless Steel Sheet: ASTM A240/A240M, Type 304, dead soft, fully annealed; with smooth, flat surface.
1. Finish: ASTM A480/A480M, No. 4 (polished directional satin).
    - a. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
    - b. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
      - 1) Run grain of directional finishes with long dimension of each piece.
      - 2) When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

## **2.03 UNDERLAYMENT MATERIALS**

- A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.
- B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum.
- C. Self-Adhering, High Temperature Sheet Underlayment: Provided under Section 073113 "Asphalt Shingles" at valley locations between shingles and metal roof.

## **2.04 MISCELLANEOUS MATERIALS**

- A. Provide materials and types of fasteners, protective coatings, sealants and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Solder:
1. For Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.

- C. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
  2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
  3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.
- H. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required for application.

## **2.05 FABRICATION, GENERAL**

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
  4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.



B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Stainless Steel: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder
2. Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer.

H. Do not use graphite pencils to mark metal surfaces.

**2.06 ROOF-DRAINAGE SHEET METAL FABRICATIONS**

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- (2400-mm-) long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars and gutter accessories from same metal as gutters. Shop-fabricate interior and exterior corners.
5. Gutter Profile: Style J in accordance with cited sheet metal standard.
6. Expansion Joints: Butt type with cover plate.
7. Accessories: Match gutter material and finish.
  - a. Removable leaf screen with sheet metal frame and hardware cloth infill.
  - b. Valley baffles.
8. Gutters: Fabricate from the following materials:
  - a. Aluminum: 0.040 inch (1.02 mm) thick.

- B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop-fabricate elbows.
1. Fabricated Hanger Style: Fig. 1-35H in accordance with SMACNA's "Architectural Sheet Metal Manual."
  2. Fabricate from the following materials:
    - a. Aluminum: 0.024 inch (0.61 mm) thick.

## **2.07 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS**

- A. Valley Flashing: Fabricate with 2 inch (51 mm) high "V" crimp at valley center line and hooked edges from the following material:
1. Stainless Steel: 0.0188 inch (0.477 mm) thick.
- B. Drip Edges: Fabricate from the following material:
1. Aluminum: 0.032 inch (0.81 mm) thick.
- C. Roof-Penetration Flashing: Fabricate from the following materials:
1. Stainless Steel: 0.0188 inch (0.477 mm) thick.

## **2.08 WALL SHEET METAL FABRICATIONS**

- A. Opening Flashings in Frame Construction: Fabricate head, sill, jamb and similar flashings to extend 4 inches (100 mm) beyond wall openings. Form head and sill flashing with 2-inch- (50-mm-) high, end dams. Fabricate from the following materials:
1. Aluminum: 0.032 inch (0.81 mm) thick.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
1. Verify compliance with requirements for installation tolerances of substrates.
  2. Verify that substrate is sound, dry, smooth, clean and securely anchored.
  3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 INSTALLATION OF UNDERLAYMENT

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.
  - 1. Install in shingle fashion to shed water.
  - 2. Lap joints not less than 2 inches (50 mm).
- B. Install slip sheet, wrinkle free, over underlayment before installing sheet metal flashing.
  - 1. Install in shingle fashion to shed water.
  - 2. Lapp joints not less than 4 inches (100 mm).

### 3.03 INSTALLATION, GENERAL

- A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.
  - 1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder and sealant.
  - 3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
  - 5. Space individual cleats not more than 24 inches (600 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
  - 6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
  - 7. Do not field cut sheet metal flashing and trim by torch.
  - 8. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
  - 1. Coat concealed side of uncoated-aluminum and stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  - 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
  - 1. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
  - 2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.

- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
  - 1. Use sealant-filled joints unless otherwise indicated.
    - a. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant.
    - b. Form joints to completely conceal sealant.
    - c. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
    - d. Adjust setting proportionately for installation at higher ambient temperatures.
      - 1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
  - 2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.
  - 1. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
  - 2. Do not solder aluminum sheet.
  - 3. Do not use torches for soldering.
  - 4. Heat surfaces to receive solder, and flow solder into joint.
    - a. Fill joint completely.
    - b. Completely remove flux and spatter from exposed surfaces.
  - 5. Stainless Steel Soldering:
    - a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
    - b. Promptly remove acid-flux residue from metal after tinning and soldering.
    - c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

### **3.04 ~~INS~~ INSTALLATION OF ROOF-DRAINAGE SYSTEM**

- A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters:
  - 1. Join sections with joints sealed with sealant.
  - 2. Provide for thermal expansion.
  - 3. Attach gutters at eave or fascia to firmly anchor them in position.

4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor and loosely lock back edge of gutter to continuous cleat.
  - a. Coordinate cleat design with the following adjacent roofing materials to maintain a secure, watertight installation. Revise as necessary or as directed by roofing system manufacturer(s):
    - 1) Asphalt shingle roofing system as specified in Section 073113.
    - 2) Standing seam metal roofing system as specified in Section 074113.
    - 3) Insulated metal roof panels roofing system as specified in Section 074116.
8. Anchor gutter with gutter brackets or straps spaced not more than 24 inches (600 mm) apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.
9. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet (15.2 m) apart. Install expansion-joint caps.
10. Install continuous gutter screens on gutters with noncorrosive fasteners, removable for cleaning gutters.

C. Downspouts:

1. Join sections with 1-1/2-inch (38-mm) telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
4. Terminate downspouts as follows:
  - a. Connect downspouts to underground drainage system at Administrative Building and Manufactured Precast Structure.
  - b. Provide elbow at base of downspout and provide 24 inch (610 mm) minimum length downspout extension to direct water away from wall at Gondola Building.

### 3.05 INSTALLATION OF ROOF FLASHINGS

- A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions and cited sheet metal standard.
  1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
  2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless steel draw band and tighten.
- C. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

### **3.06 INSTALLATION OF WALL FLASHINGS**

- A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb and similar flashings to extend 4 inches (100 mm) beyond wall openings.

### **3.07 INSTALLATION TOLERANCES**

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

### **3.08 CLEANING**

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.

### **3.09 PROTECTION**

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.
- C. Maintain sheet metal flashing and trim in clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

**SECTION 079200**

**JOINT SEALANTS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Butyl joint sealants.
5. Latex joint sealants.

B. Related Requirements:

1. Section 092900 "Gypsum Board" for sealing joints in sound-rated construction.
2. Section 321373 "Concrete Paving Joint Sealants" for sealing joints in paved roads, parking lots, walkways and curbing.

**1.02 ACTION SUBMITTALS**

A. Product Data:

1. Joint-sealants.
2. Joint sealant backing materials.

B. Samples for Initial Selection: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

**1.03 INFORMATIONAL SUBMITTALS**

A. Field Quality-Control Submittals:

1. Field-Adhesion-Test Reports: For each sealant application tested.

B. Sample warranties.



#### **1.04 CLOSEOUT SUBMITTALS**

- A. Warranty Documentation:
1. Manufacturers' special warranties.
  2. Installer's special warranties.

#### **1.05 QUALITY ASSURANCE**

- A. Qualifications:
1. Installers: Authorized representative who is trained and approved by manufacturer.
  2. Testing Agency: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

#### **1.06 FIELD CONDITIONS**

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
  2. When joint substrates are wet.
  3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

#### **1.07 WARRANTY**

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 SOURCE LIMITATIONS**

- A. Obtain joint sealants from single manufacturer for each sealant type.

### **2.02 JOINT SEALANTS, GENERAL**

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### **2.03 SILICONE JOINT SEALANTS**

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

### **2.04 URETHANE JOINT SEALANTS**

- A. Urethane, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic and nontraffic use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Uses T and NT.

### **2.05 MILDEW-RESISTANT JOINT SEALANTS**

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

### **2.06 BUTYL JOINT SEALANTS**

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

### **2.07 LATEX JOINT SEALANTS**

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

## **2.08 JOINT-SEALANT BACKING**

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

## **2.09 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt and frost.

2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
    - a. Metal.
    - b. Glass.
    - c. Glazed surfaces of ceramic tile.
  3. Clean concrete joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
    - a. Remove laitance and form-release agents from concrete.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.
  3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses in each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
  2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Provide concave joint profile in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.

### **3.04 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Tests and Inspections:
1. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
    - a. Extent of Testing: Test completed and cured sealant joints as follows:
      - 1) Perform 10 tests for the first 1000 ft. (300 m) of joint length for each kind of sealant and joint substrate.
      - 2) Perform one test for each 500 ft. (150 m) of joint length thereafter or one test per each floor per elevation.
    - b. Test Method: Test joint sealants in accordance with Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
      - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
    - c. Inspect tested joints and report on the following:
      - 1) Whether sealants filled joint cavities and are free of voids.
      - 2) Whether sealant dimensions and configurations comply with specified requirements.
      - 3) Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
    - d. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.

- e. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
  2. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.
- C. Prepare test and inspection reports.

### **3.05 CLEANING**

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### **3.06 PROTECTION**

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

### **3.07 JOINT-SEALANT SCHEDULE**

- A. Exterior joints in vertical surfaces and horizontal nontraffic surfaces:
  1. Joint Locations:
    - a. Construction joints in cast-in-place concrete.
    - b. Joints in fiber cement siding and trim.
    - c. Joints at the perimeter of metal panels and trim.
    - d. Joints between different materials listed above.
    - e. Perimeter joints between materials listed above and frames of doors and windows.
  2. Joint Sealant: Silicone, S, NS, 50, NT.
  3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Interior joints in horizontal traffic surfaces:

1. Joint Locations:
  - a. Control and expansion joints in concrete slabs.
  - b. Other joints as indicated on Drawings.
2. Joint Sealant: Urethane, S, NS, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement:

1. Joint Locations:
  - a. Filled joints on exposed interior surfaces of interior walls.
  - b. Perimeter joints between interior wall surfaces and frames of interior doors.
2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: Paintable.

D. Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces:

1. Joint Locations:
  - a. Joints between plumbing fixtures and adjoining walls, floors and counters.
  - b. Floor and wall tile control and expansion joints.
2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Concealed mastics:

1. Joint Locations:
  - a. Aluminum thresholds.
2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200



## SECTION 081113

### HOLLOW METAL DOORS AND FRAMES

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. Section includes:
  - 1. Standard steel doors and frames.
- B. Related Requirements:
  - 1. Division 08 Sections for additional wood door construction.
  - 2. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

##### 1.02 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

##### 1.03 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of electrified door hardware with access control and security systems.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

##### 1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, core descriptions and finishes.
- B. Shop Drawings: Include the following:
  - 1. Elevations of each door type.
  - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.

4. Locations of reinforcement and preparations for hardware.
  5. Details of each different wall opening condition including anchorages.
  6. Details of electrical raceway and preparation for electrified hardware and access control.
- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.38 deg Btu/F x h x sq. ft. (2.16 W/K x sq. m) when tested in accordance with ASTM C1363 or ASTM E1423.

### **2.02 STANDARD STEEL DOORS AND FRAMES**

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.
1. Doors:
    - a. Type: As indicated in the Door and Frame Schedule.
    - b. Thickness: 1-3/4 inches (44.5 mm).
    - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053-inch (1.3 mm), with minimum A60 (ZF180) coating.
    - d. Edge Construction: Model 2, Seamless.
    - e. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches (3.2 mm in 51 mm).

- f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
  - g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
  - h. Core: Manufacturer's standard polyurethane or polyisocyanurate fill.
- 2. Frames:
  - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053-inch (1.3 mm), with minimum A60 (ZF180) coating.
  - b. Construction: Full profile welded.
- 3. Exposed Finish: Prime.

## 2.03 FRAME ANCHORS

- A. Jamb Anchors:
  - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
  - 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
  - 3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
  - 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

## 2.04 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

## **2.05 FABRICATION**

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
  - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
    - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
  - 1. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
  - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

## **2.06 STEEL FINISHES**

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

### 3.02 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
  - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
  - 2. Floor Anchors: Secure with postinstalled expansion anchors.
    - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
  - 3. Solidly pack mineral-fiber insulation inside frames.
  - 4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  - 5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
  - 1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.

**3.03 REPAIR**

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

**SECTION 081416**  
**FLUSH WOOD DOORS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Five-ply flush wood veneer-faced doors for transparent finish.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 064023 "Interior Architectural Woodwork" for wood door frames and casings.
2. Section 088000 "Glazing" for glass infill panel requirements.

**1.02 PREINSTALLATION MEETINGS**

A. Preinstallation Conference: Conduct conference at Project site.

**1.03 ACTION SUBMITTALS**

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door trim for glazed openings.
5. Factory-machining criteria.
6. Factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size and swing.
2. Door elevations, dimension and locations of lite cutouts and hardware.
3. Details of frame for each frame type, including dimensions and profile.
  - a. Coordinate door hardware machining with frame for proper fit and function.
4. Dimensions and locations of blocking for hardware attachment.
5. Dimensions and locations of mortises and holes for hardware.
6. Clearances and undercuts.



7. Doors to be factory finished and application requirements.

- C. Samples for Initial Selection: For factory-finished doors.

#### **1.04 INFORMATIONAL SUBMITTALS**

- A. Sample Warranty: For special warranty.

#### **1.05 CLOSEOUT SUBMITTALS**

- A. Special warranties.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

#### **1.07 FIELD CONDITIONS**

- A. Environmental Limitations:
  1. Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

#### **1.08 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Delamination of veneer.
    - b. Warping (bow, cup, or twist) more than 1/4-inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
    - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.
  2. Warranty also includes installation and finishing that may be required due to repair or replacement of defective doors and frames.
  3. Warranty Period for Solid-Core Interior Doors: Life of installation.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Source Limitations: Obtain flush wood doors from single manufacturer.

### **2.02 FLUSH WOOD DOORS AND FRAMES, GENERAL**

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.
1. Provide labels or certificates from WI certification program indicating that doors and frames comply with requirements of grades specified.

### **2.03 SOLID-CORE FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH**

- A. Interior Doors, Solid-Core Five-Ply Veneer-Faced:
1. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
  2. Faces: Single-ply wood veneer not less than 1/50 inch (0.508 mm) thick.
    - a. Species: White oak.
    - b. Cut: Plain sliced (flat sliced).
    - c. Match between Veneer Leaves: Slip match.
    - d. Assembly of Veneer Leaves on Door Faces: Balance match.
  3. Exposed Vertical and Top Edges: Applied wood edges of same species as faces and covering edges of crossbands - Architectural Woodwork Standards edge Type D.
  4. Core for Non-Fire-Rated Doors:
    - a. ANSI A208.1, Grade LD-1 particleboard.
    - 1) Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.
  5. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

### **2.04 FABRICATION**

- A. Factory fit doors to suit frame-opening sizes indicated.
1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

- B. Factory machine doors for hardware that is not surface applied.
  - 1. Locate hardware to comply with DHI-WDHS-3.
  - 2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
- C. Openings: Factory cut and trim openings through doors.
  - 1. Light Openings: Trim openings with moldings of material and profile indicated.
  - 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

## **2.05 FACTORY FINISHING**

- A. Comply with referenced quality standard for factory finishing.
  - 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  - 2. Finish faces, all four edges, edges of cutouts, and mortises.
  - 3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
  - 1. ANSI/WDMA I.S. 1A Grade: Premium.
  - 2. Provide either of the following finishes at contractor option:
    - a. ANSI/WDMA I.S. 1A TR-4 Conversion Varnish.
    - b. ANSI/WDMA I.S. 1A TR-6 Catalyzed Polyurethane.
  - 3. Staining: None required.
  - 4. Sheen: Satin.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
  - 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
  - 2. Verify jambs have been securely anchored in place with the appropriate fasteners.
  - 3. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION**

- A. Hardware: For installation, see Section 087100 "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

### **3.03 ADJUSTING**

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

## SECTION 081435

### WOOD TERRACE DOORS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Aluminum-clad hinged wood-framed glass doors.
- B. Related Requirements:
  - 1. Section 085413 "Fiberglass Windows" for adjacent windows to be color matched.
  - 2. Section 087100 "Door Hardware" for hardware not specified in this Section.

##### 1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Coordinate work between trades for electronic unlocking hardware installed in door frame assembly and supplied under separate contract.

##### 1.04 ACTION SUBMITTALS

- A. Product Data: For each type of hinged wood-framed glass door.
  - 1. Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes and operating instructions.
- B. Shop Drawings: For hinged wood-framed glass doors.
  - 1. Include plans, elevations, sections, and details.
  - 2. Detail attachments to other work, and between units, if any.
  - 3. Include hardware and required clearances.
- C. Samples for Verification: For hinged wood-framed glass doors and components required, prepared on Samples of size indicated below:

1. Main Framing Member: 12-inch-long (300-mm-long) section with cladding, weather stripping, glazing bead and factory-applied exterior and interior color finish.
  2. Hardware: Full-size units with factory-applied finish.
- D. Product Schedule: For hinged wood-framed glass doors. Incorporate into full project Door Schedule. Use same designations indicated on Drawings.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: For each hinged wood-framed glass door, for tests performed by manufacturer and witnessed by a qualified testing agency; and for each class and performance grade indicated, tested at AAMA gateway size.
- B. Sample Warranty: For special warranty.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For finishes, weather stripping, operable panels and operating hardware to include in maintenance manuals.

#### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An installer acceptable to hinged wood-framed glass door manufacturer for installation of units required for this Project.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mockup for hinged wood-framed glass door consisting of one door, as selected by Architect in field, with access control hardware as supplied under Section 087100.
    - a. Installation will be inspected for aesthetic appearance as well as weather resistant and security performance.
  2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

#### **1.08 WARRANTY**

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace hinged wood-framed glass doors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Failure to meet performance requirements.
    - b. Structural failures including excessive deflection.

- c. Excessive water leakage or air infiltration.
  - d. Faulty operation of movable panels and hardware.
  - e. Deterioration of wood and metals, including finishes, beyond normal weathering.
  - f. Failure of insulating glass.
- 2. Warranty Period:
  - a. Hinged Door: Ten years from date of Substantial Completion.
  - b. Insulating Glass: 10 years from date of Substantial Completion.
  - c. Finish:
    - 1) Exterior: 20 years from date of Substantial Completion.
    - 2) Interior: 5 years from date of Substantial Completion

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Source Limitations: Obtain aluminum clad wood-framed glass doors and fiberglass clad windows supplied under Section 085413 from single source from single manufacturer.

### **2.02 PERFORMANCE REQUIREMENTS**

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
  - 1. Product Certification: AMMA certified with label attached to each door.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
  - 1. Minimum Performance Class: Class LC.
  - 2. Minimum Performance Grade: Grade 50.
- C. Thermal Transmittance: NFRC 100 maximum total fenestration product U-factor of 0.54 Btu/sq. ft. x h x deg F (3.06 W/sq. m x K).
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum total fenestration product SHGC of 0.40 maximum.

### **2.03 ALUMINUM-CLAD HINGED WOOD-FRAMED GLASS DOORS**

- A. Basis of Design: Marvin, Signature Collection, Ultimate Commercial Door line.
- B. Exterior Surfaces: Aluminum cladding with manufacturer's standard fluoropolymer two-coat system with fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight and complying with AAMA 2605.
  - 1. Color: Ebony (black) to match adjacent windows.



- C. Interior Surfaces: Manufacturer's standard factory-applied opaque color finish.
1. Color: Black to match exterior door finish.
- D. Frames and Door Panels: Fabricate from wood components complying with indicated requirements. Provide factory-assembled door panels with manufacturers standard-profile stiles and factory-assembled frames.
1. Door Thickness: 1-3/4 inches (44 mm).
  2. Top and Jamb Rails: 6 inches (152 mm).
  3. Door Bottom Rail: Provide 10 inch (254 mm) minimum height bottom rail in compliance with accessibility guidelines.
  4. Door Panels: Provide manufacturer's standard flat panel infill where shown.
  5. Divided Lites: Provide glazing with simulated divided lites (SDL) with a spacer bar within IGU airspace between glass panels where shown.
  6. Aluminum Cladding: 0.050 inch (1.3 mm) thick minimum extruded aluminum cladding over all exterior wood door and frame components.
- E. Wood Components: Manufacturer's standard LVL or fine-grained wood lumber complying with AAMA/WDMA/CSA 101/I.S.2/A440; kiln dried to a moisture content of not more than 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch (0.8 mm) deep by 2 inches (51 mm) wide; water-repellent preservative treated.
- F. Trim and Glazing Stops: Material and finish to match cladding in appearance.
- G. Integral Nailing Fin: Nailing fins for securing frame to structure; provide sufficient strength to withstand design pressure indicated.
- H. Drip Caps: Extruded aluminum, factory fabricated and finished to match door frame; designed to direct water away from building when installed horizontally at head of hinged wood-framed glass doors.
- I. Threshold: Provide manufacturer's standard thermal barrier saddle threshold of thickness, dimensions, and profile required to accommodate accessibility; designed to comply with performance requirements indicated and to drain to exterior.
1. Color: Black.
  2. Low-Profile Threshold: ADA-ABA compliant.

## 2.04 GLAZING

- A. Glass and Glazing: Manufacturer's standard glazing system that produces weathertight seal.
1. Glass: ASTM C 1036, Type 1, q3, Category II safety glass complying with testing requirements in 16 CFR 1201.
  2. Safety Glazing Labeling: Permanently mark safety glazing with certification label of the SGCC or the manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
  3. Tint: Clear.

4. Double Pane Insulating-Glass Units: ASTM E 2190, certified through IgCC as complying with requirements of IgCC.
  - a. Filling: Fill space between glass lites with air.
  - b. Low-E Coating: Manufacturer's standard coating sputtered on second surface.

## **2.05 HARDWARE**

- A. General: Provide manufacturer's standard hardware, fabricated from a corrosion-resistant material compatible with wood and fiberglass cladding complying with AAMA 907; designed to smoothly operate, tightly close, and securely lock hinged wood-framed glass doors and sized to accommodate panel weight and dimensions.
- B. Hinges: Butt hinges complying with BHMA A156.1 fabricated from non-ferrous metal.
  1. Minimum Size: 4-1/2 inches by 4-1/2 inches (114 by 144 mm).
  2. Finish: Painted black to match door finish.
- C. Lockset: Provided under Section 087100 "Door Hardware".
- D. Electric Strike: Provided under Section 087100 "Door Hardware".
- E. Weather Stripping: Provide manufacturers standard full-perimeter bulb type weather stripping with replaceable gasketing. Color to be black.
- F. Closer: Provided under Section 087100 "Door Hardware".
- G. Threshold: As specified above.

## **2.06 ACCESSORIES**

- A. Grilles (Simulated Divided Lites): Provide grilles as follows:
  1. Type: Exterior and interior, adhered to glass with between-glass spacer bar.
  2. Material: To match adjacent finish of door panel.
  3. Lite Pattern: 1 wide by 4 high as indicated on Drawings.
  4. Bar Shape (Interior and Exterior): Square profile, 1-15/16 inches (49 mm) wide.
  5. Color: Match door panel finish.
- B. Fasteners: Noncorrosive and compatible with door members, trim, hardware, anchors, and other components.
  1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.
- C. Anchors, Clips, and Accessories: Provide anchors, clips, and accessories of aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron for hinged wood-framed glass doors, complying with ASTM B 456 or ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

## **2.07 FABRICATION**

- A. Fabricate hinged wood-framed glass doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate hinged wood-framed glass doors that are reglazable without dismantling panel framing.
- C. Factory machine hinged wood-framed glass doors for openings and hardware that is not surface applied.
- D. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.
- E. Factory-Glazed Fabrication: Glaze hinged glass doors in the factory.

## **2.08 WOOD FINISHES**

- A. Factory-Applied Color Finish: Provide manufacturer's standard factory-applied finish complying with WDMA T.M. 12. Apply finish to exposed interior wood surfaces.

## **2.09 ALUMINUM FINISHES**

- A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

# **PART 3 - EXECUTION**

## **3.01 EXAMINATION**

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of Work.
- B. Verify rough opening dimensions, levelness of threshold substrate, and operational clearances.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight hinged door installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION**

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing hinged doors, hardware, accessories, and other components.
- B. Install hinged wood-framed glass doors level, plumb, square, true to line; without distortion, warp, or rack of frames and panels, and without impeding thermal movement; anchored securely in place to structural support; and in proper relation to wall flashing, vapor retarders, air barriers, water/weather barriers, and other adjacent construction. Comply with ASTM E 2112.
- C. Set sill members in bed of sealant to provide weathertight construction.
- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials according to ASTM E 2112.

### **3.03 ADJUSTING, CLEANING, AND PROTECTION**

- A. Lubricate hardware and moving parts.
- B. Adjust operating panels and screens to provide a tight fit at contact points and weather stripping for smooth operation, without binding, and weathertight closure.
- C. Adjust hardware for proper alignment, smooth operation, and proper latching without unnecessary force or excessive clearance.
- D. Clean exposed surfaces immediately after installing hinged wood-framed glass doors. Avoid damaging protective coatings and finishes. Remove nonpermanent labels, excess sealants, glazing materials, dirt, and other substances.
- E. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- F. Protect hinged wood-framed glass door surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances contact hinged wood-framed glass door surfaces, remove contaminants immediately according to manufacturer's written instructions.
- G. Refinish or replace hinged doors with damaged finishes.
- H. Replace damaged components.

END OF SECTION 081435

**SECTION 083323**

**OVERHEAD COILING DOORS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Insulated service doors.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for miscellaneous steel supports.

**1.02 ACTION SUBMITTALS**

A. Product Data: For each type and size of overhead coiling door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.

1. Include plans, elevations, sections, and mounting details.
2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
5. Show locations of controls, locking devices and other accessories.
6. Include diagrams for power, signal, and control wiring.

C. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include similar Samples of accessories involving color selection.

**1.03 INFORMATIONAL SUBMITTALS**

A. Qualification Data: For Installer.

- B. Sample Warranty: For special warranty.

#### **1.04 CLOSEOUT SUBMITTALS**

- A. Special warranty.
- B. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.
1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

#### **1.06 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.
1. Warranty Period Except as Follows: Three years from date of Substantial Completion.
2. Warranty Period Counterbalance Spring: Two years from date of Substantial Completion
- B. Special Finish Warranty: Manufacturer agrees to repair finish of doors or components that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Four years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.
1. Obtain operators and controls from overhead coiling-door manufacturer.

#### **2.02 PERFORMANCE REQUIREMENTS**

- A. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:
1. Design Wind Load: As indicated on Drawings.
2. Testing: According to ASTM E330/E330M.
3. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.

4. Operability under Wind Load: Overhead coiling doors to remain operable under uniform pressure of 20-lbf/sq. ft. (960-Pa) wind load, acting inward and outward.

## 2.03 DOOR ASSEMBLY

- A. Insulated Service Door: Overhead coiling door formed with curtain of interlocking metal slats.
  1. Basis of Design: Overhead Door Co., Stormtite insulated Model 625 service door.
- B. Operation Cycles: Door components and operators capable of operating for not less than 20,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.
- C. Air Infiltration: Maximum rate of 1.0 cfm/sq. ft. (5.1 L/s per sq. m) at 15 and 25 mph (24.1 and 40.2 km/h) when tested according to ASTM E283.
- D. Insulated Door Curtain R-Value: 7.7 deg F x h x sq. ft./Btu (1.355 K x sq. m/W).
- E. Door Curtain Material: Galvanized steel.
- F. Door Curtain Slats: Flat profile slats of 2-5/8-inch (67-mm) center-to-center height by 3/4 inch (19 mm) thick.
  1. Insulated-Slat Interior Facing: Metal.
  2. Gasket Seal. Manufacturer's standard continuous gaskets between slats.
- G. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch (38 by 38 by 3 mm) thick; fabricated from hot-dip galvanized steel and finished to match door.
- H. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.
- I. Hood: Match curtain material and finish.
  1. Shape: Round or square at contractor option.
  2. Mounting: Between jambs.
- J. Locking Devices: Equip door with slide bolt for padlock.
- K. Electric Door Operator:
  1. Usage Classification: Light duty, up to 10 cycles per hour.
  2. Operator Location: Front of hood.
  3. Motor Exposure: Exterior, wet, and humid.
  4. Motor Electrical Characteristics:
    - a. Horsepower: 1/2 hp minimum.
    - b. Voltage: 115 V ac, single phase, 60 H.
  5. Emergency Manual Operation: Push-up type.
  6. Obstruction-Detection Device: Automatic photoelectric sensor.



7. Control Station(s): Interior mounted.

L. Curtain Accessories:

1. Weatherseals: Manufacturer's optional air infiltration package consisting of guide covers and caps with dual brush guide seals, lintel seal at head and bottom astragal.
2. Push/pull handles and pull-down strap.

M. Door Finish:

1. Baked-Enamel or Powder-Coated Finish: Custom color to match wall panel color as specified in Section 074213 Insulated Metal Wall Panels.
2. Interior Curtain-Slat Facing: As selected from manufacturer's standard interior panel color options.

## 2.04 MATERIALS, GENERAL

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.05 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 (Z275) zinc coating; minimum nominal sheet thickness (coated) of 0.038 inch (0.97 mm); and as required.
2. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84 or UL 723. Enclose insulation completely within slat faces.
3. Metal Interior Curtain-Slat Facing: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 (Z275) zinc coating; minimum steel thickness (coated) of 0.026-inch (0.66 mm); and as required.

- B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain, and a continuous bar for holding windlocks.

## **2.06 HOODS**

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that project beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
1. Galvanized Steel: Nominal 0.028-inch- (0.71-mm-) thick, hot-dip galvanized steel sheet with G90 (Z275) zinc coating, complying with ASTM A653/A653M.

## **2.07 LOCKING DEVICES**

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

## **2.08 CURTAIN ACCESSORIES**

- A. Weatherseals: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation complying with IECC 2012/2015.
1. At door head, use 1/8-inch- (3-mm-) thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- (3-mm-) thick seals of flexible vinyl, rubber, or neoprene or nylon brushes.
3. At door bottom, provide manufacturer's standard replaceable, resilient seal to maintain specified infiltration rates.
- B. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.
- C. Pull-Down Strap: Provide pull-down straps for doors more than 84 inches (2130 mm) high.

## **2.09 COUNTERBALANCE MECHANISM**

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

- B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless or welded carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. (2.5 mm/m) of span under full load.
- C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.
- D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

## **2.10 ELECTRIC DOOR OPERATORS**

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
  - 1. Comply with NFPA 70.
  - 2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Door Operator Location(s): Operator location indicated for each door.
  - 1. Front-of-Hood Mounted: Operator is mounted to the right or left door head plate with the operator on coil side of the door-hood assembly and connected to the door drive shaft with drive chain and sprockets. Front clearance is required for this type of mounting.
- D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated for each door assembly.
  - 1. Electrical Characteristics: Minimum as indicated for each door assembly. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. (203 mm/s) and not more than 12 in./sec. (305 mm/s), without exceeding nameplate ratings or service factor.
  - 2. Operating Controls, Controllers, Disconnect Switches, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
  - 3. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.
- E. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

- F. Obstruction-Detection Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
  - 1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
- G. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure push-button control labeled "Close."
  - 1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
- H. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for push-up door operation does not exceed 25 lbf (111 N).
- I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

## **2.11 GENERAL FINISH REQUIREMENTS**

- A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **2.12 STEEL AND GALVANIZED-STEEL FINISHES**

- A. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of zinc based prime coat and premium thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application and minimum dry film thickness.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Examine locations of electrical connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION, GENERAL**

- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.
- C. Power-Operated Doors: Install automatic door openers according to UL 325.

### **3.03 STARTUP SERVICE**

- A. Engage a factory-authorized service representative to perform startup service.
  - 1. Complete installation and startup checks according to manufacturer's written instructions.
  - 2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
  - 3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

### **3.04 ADJUSTING**

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
  - 1. Adjust exterior doors and components to be weather resistant.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust seals to provide tight fit around entire perimeter.

**3.05 MAINTENANCE SERVICE**

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service includes 12 months' full maintenance by skilled employees of coiling-door Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies are to be manufacturer's authorized replacement parts and supplies.
1. Perform maintenance, including emergency callback service, during normal working hours.
  2. Include 24-hour-per-day, seven-day-per-week, emergency callback service.

**3.06 DEMONSTRATION**

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 083323

## SECTION 085413

### FIBERGLASS WINDOWS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section includes fiberglass-framed windows.

##### 1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 2. Review, discuss, and coordinate the interrelationship of fiberglass windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
  - 3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
  - 4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

##### 1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for fiberglass windows.
- B. Shop Drawings: For fiberglass windows.
  - 1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples for Verification: For fiberglass windows and components required, prepared on Samples of size indicated below:
  - 1. Exposed Finishes: 2 by 4 inches (50 by 100 mm).
  - 2. Exposed Hardware: Full-size units.



- D. Product Schedule: For fiberglass windows. Use same designations indicated on Drawings.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For manufacturer and Installer.
- B. Product Test Reports: For each type of fiberglass window, for tests performed by a qualified testing agency.
- C. Sample Warranties: For manufacturer's warranties.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A manufacturer capable of fabricating fiberglass windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.
- B. Installer Qualifications: An installer acceptable to fiberglass window manufacturer for installation of units required for this Project.

#### **1.07 WARRANTY**

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace fiberglass windows that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Failure to meet performance requirements.
    - b. Structural failures including excessive deflection, water leakage or air infiltration.
    - c. Faulty operation of movable sash and hardware.
    - d. Deterioration of materials and finishes beyond normal weathering.
    - e. Failure of insulating glass.
  2. Warranty Period:
    - a. Window Including Hardware: 10 years from date of Substantial Completion.
    - b. Glazing Units: 10 years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Source Limitations: Obtain fiberglass windows and aluminum clad entry doors supplied under Section 081435 from single source from single manufacturer.

#### **2.02 WINDOW PERFORMANCE REQUIREMENTS**

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
  - 1. Window Certification: WDMA certified with label attached to each window.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
  - 1. Minimum Performance Class: LC.
  - 2. Minimum Performance Grade: 40.
- C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of:
  - 1. Operable Units: 0.43 Btu/sq. ft. x h x deg F (2.46 W/sq. m x K).
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.

### 2.03 FIBERGLASS WINDOWS

- A. Basis of Design: Marvin, Essential Series window units.
- B. Operating Types: Provide the following operating types in locations indicated on Drawings:
  - 1. Double Hung.
- C. Frames and Sashes: Pultruded fiberglass complying with AAMA/WDMA/CSA 101/I.S.2/A440 and with exposed exterior fiberglass surfaces finished with manufacturer's standard enamel coating complying with AAMA 624-10.
  - 1. Minimum Extrusion Thickness: 0.075 inches (2 mm).
  - 2. Frame and Sash Dimensions: Manufacturer's standard as necessary to comply with specified performance criteria.
  - 3. Finish:
    - a. Exterior Color: Ebony (black).
    - b. Interior Finish: Ebony (black).
- D. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.
- E. Insulating-Glass Units: ASTM E2190.
  - 1. Glass: ASTM C1036, Type 1, Class 1, q3.
    - a. Tint: Clear.
  - 2. Lites: Two.
  - 3. Filling: Fill space between glass lites with argon.
  - 4. Low-E Coating: Sputtered on second surface. Provide coating type as necessary to attain the specified thermal performance.
- F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

- G. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock fiberglass windows, and sized to accommodate sash weight and dimensions.
1. Exposed Hardware Color and Finish: Matte Black to match window color.
- H. Hung Window Hardware:
1. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.
  2. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only.
  3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis to facilitate cleaning exterior surfaces from the interior.
- I. Weather Stripping: Provide primary and secondary full-perimeter weather stripping for each operable sash.
- J. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

## **2.04 ACCESSORIES**

- A. Nailing Fins: Provide factory installed full perimeter extended nailing fin for unit attachment.
- B. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.
1. Quantity and Type: Two per sash, removable from exposed surfaces of interior and permanently located at exterior lite with one permanently located between insulating-glass lites.
  2. Material: Manufacturer's standard.
  3. Pattern: As indicated on Drawings.
  4. Bar Shape (Interior and Exterior): Square profile, 1-15/16 inches (49 mm) wide.
  5. Color: Match frame color.

## **2.05 INSECT SCREENS**

- A. General: Fabricate insect screens to integrate with window frame.
1. Type and Location: Full, outside for double-hung sashes.
- B. Aluminum Frames: Manufacturer's standard aluminum alloy complying with SMA 1004 or SMA 1201. Fabricate frames with mitered or coped joints or corner extrusions, concealed fasteners, and removable PVC spline/anchor concealing edge of frame.
1. Tubular Framing Sections and Cross Braces: Roll formed from aluminum sheet.
  2. Finish for Interior Screens: Baked-on organic coating with Ebony finish to match frame.

- C. Glass-Fiber Mesh Fabric: 18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm) mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656/D3656M.

1. Mesh Color: Charcoal.

## **2.06 FABRICATION**

- A. Fabricate fiberglass windows in sizes indicated. Include a complete system for installing and anchoring windows.
- B. Glaze fiberglass windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Mullions: Where multiple windows are shown within an opening, factory mull units as one assembly. Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.
- E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION**

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

- B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

### **3.03 ADJUSTING, CLEANING, AND PROTECTION**

- A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.
- B. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
  - 1. Keep protective films and coverings in place until final cleaning.
- C. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.
- D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 085413

## SECTION 087100

### DOOR HARDWARE

#### GENERAL

#### 1.01 SUMMARY

A. Section Includes:

1. Mechanical door hardware for swinging doors.
2. Electrified door hardware.

B. Related Requirements:

1. Section 081113 "Hollow Metal Doors and Frames" for metal doors to receive hardware.
2. Section 081416 "Flush Wood Doors" for wood doors to receive hardware.
3. Section 081435 "Wood Terrace Doors" for hardware provided with assemblies.
4. Section 133400 "Manufactured Precast Structure" for all door hardware associated with precast modular toilet building facility.

#### 1.02 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

#### 1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant.

B. Keying Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant.
2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:
  - a. Preliminary key system schematic diagram indicating keying requirements for each opening and level of master keying required.

- b. Requirements for access control.

#### 1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For electrified door hardware.
1. Include diagrams for power, signal, and control wiring.
  2. Include details of interface of electrified door hardware and building safety and security systems.
- C. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
  2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
  3. Content: Include the following information:
    - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
    - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
    - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    - d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
    - e. Fastenings and other installation information.
    - f. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
    - g. Mounting locations for door hardware.
    - h. List of related door devices specified in other Sections for each door and frame.
- D. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

#### 1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.



- B. Product Certificates: For each type of electrified door hardware.
  - 1. Certify that door hardware for use on each type and size of labeled fire-rated doors complies with listed fire-rated door assemblies.
- C. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- D. Sample Warranty: For special warranty.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.
- B. Schedules: Final door hardware and keying schedule.

#### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
  - 1. Warehousing Facilities: In Project's vicinity.
  - 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
  - 3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC) and an Electrified Hardware Consultant (EHC).

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

## **1.09 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Structural failures including excessive deflection, cracking, or breakage.
    - b. Faulty operation of doors and door hardware.
    - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
  2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
    - a. Manual Closers: 10 years from date of Substantial Completion.

## **PRODUCTS**

## **1.10 MANUFACTURERS**

- A. Source Limitations: Obtain each type of door hardware from single manufacturer.
1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

## **1.11 PERFORMANCE REQUIREMENTS**

- A. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- C. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
  2. Comply with the following maximum opening-force requirements:
    - a. Interior Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
  3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
  4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.

### **1.12 HINGES**

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
- B. Provide heavy-weight, concealed bearing, stainless-steel hinges for exterior door locations.
- C. Provide standard-weight, steel hinges for interior locations.
- D. Provide full mortise, 5-knuckle hinges.

### **1.13 MECHANICAL LOCKS AND LATCHES**

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
  - 1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
- C. Lock Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
- D. Lock Trim:
  - 1. Description: Accessible design levers with end return comparable to the #14K design of basis of design lockset manufacturer.
  - 2. Levers: Cast.
  - 3. Escutcheons (Roses): Wrought.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
- F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.
  - 1. Basis of Design: Best 9K Series.

### **1.14 ELECTRIC STRIKES**

- A. Electric Strikes: BHMA A156.31; Grade 1; with faceplate to suit lock and frame.
  - 1. Provide strikes configured to function with specified locking devices.
  - 2. Provide power supplies as necessary to energize strikes and integrate with access control devices supplied by the security contractor.
    - a. Power supplies to be located in a NEMA 1 enclosure with hinged cover.
    - b. Provide AC input and DC output monitoring circuit with LED indicators.
    - c. Voltage: 120-240 VAC input with 12/24 VDC output, field selectable.
    - d. Tested and certified to meet UL294.

### **1.15 LOCK CYLINDERS**

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel or nickel silver.
  - 1. Provide Best cores to match existing facility keying system.
- B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.
  - 1. Core Type: Small format, interchangeable cores.
- C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

### **1.16 KEYING**

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.
  - 1. Existing System:
    - a. Master key or grand master key locks to Owner's existing system.
- B. Keys: Nickel silver.
  - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
    - a. Notation: Information to be furnished by Owner.

### **1.17 KEY CONTROL SYSTEM**

- A. Key Control Cabinet: BHMA A156.28; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.
  - 1. Wall-Mounted Cabinet: Grade 1 cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

### **1.18 SURFACE CLOSERS**

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
  - 1. Basis of Design: LCN, 4040XP heavy-duty parallel arm mounted closer.
  - 2. Provide optional metal covers.
  - 3. Finish: Powder coat, 693 Black.

## **1.19 MECHANICAL STOPS AND HOLDERS**

- A. Stops: BHMA A156.16, concave design wall stop and hinge mounted design as indicated.

## **1.20 DOOR GASKETING**

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
- B. Maximum Air Leakage: When tested in accordance with ASTM E283 with tested pressure differential of 0.3-inch wg (75 Pa), as follows:
1. Gasketing on Single Doors: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.

## **1.21 THRESHOLDS**

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
1. Provide 1/2 inch (12.7 mm) high thresholds complying with accessibility guidelines per ANSI A117.1. Width and configuration as indicated in hardware schedule.
  2. Material: Mill finish aluminum.

## **1.22 FABRICATION**

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.
1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
  3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

### 1.23 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
  - 1. All hardware installed for exterior aluminum clad wood entry doors shall have factory black painted finish to match door color.
  - 2. Remaining hardware to be satin chromium plated or satin stainless steel as indicated.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

#### EXECUTION

### 1.24 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 1.25 PREPARATION

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.
- B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

### 1.26 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
  - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
  - 2. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."

- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
1. Replace construction cores with permanent cores as directed by Owner.
- E. Key Control System:
1. Key Control Cabinet: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- F. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, in storage room on main level. Verify location with Architect.
1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.
- G. Thresholds: Install thresholds for exterior doors with stainless steel fasteners and set in a full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- H. Stops: Provide wall stops for doors for all doors unless indicated otherwise.
- I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
1. Do not notch perimeter gasketing to install other surface-applied hardware.
- J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.



### **1.27 ADJUSTING**

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
  - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
  - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
- B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

### **1.28 CLEANING AND PROTECTION**

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

### **1.29 MAINTENANCE SERVICE**

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

### **1.30 DEMONSTRATION**

- A. Train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

### 1.31 OFFICE BUILDING DOOR HARDWARE SCHEDULE

A. Hardware Set #O-1 (Door 1) Exterior Doors:

1. Butts: Supplied by door manufacturer under Section 081435.
2. Cylindrical Lockset: Best – 9K Series with exterior lock cylinder (Storeroom function). Match door finish.
3. Electric Strike: Fail secure operation.
4. Surface Closer: LCN – push side.
5. Weatherstripping: Supplied by door manufacturer under Section 081435.
6. Threshold: Supplied by door manufacturer under Section 081435.

Theory of Operation: Door always locked from exterior and unlocked from interior. Access control device provided by Security contract temporarily unlatches strike for entry. Key override on exterior also allows entry. Operation is fail secure. Door status monitored.

B. Hardware Set #O-2 (Door 2) Toilet Room 107 Door:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Privacy function with occupancy indicator).
3. Wall Stop: Concave design.

C. Hardware Set #O-2.1 (Door 2) Storage 105 and Janitor 106 Doors:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Storeroom function).
3. Wall Stop:
  - a. Door 105: Concave design.
  - b. Door 106: Adjustable hinge pin design.

D. Hardware Set #O-2.2 (Door 2) Conference Room 114 Door:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Passage function).
3. Wall Stop: Concave design.

E. Hardware Set #O-3 (Door 3) Exterior Door:

1. Butts: Supplied by door manufacturer under Section 081435.
2. Cylindrical Lockset: Best – 9K Series with exterior lever with lock cylinder hardware (Storeroom function). Match door finish.
3. Electric Strike: Fail secure operation.
4. Surface Closer: LCN – push side.
5. Weatherstripping: Supplied by door manufacturer under Section 081435.
6. Threshold: Supplied by door manufacturer under Section 081435.

Theory of Operation: Door always locked from exterior and unlocked from interior. Access control device provided by Security contract temporarily unlatches strike for entry. Key override on exterior also allows entry. Operation is fail secure. Door status monitored.

F. Hardware Set #O-4 (Door 4) Interior Vestibule Doors:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Passage function).
3. Surface Closer: LCN – push side.
4. Weatherstripping: Head and jamb neoprene compression seals.
5. Wall Stop: Concave design.

G. Hardware Set #O-4.1 (Door 4) Interior Office Doors:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Office function).
3. Wall Stop: Concave design.

H. Hardware Set #O-5 (Door 5) Stair Door:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Classroom function).
3. Wall Stop: Concave design.

I. Hardware Set #O-7 (Door 7) Closet Door:

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2".
2. Cylindrical Lockset: Best – 9K Series (Passage function).

**1.32 GONDOLA BUILDING DOOR HARDWARE SCHEDULE**

A. Hardware Set #G-1 (Door G100, G101 and G103):

1. Butts: 1-1/2 pair, 4-1/2" x 4-1/2", stainless steel.
2. Cylindrical Lockset: Best – 9K Series (Storeroom function).
3. Surface Closer: LCN – push side.
4. Weatherstripping: Head, jamb and sill neoprene compression seals.
5. Threshold: Full saddle design – 1/2 inch high by 5 inches wide.

END OF SECTION 087100

## SECTION 088000

### GLAZING

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
1. Glass products.
  2. Glazing sealants.
  3. Glazing tapes.
  4. Miscellaneous glazing materials.
- B. Related Requirements:
1. Section 081435 "Wood Terrace Doors" for factory glazed entries.
  2. Section 085113 "Fiberglass Windows" for factory glazed fenestration.

##### 1.03 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.
- C. IBC: International Building Code.
- D. Interspace: Space between lites of an insulating-glass unit.

##### 1.04 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

### **1.05 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

### **1.06 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For glass.

### **1.07 QUALITY ASSURANCE**

- A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved by primary glass manufacturer.

### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

### **1.09 FIELD CONDITIONS**

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
  - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

## **2.02 GLASS PRODUCTS, GENERAL**

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. NGA Publications: "Glazing Manual."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

## **2.03 GLASS PRODUCTS**

- A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
  - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

## **2.04 GLAZING SEALANTS**

- A. General:
  - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  - 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.
- B. Neutral-Curing Silicone Glazing Sealant, Class 25: Complying with ASTM C920, Type S, Grade NS, Use NT.

## **2.05 GLAZING TAPES**

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

## **2.06 MISCELLANEOUS GLAZING MATERIALS**

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks:
  1. EPDM or silicone with Shore A durometer hardness of 85, plus or minus 5.
  2. Type recommended in writing by sealant or glass manufacturer.
- D. Spacers:
  1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
  2. Type recommended in writing by sealant or glass manufacturer.
- E. Edge Blocks:
  1. EPDM or silicone with Shore A durometer hardness per manufacturer's written instructions.
  2. Type recommended in writing by sealant or glass manufacturer.

## **2.07 FABRICATION OF GLAZING UNITS**

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
  1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.



## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
  - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
  - 2. Presence and functioning of weep systems.
  - 3. Minimum required face and edge clearances.
  - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

### **3.03 GLAZING, GENERAL**

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
  2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

### **3.04 TAPE GLAZING**

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

### **3.05 CLEANING AND PROTECTION**

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

### **3.06 MONOLITHIC GLASS SCHEDULE**

- A. Clear Glass Type Fully tempered float glass.
  1. Minimum Thickness: 6 mm.
  2. Provide Safety glazing labeling.

END OF SECTION 088000

**SECTION 092900**

**GYPSUM BOARD**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Interior gypsum board.
2. Tile backing panels.
3. Acoustical accessories.

B. Related Requirements:

1. Section 092216 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.

**1.02 ACTION SUBMITTALS**

A. Product Data: For the following:

1. Gypsum board, Type X.
2. Gypsum ceiling board.
3. Glass-mat, water-resistant gypsum backing board.
4. Interior trim.
5. Joint treatment materials.
6. Sound-attenuation blankets.
7. Acoustical sealant.

**1.03 DELIVERY, STORAGE AND HANDLING**

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

**1.04 FIELD CONDITIONS**

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

## **PART 2 - PRODUCTS**

### **2.01 GYPSUM BOARD, GENERAL**

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

### **2.02 INTERIOR GYPSUM BOARD**

- A. Gypsum Board, Type X: ASTM C1396/C1396M.
  1. Thickness: 5/8 inch (15.9 mm).
  2. Long Edges: Tapered.
- B. Gypsum Ceiling Board: ASTM C1396/C1396M.
  1. Thickness: 1/2 inch (12.7 mm). Verify to match thickness of existing ceiling board.
  2. Long Edges: Tapered.

### **2.03 TILE BACKING PANELS**

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C1178/C1178M, with manufacturer's standard edges.
  1. Core: 5/8 inch (15.9 mm), Type X.
  2. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

### **2.04 TRIM ACCESSORIES**

- A. Interior Trim: ASTM C1047.
  1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc or paper-faced galvanized-steel sheet.
  2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. L-Bead: L-shaped; exposed long flange receives joint compound.
    - d. U-Bead: J-shaped; exposed short flange does not receive joint compound.

### **2.05 JOINT TREATMENT MATERIALS**

- A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, beveled panel edges and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.

D. Joint Compound for Tile Backing Panels:

1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.

**2.06 AUXILIARY MATERIALS**

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
- C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
- D. Acoustical Sealant for Concealed Joints: Manufacturer's standard nonsag, nondrying, nonhardening, non-skinning, nonstaining, gun grade synthetic-rubber acoustical sealant

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 INSTALLATION AND FINISHING OF PANELS, GENERAL**

- A. Comply with ASTM C840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 1. Unless concealed application is indicated or required for sound ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
- F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- G. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.
- H. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

### **3.03 INSTALLATION OF INTERIOR GYPSUM BOARD**

- A. Install interior gypsum board in the following locations:
  - 1. Type X: Vertical surfaces unless otherwise indicated.
  - 2. Ceiling Type: Ceiling surfaces.



**B. Single-Layer Application:**

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), and minimize end joints.
  - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

**3.04 INSTALLATION OF TILE BACKING PANELS**

- A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

**3.05 INSTALLATION OF TRIM ACCESSORIES**

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach according to manufacturer's written instructions.
- B. Interior Trim: Install in the following locations:
  1. Cornerbead: Use at outside corners.
  2. Use either LC-Bead or L-Bead at Contractor option for exposed panel edges.
  3. U-Bead: Use at concealed locations where gypsum board butts dissimilar materials.

**3.06 FINISHING GYPSUM BOARD**

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints or beveled edges and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
  1. Skim coat or float existing and new ceiling surfaces either side of juncture as required to blend finish faces flush without any visible undulations.

- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
- E. Glass-Mat Faced Tile Backer Panels: Finish according to manufacturer's written instructions.

### **3.07 PROTECTION**

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
  - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

## SECTION 093013

### CERAMIC TILING

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:

1. Porcelain tile.
2. Glazed wall tile.
3. Thresholds.
4. Waterproof membrane.
5. Metal edge strips.
6. Floor tile backing panels.

- B. Related Requirements:

1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Section 092900 "Gypsum Board" for glass-mat, water-resistant wall tile backer board.

##### 1.03 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.
- D. Module Size: Actual tile size plus joint width indicated.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

**1.05 ACTION SUBMITTALS**

- A. Product Data: For each type of product specified.
- B. Samples for Verification:
  - 1. Full-size units of each type and composition of tile and for each color and finish required.
  - 2. Stone thresholds in 6-inch (150-mm) lengths.
  - 3. Metal edge strips in 6-inch (150-mm) lengths.

**1.06 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of product.
- C. Product Test Reports: For tile-setting and -grouting products and certified porcelain tile.

**1.07 QUALITY ASSURANCE**

- A. Installer Qualifications:
  - 1. Installer is member in good standing of the National Tile Contractors Association or the Tile Contractors' Association of America.
  - 2. Installer employs at least one installer for Project that has completed the Advanced Certification for Tile Installers (ACT) certification for installation of gauged porcelain tile/gauged porcelain tile panels and slabs and large format tile.

**1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

**1.09 FIELD CONDITIONS**

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Source Limitations for Tile: Obtain tile from single source or producer.
  - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
  - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
  - 2. Obtain waterproof membrane from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each product specified in this Section from a single manufacturer.

### **2.02 PRODUCTS, GENERAL**

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
  - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

### **2.03 TILE PRODUCTS**

- A. Ceramic Tile Type (PCT-201 and 402): Porcelain floor/base tile.
  - 1. Basis of Design: As indicated in Finish Legend on Drawings.
  - 2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  - 3. Face Size: As indicated on Drawings.
  - 4. Face Size Variation: Rectified.
  - 5. Thickness: 3/8 inch (9.5 mm).
  - 6. Face: Plain with square edges.

7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: As indicated by manufacturer's designations.
9. Grout Color: As selected by Architect from manufacturer's full range.
10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide bull nose base tile as indicated on Drawings.

B. Ceramic Tile Type (CT-202 and 203): Glazed wall tile.

1. Basis of Design: As indicated in Finish Legend on Drawings.
2. Module Size: As indicated on Drawings.
3. Thickness: 5/16 inch (8 mm).
4. Face: Pattern of design indicated, with manufacturer's standard edges.
5. Finish: Varies as indicated on Drawings.
6. Tile Color and Pattern: As indicated by manufacturer's designations.
7. Grout Color: As selected by Architect from manufacturer's full range.

## 2.04 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.

B. Granite Thresholds: ASTM C615/C615M, with honed finish.

1. Description: Uniform, fine-grained, black stone without veining

## 2.05 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.

1. Thickness: 1/4 inch (6 mm).

## 2.06 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

## **2.07 SETTING MATERIALS**

- A. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
1. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
  2. Provide prepackaged, dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive at Project site.
  3. Provide mortar that complies with requirements for non-sagging mortar in addition to the other requirements in ANSI A118.4.
- B. Medium-Bed, Modified Dry-Set Mortar: Comply with requirements in ANSI A118.4 and ANSI A118.15. Provide product that is approved by manufacturer for application thickness of 5/8 inch (16 mm) or greater.
1. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
  2. Provide prepackaged, dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive at Project site.

## **2.08 GROUT MATERIALS**

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. High-Performance Tile Grout: ANSI A118.7.
1. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.
  2. Polymer Type: Acrylic resin or styrene-butadiene rubber in liquid-latex form for addition to prepackaged dry-grout mix.

## **2.09 MISCELLANEOUS MATERIALS**

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Basis of Design Metal Edge Strips: Provide Schluter extruded metal tile trim as follows:
1. Tile Accent Strip (Jolly): Extruded aluminum angle or L-shape, height to match tile and setting-bed thickness, designed specifically for tile applications.
  2. Tile Cove Transition (Dilex-AHK): Extruded aluminum cove shape, height to match tile and setting-bed thickness, designed to transition between floor and wall tile.
  3. Finish: Satin brass.



- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

## **2.10 MIXING MORTARS AND GROUT**

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  - 2. Verify that floor joist spacing in the work area does not exceed 16 inches (406 mm) oc.
  - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

### 3.03 INSTALLATION OF CERAMIC TILE

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
1. Follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage for floor tile.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's bullnose trim shapes where shown.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
1. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim; align joints unless otherwise indicated.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Porcelain Tile: 3/16 inch (4.8 mm).
  2. Ceramic Tile: 3/16 inch (4.8 mm).
- G. Expansion Joints: Provide sealant-filled joints at transition from floor tile to base tile. Form joints during installation of setting materials and tile. Do not saw-cut joints after installing tiles.
1. Do not seal joint between floor tile and metal cove trim.
- H. Stone Thresholds: Install stone thresholds in same type of setting material as adjacent floor tile.
1. Do not extend floor tile backing panel and waterproof membrane under thresholds.
  2. Coordinate stone threshold thickness so finish surface aligns with finish surface of adjacent floor tile including thickness of backing panel and is not more than 1/2 inch (12.7 mm) above adjacent resilient flooring finish on exterior side of threshold.
  3. Fill joints between thresholds and adjoining tile with elastomeric sealant.
- I. Metal Trim:
1. Accent Strips: Install at locations indicated full height of wall.
  2. Cove Transition: Install at base of fixture wall between floor and wall tile.

- J. Floor Sealer: Apply floor sealer to grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

### **3.04 INSTALLATION OF FLOOR TILE BACKING PANEL**

- A. Install panels and treat joints according to ANSI A108.11 and underlayment manufacturer's written instructions for type of application indicated.
1. Use modified dry-set mortar for bonding material to substrate. Fasten through panels and mortar bed to subfloor construction. Space fasteners as directed by manufacture.
  2. Stagger panel joints from substrate joints and between adjacent underlayment panels.
  3. Maintain a 1/4-inch (6 mm) gap at perimeter walls as directed by manufacturer.
  4. Fill all joints and install alkali-resistant fiberglass mesh reinforcement. Finish joints and fastener heads with modified dry-set mortar and strike flush with adjacent surfaces.
  5. Allow mortar to fully cure prior to proceeding with work.

### **3.05 INSTALLATION OF WATERPROOF MEMBRANE**

- A. Install waterproof membrane over underlayment to comply with ANSI A108.13, ANSI A108.17 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

### **3.06 ADJUSTING AND CLEANING**

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove grout residue from tile as soon as possible.
  2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

### **3.07 PROTECTION**

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

### **3.08 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE**

- A. Interior Floor Installations, Wood Subfloor:
  - 1. Ceramic Tile Installation: TCNA F144; thinset mortar on waterproof membrane over cementitious backer units.
    - a. Ceramic Tile Type: Porcelain tiles.
    - b. Thinset Mortar: Medium-bed, modified dry-set mortar.
    - c. Grout: High-performance polymer sanded or unsanded grout.
- B. Interior Wall Installations, Wood or Metal Studs or Furring:
  - 1. Ceramic Tile Installation: TCNA W245 or TCNA W248; thinset mortar on glass-mat, water-resistant gypsum backer board.
    - a. Ceramic Tile Type: Glazed wall tile.
    - b. Thinset Mortar: Modified dry-set mortar.
    - c. Grout: High-performance polymer sanded or unsanded grout.

END OF SECTION 093013

## SECTION 096513

### RESILIENT BASE AND ACCESSORIES

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Thermoplastic-rubber base.
  - 2. Rubber stair accessories.
  - 3. Rubber molding accessories.

##### 1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long.

##### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

##### 1.05 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After installation, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

- C. Install resilient products after painting and other finishing operations have been completed.

## **PART 2 - PRODUCTS**

### **2.01 THERMOPLASTIC-RUBBER BASE**

- A. Basis of Design: Provide product as indicated in Finish Legend on Drawings.
- B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
1. Group: I (solid, homogeneous).
  2. Style and Location:
    - a. Style A, Straight: Provide in areas with carpet.
    - b. Style B, Cove: Provide in areas with resilient floor coverings.
- C. Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches (102 mm).
- E. Lengths: Cut lengths 48 inches (1219 mm) long or coils in manufacturer's standard length.
- F. Outside Corners: Job formed or preformed.
- G. Inside Corners: Job formed.
- H. Colors: As indicated by manufacturer's designations.

### **2.02 RUBBER STAIR ACCESSORIES**

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Basis of Design: Provide products from manufacture as indicated in Finish Legend on Drawings.
- C. Stair Treads: ASTM F2169.
1. Type: TS (rubber, vulcanized thermoset).
  2. Class: 2 (pattern; embossed, grooved, or ribbed).
    - a. Texture: Bamboo surface texture from basis of design manufacturer.
  3. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
  4. Nosing Height: 2 inches (51 mm).
  5. Thickness: 1/4 inch (6 mm) and tapered to back edge.
  6. Size: Lengths and depths to fit each stair tread in one piece.
  7. Integral Risers: Smooth, flat; in height that fully covers substrate.

- D. Stair-Tread Nosing: Provide nosing with square profile to match treads designed to terminate adjacent carpet tile floor finish at top landing. Match stair tread color and finish.
- E. Locations: Provide rubber treads at interior stair as shown. Provide nosing at edge of top riser to terminate landing carpet tile finish.
- F. Colors and Patterns: As indicated by manufacturer's designations.

## **2.03 RUBBER MOLDING ACCESSORY**

- A. Basis of Design: Provide accessories from same manufacturer as wall base.
- B. Description: Rubber carpet edge for glue-down applications, transition strips between varying resilient floor covering materials and joiner for tile and carpet.
- C. Locations: Provide rubber molding accessories in areas indicated and as necessary to conceal edges of all carpet and resilient tile flooring for a complete finish project.
- D. Colors and Patterns: As selected by Architect.

## **2.04 INSTALLATION MATERIALS**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
- C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
  - 1. Installation of resilient products indicates acceptance of surfaces and conditions.



### 3.02 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### 3.03 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. Preformed Corners: Install preformed corners before installing straight pieces.
- G. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 inches (150 mm) in length.
    - a. Form without producing discoloration (whitening) at bends.
  - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 inches (150 mm) in length.
    - a. Miter or cope corners to minimize open joints.

### **3.04 RESILIENT ACCESSORY INSTALLATION**

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
  - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
  - 2. Tightly adhere to substrates throughout length of each piece.
- C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

### **3.05 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
  - 1. Remove adhesive and other blemishes from surfaces.
  - 2. Sweep and vacuum horizontal surfaces thoroughly.
  - 3. Damp-mop horizontal surfaces to remove marks and soil.
- C. Protect resilient products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

**SECTION 096519  
RESILIENT TILE FLOORING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Solid vinyl floor tile.
  - 2. Vinyl composition floor tile.
- B. Related Requirements:
  - 1. Section 024119 "Selective Demolition" for removing existing floor coverings.
  - 2. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
    - a. Review delivery, storage, and handling procedures.
    - b. Review ambient conditions and ventilation procedures.
    - c. Review preparation procedures for existing subfloor.

**1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include manufacturer's written installation recommendations for each type of substrate.
- B. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- C. Product Schedule: For floor tile. Use same designations indicated on Drawings.

**1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

**1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

**1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
  - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

**1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

**1.09 FIELD CONDITIONS**

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

## **1.10 WARRANTY**

- A. Special Warranty for Resilient Tiles: Manufacturer agrees to repair or replace components of resilient tile installation that fail in materials or workmanship within specified warranty period.
1. Warranty does not include deterioration or failure of resilient tile due to unusual traffic, failure of substrate, vandalism or abuse.
  2. Failures include, but are not limited to, the following:
    - a. Excessive tile finish wear through resulting in uneven appearance.
    - b. Dimensional instability.
    - c. Delamination.
  3. Warranty Period:
    - a. Vinyl Composition Tile: 5 years from date of installation
    - b. Luxury Vinyl Tile: 20 years from date of installation.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

### **2.02 SOLID VINYL FLOOR TILE**

- A. Basis of Design (LVT-301): Provide material as indicated in Finish Legend on Drawings.
- B. Tile Standard: ASTM F1700.
1. Class: Class III, Printed Film Vinyl Tile.
  2. Type: B, Embossed Surface.
- C. Thickness: 0.120 inch (3.0 mm).
- D. Size: 4 by 12 inches (102 by 305 mm).
- E. Colors and Patterns: As indicated by manufacturer's designations.

### **2.03 VINYL COMPOSITION FLOOR TILE**

- A. Basis of Design (VCT-302): Provide material as indicated in Finish Legend on Drawings.
- B. Tile Standard: ASTM F1066, Class 2, through pattern.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch (3.2 mm).
- E. Size: 12 by 12 inches (305 by 305 mm).
- F. Colors and Patterns: As indicated by manufacturer's designations.

### **2.04 INSTALLATION MATERIALS**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- B. Wood Subfloors: Verify the following:
  - 1. New subfloor complies with requirements specified in Section 061600 "Sheathing."
  - 2. Existing subfloor is securely anchored with relatively smooth surface, free of irregularities and ready to receive leveling material.
    - a. Existing floor conditions shall be reviewed and agreed upon as part of pre-installation review process.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

### **3.03 FLOOR TILE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
  - 1. Lay tiles square with room axis.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
  - 1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern).
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.



### **3.04 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
  - 1. Remove adhesive and other blemishes from surfaces.
  - 2. Sweep and vacuum surfaces thoroughly.
  - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.
  - 1. Apply three coat(s).
- E. Cover floor tile until Substantial Completion.

END OF SECTION 096519

**SECTION 096813**

**TILE CARPETING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Modular carpet tile.
- B. Related Requirements:
1. Section 024119 "Selective Demolition" for removing existing floor coverings.
  2. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
    - a. Review delivery, storage, and handling procedures.
    - b. Review ambient conditions and ventilation procedures.
    - c. Review preparation procedures for existing subfloor.

**1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
1. Include manufacturer's written data on physical characteristics, durability and fade resistance.
  2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Samples for Verification: For each color and texture required. Label each Sample with manufacturer's name, material, color, pattern and designation indicated on Drawings.
1. Carpet Tile: Full-size Sample.

- C. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

#### **1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
  - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
  - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

#### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with the Carpet and Rug Institute's CRI 104.

#### **1.09 FIELD CONDITIONS**

- A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

#### **1.10 WARRANTY**

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, the following:
  - a. More than 10 percent edge raveling, snags, and runs.
  - b. Dimensional instability.
  - c. Excess static discharge.
  - d. Loss of tuft-bind strength.
  - e. Loss of face fiber.
  - f. Delamination.
3. Warranty Period: Lifetime of installation.

## **PART 2 - PRODUCTS**

### **2.01 CARPET TILE**

- A. Basis of Design (MAT-101): Provide material as indicated in Finish Legend on Drawings.
- B. Pattern and Color: As indicated by manufacturer's designations.
- C. Fiber Content: 100 percent nylon.
- D. Pile Characteristic: Cut-and-loop pile, tufted construction.
- E. Pile Thickness: 0.185 inches (5 mm) for finished carpet tile average height.
- F. Total Thickness: 0.245 inches (6.3 mm).
- G. Surface Pile Weight: 29 oz./sq. yd.
- H. Primary Backing: Manufacturer's standard synthetic multi-layer, nonwoven material.
- I. Secondary Backing: Manufacturer's standard coating that minimize substrate compatibility problems and acts as a chemical barrier to moisture intrusion.
  1. Equal to Ethos backing by specified manufacturer.
- J. Size: 24 by 24 inches (610 by 610 mm).
- K. Applied Treatments:
  1. Soil-Resistance Treatment: Manufacturer's standard treatment.
  2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:

- a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.

L. Performance Characteristics:

1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D2646.
4. Tuft Bind: Not less than 10 lbf (45 N) according to ASTM D1335.
5. Delamination: Not less than 4 lbf/in. (0.7 N/mm) according to ASTM D3936.
6. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
8. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
9. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
10. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.

**2.02 CARPET TILE**

- A. Basis of Design (CPT-102 and 103): Provide material as indicated in Finish Legend on Drawings.
- B. Pattern and Color: As indicated by manufacturer's designations.
- C. Fiber Content: 100 percent nylon.
- D. Pile Characteristic:
  1. CPT-102: Patterned Tipshear pile.
  2. CPT-103: Patterned-loop pile.
- E. Pile Thickness:
  1. CPT-102: 0.205 inches (5.2 mm) for finished carpet tile average height.
  2. CPT-103: 0.110 inches (2.8 mm) for finished carpet tile average height.
- F. Total Thickness:
  1. CPT-102: 0.265 inches (6.7 mm) for finished carpet tile.
  2. CPT-103: 0.170 inches (4.3 mm) for finished carpet tile.
- G. Surface Pile Weight:
  1. CPT-102: 20 oz./sq. yd.
  2. CPT-103: 25 oz./sq. yd.

- H. Primary Backing: Manufacturer's standard synthetic multi-layer, nonwoven material.
- I. Secondary Backing: Manufacturer's standard coating that minimize substrate compatibility problems and acts as a chemical barrier to moisture intrusion.
  - 1. Equal to Ethos backing by specified manufacturer.
- J. Size: 18 by 36 inches (457 by 914 mm).
- K. Applied Treatments:
  - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.
  - 2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:
    - a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.
- L. Performance Characteristics:
  - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D7330.
  - 2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
  - 3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D2646.
  - 4. Tuft Bind: Not less than 10 lbf (45 N) according to ASTM D1335.
  - 5. Delamination: Not less than 4 lbf/in. (0.7 N/mm) according to ASTM D3936.
  - 6. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
  - 7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
  - 8. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
  - 9. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
  - 10. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.

## **2.03 INSTALLATION ACCESSORIES**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern and potential defects.
- C. Wood Subfloors: Verify the following:
  - 1. New subfloor complies with requirements specified in Section 061600 "Sheathing."
  - 2. Existing subfloor is securely anchored with relatively smooth surface, free of irregularities and ready to receive leveling material.
    - a. Existing floor conditions shall be reviewed and agreed upon as part of pre-installation review process.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

### **3.03 INSTALLATION**

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method and Procedures: As recommended in writing by carpet tile manufacturer for each different location and condition.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Install tile in ashlar pattern. Maintain pile-direction orientation as recommended in writing by carpet tile manufacturer.



- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.

### **3.04 CLEANING AND PROTECTION**

- A. Perform the following operations immediately after installing carpet tile:
  - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
  - 2. Remove yarns that protrude from carpet tile surface.
  - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

**SECTION 098433**

**SOUND-ABSORBING WALL UNITS**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section includes shop-fabricated, acoustical panel units tested for acoustical performance, including the following:
  - 1. Sound-absorbing wall panels.

**1.03 DEFINITIONS**

- A. NRC: Noise Reduction Coefficient.
- B. SAA: Sound Absorption Average.

**1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include panel edge, core material, and mounting indicated.
- B. Shop Drawings: For unit assembly and installation.
  - 1. Include elevations to confirm understanding of scope.
- C. Samples for Verification: For the following products:
  - 1. Assembled Panels: Full size panel for each separate color.

**1.05 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For each type of unit confirming flame spread performance.
- B. Sample Warranty: For manufacturer's special warranty.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of unit to include in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal instructions.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with fabric and unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.
- B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

#### **1.08 FIELD CONDITIONS**

- A. Environmental Limitations: Do not install units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Lighting: Do not install units until a permanent level of lighting is provided on surfaces to receive the units.
- C. Air-Quality Limitations: Protect units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.
- D. Field Measurements: Verify unit locations and actual dimensions of openings and penetrations by field measurements before fabrication and indicate them on Shop Drawings.

#### **1.09 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace units and components that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to the following:
    - a. Acoustical performance.
    - b. Flaking or integrity failure of panels.
    - c. Warping of panels.
  - 2. Warranty Period: Three years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    - a. Flame-Spread Index: 25 or less.
    - b. Smoke-Developed Index: 450 or less.
  2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

### **2.02 SOUND-ABSORBING WALL UNITS**

- A. Sound-Absorbing Wall Panel (AWT-801, 802, 803 and 804): Manufacturer's standard panel construction consisting of homogenous PET material with through color and self-adhesive backing, manufactured into shape as indicated.
- B. Basis of Design: Provide products as indicated in Finish Legend on Drawings.
1. Panel Shape: Flat, triangular shape (Delta tile).
    - a. Panel Size: 7.9 inches (200 mm) right angle legs with 10.9 inches (277 mm) hypotenuse by 1/2 inch (12 mm) thick.
    - b. Edges: Square.
    - c. Finish: Felt like texture all surfaces.
  2. Mounting: Self-adhesive backed panels secured to substrate.
  3. Color (Tile Face and Edges): As indicated on Drawings.
  4. Core: Polyethylene Terephthalate (PET) plastic.
  5. Acoustical Performance: Sound absorption NRC of 0.40 according to ASTM C423 based on direct mounting to wall surface.

### **2.03 MATERIALS**

- A. Core Materials:

1. Fire-Retardant Formed Plastic: Manufacturer's standard formed plastic with flame-spread index of 25 or less and smoke-developed index of 25 or less according to ASTM E84 or UL 723.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine fabric, fabricated units, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting unit performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 INSTALLATION**

- A. Layout: Balance panels between door frames so that no less than one half tile is installed unless specifically noted otherwise.
  1. Coordinate layout with drawings so transitions between varying color tiles align across door openings. Adjust height of base tiles as necessary to achieve.
- B. Install units in locations indicated. Install units with vertical surface edges plumb and in alignment. Maintain faces flush and scribe panels to fit tight to adjoining work at borders.
- C. Comply with manufacturer's written instructions for installation of units. Press firmly against substrate to provide secure, permanent bond.

#### **3.03 INSTALLATION TOLERANCES**

- A. Variation from Plumb and Level: Plus or minus 1/16 inch (1.6 mm) in 48 inches (1200 mm), noncumulative.
- B. Variation of Joint Width: Not more than 1/32-inch (0.79-mm) variation from hairline in 48 inches (1200 mm), noncumulative.

#### **3.04 CLEANING**

- A. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 098433

**SECTION 099113**

**EXTERIOR PAINTING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:

1. Primers.
2. Finish coatings.

- B. Related Requirements:

1. Section 061533 "Wood Patio Decking" for factory finished deck and rail material
2. Section 074646 "Fiber-Cement Siding" for factory finished siding and trim material.
3. Section 081113 "Hollow Metal Doors and Frames" for shop priming.

**1.03 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

1. Include preparation requirements and application instructions.
2. Indicate VOC content.

- B. Product Schedule: Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

**1.04 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint Products: Supply paint in 1-gallon (3.8 L) cans minimum and return left over paint of each color to Owner. Take precautions not to contaminate paint during use and to seal containers securely at the end of each use.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.

2. Remove rags and waste from storage areas daily.

## **1.06 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Basis of Design: Provide materials as indicated in Finish Legend on Drawings.
- B. Source Limitations: Obtain each paint product from single source from single manufacturer.

### **2.02 PAINT PRODUCTS, GENERAL**

- A. Material Compatibility:
  1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
  2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.
- B. Colors: As indicated in a Finish Legend.

### **2.03 PRIMERS**

- A. Exterior Primer: Materials provided by supplier of metal fabrication/product.

### **2.04 FINISH COATINGS**

- A. Exterior, Water-Based, Light Industrial Coating, Semigloss: Corrosion-resistant, water-based, pigmented, emulsion coating formulated for resistance to blocking (sticking of two painted surfaces), water, alkalis, moderate abrasion, and mild chemical exposure and for use on exterior, primed, wood and metal surfaces.
  1. Basis of Design: Sherwin Williams, Pro Industrial Acrylic Coating.
  2. Gloss Level: Manufacturer's standard semigloss finish.



## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility, with finish.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

### **3.02 PREPARATION**

- A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

### **3.03 INSTALLATION**

- A. Apply paints in accordance with manufacturer's written instructions.
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  - 3. Paint exterior and interior sides and edges of exterior doors and entire frame.
  - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Tint undercoats same color as topcoat but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### **3.04 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
  - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
  - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
  - 3. Allow empty paint cans to dry before disposal.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### **3.05 EXTERIOR PAINTING SCHEDULE**

- A. Steel and Iron Substrates:
  - 1. Water-Based, Light Industrial Coating System over shop primed materials:
    - a. Prime Coat: Shop primer specified in Section in which substrate is specified.
    - b. Intermediate Coat: Matching topcoat.
    - c. Topcoat: Exterior, water-based, light industrial coating, semigloss.

END OF SECTION 099113

**SECTION 099123**  
**INTERIOR PAINTING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Primers.
  2. Water-based finish coatings.
- B. Related Requirements:
1. Section 099113 "Exterior Painting" for painting of hollow metal doors and frames.

**1.03 ACTION SUBMITTALS**

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
1. Include preparation requirements and application instructions.
  2. Indicate VOC content.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
1. Submit Samples on rigid backing, 8 inches (200 mm) square.
  2. Label each Sample for location and application area.
- C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

**1.04 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint Products: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

## **1.06 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent, at temperatures of less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Basis of Design: Sherwin Williams, ProMar 200 HP Zero VOC latex finish coats with manufacturer recommended primer based on the applicable substrate. Gloss level as indicated in Finish Legend on Drawings.
- B. Source Limitations: Obtain each paint product from single source from single manufacturer.

### **2.02 PAINT PRODUCTS, GENERAL**

- A. Material Compatibility:
  - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. Colors: As indicated in a Finish Legend.

### **2.03 PRIMERS**

- A. Interior, Institutional Low-Odor/VOC Primer Sealer: Water-based primer sealer with low-odor characteristics and a VOC of less than 10 grams per liter for use on new interior gypsum wallboard surfaces that are subsequently to be painted with latex finish coats.

- B. Interior Latex Primer for Wood: Waterborne-emulsion primer formulated for resistance to extractive bleeding, mold, and microbes; for hiding stains; and for use on interior wood.

## **2.04 WATER-BASED FINISH COATS**

- A. Interior, Latex, Institutional Low Odor/VOC, Flat: White or colored latex paint with low-odor characteristics and a VOC of less than 10 grams per liter, for use in areas, such as hospitals and other occupied buildings, where the odor and VOC levels of conventional latex products would preclude their use.
  - 1. Gloss and Sheen Level: Maximum gloss of 5 units at 60 degrees and maximum sheen of 10 units at 85 degrees when tested in accordance with ASTM D523.
- B. Interior, Latex, Institutional Low Odor/VOC, Eggshell: White or colored latex paint with low-odor characteristics and a VOC of less than 10 grams per liter, for use in areas, such as hospitals and other occupied buildings, where the odor and VOC levels of conventional latex products would preclude their use.
  - 1. Gloss and Sheen Level: Gloss of 10 to 25 units at 60 degrees and sheen of 10 to 35 units at 85 degrees when tested in accordance with ASTM D523.
- C. Interior, Latex, Institutional Low Odor/VOC, Semigloss: White or colored latex paint with low-odor characteristics and a VOC of less than 10 grams per liter, for use in areas, such as hospitals and other occupied buildings, where the odor and VOC levels of conventional latex products would preclude their use.
  - 1. Gloss Level: Gloss of 35 to 70 units at 60 degrees when tested in accordance with ASTM D523.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Wood: 15 percent.
  - 2. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

E. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

### 3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Wood Substrates:
1. Scrape and clean knots and apply coat of knot sealer before applying primer.
  2. Sand surfaces that will be exposed to view, and dust off.
  3. Prime edges, ends, faces, undersides, and backsides of wood.
  4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

### 3.03 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
1. Use applicators and techniques suited for paint and substrate indicated.
  2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### **3.04 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
  - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
  - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
  - 3. Allow empty paint cans to dry before disposal.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### **3.05 INTERIOR PAINTING SCHEDULE**

- A. Finish Carpentry: Wood trim.
  - 1. Institutional Low-Odor/VOC Latex System:
    - a. Prime Coat: Interior latex primer for wood.
    - b. Intermediate Coat: Matching topcoat.
    - c. Topcoat: Interior, latex, institutional low odor/VOC, semigloss.



B. Gypsum Board Substrates:

1. Institutional Low-Odor/VOC Latex System (Ceilings and Overhead Soffits):
  - a. Prime Coat: Interior, institutional low-odor/VOC primer sealer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Interior, latex, institutional low odor/VOC, flat.
2. Institutional Low-Odor/VOC Latex System (Walls):
  - a. Prime Coat: Interior, institutional low-odor/VOC primer sealer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Interior, latex, institutional low odor/VOC, eggshell

END OF SECTION 099123

**SECTION 102800**

**TOILET, BATH, AND LAUNDRY ACCESSORIES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Public-use washroom accessories.
2. Underlavatory guards.
3. Custodial accessories.

**1.02 COORDINATION**

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

**1.03 ACTION SUBMITTALS**

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

**1.04 INFORMATIONAL SUBMITTALS**

A. Sample Warranty: For manufacturer's special warranties.

**1.05 CLOSEOUT SUBMITTALS**

A. Maintenance Data: For accessories to include in maintenance manuals.

## **1.06 WARRANTY**

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, visible silver spoilage defects.
  2. Warranty Period: 10 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Design accessories and fasteners to comply with the following requirements:
1. Grab Bars: Installed units are able to resist 250 lbf (1112 N) concentrated load applied in any direction and at any point.

### **2.02 PUBLIC-USE WASHROOM ACCESSORIES**

- A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.
- B. Toilet Tissue (Roll) Dispenser (1-1):
1. Basis of Design: Provide product as indicated in Toilet Accessory Schedule on Drawings.
  2. Description: Roll-in-reserve dispenser with hinged front secured with tumbler lockset.
  3. Mounting: Recessed.
  4. Operation: Non-control delivery with standard spindle.
  5. Capacity: Designed for 5-inch- (127-mm-) diameter tissue rolls.
  6. Material and Finish: Stainless steel, ASTM A480/A480M bright polished.
- C. Combination Towel (Folded) Dispenser/Waste Receptacle (1-7):
1. Basis of Design: Provide product as indicated in Toilet Accessory Schedule on Drawings.
  2. Description: Combination unit for dispensing C-fold or multifold towels, with removable waste receptacle.
  3. Mounting: Semi-recessed – designed for nominal 4-inch (100-mm) wall depth.
  4. Minimum Towel-Dispenser Capacity: 400 C-fold or 700 multifold paper towels.
  5. Minimum Waste-Receptacle Capacity: 4 gal. (15 L).
  6. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
  7. Liner: Reusable, vinyl waste-receptacle liner.
  8. Lockset: Tumbler type for towel-dispenser compartment and waste receptacle.

D. Paper Towel (Folded) Dispenser (1-8):

1. Basis of Design: Provide product as indicated in Toilet Accessory Schedule on Drawings.
2. Mounting: Surface mounted.
3. Minimum Capacity: 400 C-fold or 525 multifold towels.
4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
5. Lockset: Tumbler type.
6. Refill Indicator: Pierced slots at sides or front.

E. Soap Dispenser (1-5):

1. Basis of Design: Provide product as indicated in Toilet Accessory Schedule on Drawings.
2. Description: Designed for manual operation and dispensing soap in liquid or lotion form.
3. Mounting: Vertically oriented, recess mounted in wall.
4. Capacity: 40 oz.
5. Materials: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
6. Lockset: Tumbler type.
7. Refill Indicator: Window type.

F. Grab Bars (1-2, 1-3 and 1-6):

1. Mounting: Flanges with concealed fasteners.
2. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
  - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin) on ends and slip-resistant texture in grip area.
3. Outside Diameter: 1-1/2 inches (38 mm).
4. Straight bars of length as follows:
  - a. Horizontal Bars: 42 inches (1067 mm) and 36 inches (914 mm) long.
  - b. Vertical Bar: 18 inches (457 mm) long.
  - c. Locate as indicated on Drawings.

G. Mirror Unit (1-4):

1. Frame: Stainless steel angle, or channel 0.05 inch (1.3 mm) thick.
  - a. Corners: Manufacturer's standard.
2. Size: 24 inches (610 mm) by 36 inches (914 mm), unless noted otherwise on Drawings.
3. Hangers: Manufacturer's standard rigid, tamper and theft resistant.

**2.03 UNDER LAVATORY GUARDS**

A. Under lavatory Guard:

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

## **2.04 CUSTODIAL ACCESSORIES**

A. Source Limitations: Obtain custodial accessories from single source from single manufacturer.

B. Custodial Mop and Broom Holder (1-9):

1. Basis of Design: Provide product as indicated in Toilet Accessory Schedule on Drawings.
2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf.
3. Length: 30 inches (762 mm).
4. Hooks: Two.
5. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
  - a. Shelf: Not less than nominal 0.05-inch- (1.3-mm-) thick stainless steel.
  - b. Rod: Approximately 1/4-inch- (6-mm-) diameter stainless steel.

## **2.05 MATERIALS**

- A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch- (0.8-mm-) minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.
- C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch- (0.9-mm-) minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 (Z180) hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.
- G. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

## **2.06 FABRICATION**

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of four keys to Owner's representative.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- A. Install accessories in accordance with manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
  - 1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.

#### **3.02 ADJUSTING AND CLEANING**

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Clean and polish exposed surfaces in accordance with manufacturer's written instructions.

END OF SECTION 102800

**SECTION 123661**

**SOLID SURFACING COUNTERTOPS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Solid surface material countertops.
  - 2. Solid surface material splashes.
- B. Related Requirements:
  - 1. Division 22 for specified lavatory and plumbing fittings.

**1.02 ACTION SUBMITTALS**

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- C. Samples for Verification: For the following products:
  - 1. Countertop material, 6 inches (150 mm) square.

**1.03 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For fabricator.

**1.04 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

**1.05 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of countertops.



## **1.06 COORDINATION**

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

## **PART 2 - PRODUCTS**

### **2.01 SOLID SURFACE COUNTERTOP MATERIALS**

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.

- 1. Basis of Design: Provide material as indicated in Finish Legend on Drawings.
  - 2. Type: Provide Standard type.
  - 3. Colors and Patterns: As indicated by manufacturer's designations.

- B. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.

### **2.02 FABRICATION**

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WT's "Architectural Woodwork Standards."

- 1. Grade: Premium.

- B. Configuration:

- 1. Front: Straight, slightly eased at top.
  - 2. Splashes: Straight, slightly eased at corner.

- C. Countertops:

- 1. 1/2-inch- (12.7-mm-) thick, solid surface material with front edge built up with same material.

- D. Splashes: 1/2-inch- (12.7-mm-) thick, solid surface material.

- E. Fabricate tops with shop-applied edges and splashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

- 1. Fabricate with loose splashes for field assembly.

- F. Joints:

- 1. Fabricate countertops in continuous runs with no joints.

G. Cutouts and Holes:

1. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
2. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

**2.03 INSTALLATION MATERIALS**

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 INSTALLATION**

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer.
- C. Contractor Option: If installing countertops over subtops.
1. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
  2. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions.
  3. Seal edges of cutouts in particleboard subtops by saturating with varnish.
- D. Install splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

- E. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- F. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661

## SECTION 220010

### GENERAL REQUIREMENTS FOR PLUMBING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to the Work of this Division.
  - 1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
  - 2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.
- B. Thoroughly study all Drawings and Specifications before submitting bids.
- C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.
- D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

##### 1.2 SUMMARY

- A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.
- B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.
- C. Guarantee workmanship, materials, and performance of this Division's systems in accordance with the requirements of the Contract Documents.
- D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:
  - 1. Plumbing systems including:

- a. Earth moving for plumbing.
  - b. Escutcheons for plumbing piping.
  - c. General-duty valves for plumbing piping.
  - d. Hangers and supports for plumbing piping and equipment.
  - e. Identification for plumbing piping and equipment.
  - f. Plumbing piping insulation.
  - g. Facility water distribution piping.
  - h. Domestic-water piping and piping specialties.
  - i. Gray-water piping.
  - j. Domestic-water pumps.
  - k. Facility sanitary sewers.
  - l. Sanitary waste and vent piping and waste piping specialties.
  - m. Commercial plumbing fixtures.
  - n. Pressure water coolers.
2. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in this Section.
  3. Submittal of forms and Drawings to review and permit agencies.
  4. Submittals.
  5. Record Documents.
  6. Permits and Inspections: Apply for and obtain all required permits and inspections for all work in this Contract; pay all related fees and charges.
  7. Water Charges: Pay fees for consumption during construction.

### 1.3 PRODUCTS ORDERED IN ADVANCE

- A. The Owner's Representative may elect to prepurchase certain items specified in this Division's Specifications. Verify with Owner's Representative any prepurchased arrangements prior to submitting bid.
- B. The Owner's Representative shall assign the prepurchased items to this Division on award of the Contract. This Division shall be responsible for respective items as though purchased originally. Responsibilities shall include but not be limited to the following:
  1. Expediting.
  2. Shop Drawings.
  3. Delivery.
  4. Unloading.
  5. Storage.
  6. Installation.
  7. Guarantees.
  8. Payment.
- C. Turn over all prepurchased equipment that is not used in the Project to the Owner's Representative at completion of the work.

#### **1.4 ALLOWANCES**

- A. Refer to Division 01 Specifications.

#### **1.5 UNIT PRICES**

- A. Refer to Division 01 Specifications.

#### **1.6 ALTERNATES**

- A. Refer to Division 01 Specifications.

#### **1.7 PROJECT MANAGEMENT AND COORDINATION**

- A. General Requirements:

1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. **DO NOT SCALE DRAWINGS.**
2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

- B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.
2. Interference:
  - a. Thoroughly coordinate work with other Divisions and:
    - 1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.
    - 2) Maintain maximum headroom.
    - 3) Obtain Engineer's review before installing any work below 7'-0" clear headroom in mechanical areas.
    - 4) Install work of this Division so that all equipment is serviceable and operable.

- b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.
- C. Coordination with Drawings: Review all Drawings and if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.
- D. Coordination Drawings:
  - 1. Before construction work commences, subcontractors for all trades shall submit coordination drawings in the form of reproducible transparencies drawn at not less than 1/4 inch = 1 foot in scale, noting Contract work below floor slab and penetrating floor slab. Such drawings will be required throughout all areas for all trades. These drawings shall show resolutions of trade conflicts in congested areas. All utilities, piping, ductwork, wiring, etc., shall be dimensioned from column centerlines.
  - 2. Coordination drawings are intended for the respective Contractor's use during construction and shall not be construed as replacing any Shop Drawings or Record Drawings required elsewhere in these Contract Documents. Generally, drawing details and sections are required only at places of conflict among trades. The drawings may be done on an area basis so as not to delay the overall project.
  - 3. Submit coordinated drawings for review as Shop Drawings. The Owner's Representative's review of coordination drawings shall not relieve this Division from the responsibility for coordinating their work with the work of other trades nor shall it authorize any extra cost, omission, or deviation from the requirements of the Contract Documents. Any costs arising from errors or omissions in the coordination process shall be borne by this Division.
- E. Scheduling and Procedure of Work:
  - 1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.
  - 2. As work occurs within or attached to existing structures:
    - a. Perform all work only on approved schedule.
    - b. Do not interfere with normal operation of existing systems.
    - c. Do not shut off any services without written authorization of Owner's Representative.
    - d. Do as much work as possible prior to the shutdown to minimize the downtime.
    - e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.
  - 3. No radios, tape players, compact disc players, etc., shall be permitted on-site.



4. Proper work attire shall be worn at all times.
5. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

## 1.8 PHOTOGRAPHIC DOCUMENTATION

- A. Provide preconstruction and periodic construction photographs of Contract Work to the Engineer.
  1. Preconstruction Photographs: Before commencement of excavation, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.
  2. Periodic Construction Photographs: Take 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- B. Provide photographs in either of the following formats:
  1. Digital Photographs: Provide on digital video disk recordable (DVD-R), unaltered, original, full-size, JPG-formatted image files within three days of taking photographs. Minimum digital camera sensor resolution of 8 megapixels.
  2. Printed Photographs: Submit three 8-by-10-inch glossy color prints on single-weight, commercial-grade photographic paper of each photographic view within seven days of taking photographs.
- C. Identification: Provide the following information with each digital image description in file metadata tag and on the back of each print on an applied label or rubber-stamped impression:
  1. Name of Project.
  2. Name and contact information for photographer.
  3. Name of Architect.
  4. Name of Contractor.
  5. Date and time photograph was taken if not date stamped by camera.
  6. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
  7. Measurement indicator.
  8. Photo identification number.

## 1.9 SUBMITTALS

- A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.

- B. Wiring Diagrams: Electrically operated equipment shall include factory-approved wiring diagram illustrating proper connections to be made between equipment and power and equipment and auxiliary controls (where applicable).
- C. Penetration Firestopping: Submit product data and installer certificates signed by installer certifying that products have been installed in compliance with requirements.
- D. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.
- E. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

#### **1.10 QUALITY REQUIREMENTS**

- A. Contractor shall be licensed in accordance with New York State General Business Law, Article 6-D.
- B. Observation of the Work: Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.
- C. Conflict Requirements:
  - 1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- D. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not, including the following:
  - 1. Potable Domestic Water Piping: Follow cleaning procedures specified in Division 22 Section "Domestic Water Piping," and submit water samples in sterile bottles to NYS Department of Health-approved lab, with results sent to Engineer.

#### **1.11 REFERENCES**

- A. Industry Standards:
  - 1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.

- a. Local and state building codes.
- b. Local utility companies.
- c. National Electrical Manufacturer's Association ("NEMA").
- d. American Institute of Electronic and Electrical Engineers ("IEEE")
- e. National Electrical Safety Code ("NESC").
- f. National Electric Code ("NEC").
- g. ETL, Factory Mutual ("FM"), or Underwriters Laboratories, Inc. ("UL"), approved or listed, wherever applicable to materials.
- h. American National Standards Institute ("ANSI").
- i. National Plumbing Code ASA A40.8.
- j. National Fire Protection Association ("NFPA").
- k. Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR") for education, health, and sanitary rules and regulations, including:

1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:

a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):

- (1) Uniform Fire Prevention and Building Code (Part 1219).
- (2) Residential Construction (Part 1220).
- (3) Building Construction (Part 1221).
- (4) Plumbing Systems (Part 1222).
- (5) Mechanical Systems (Part 1223).
- (6) Fuel Gas Equipment and Systems (Part 1224).
- (7) Fire Prevention (Part 1225).
- (8) Property Maintenance (Part 1226).
- (9) Existing Buildings (Part 1227).
- (10) The following documents by reference: 2020 Residential Code of New York State, 2020 Plumbing Code of New York State, 2020 Mechanical Code of New York State, 2020 Building Code of New York State, 2020 Fire Code of New York State, 2020 Existing Building Code of New York State, 2020 Fuel Gas Code of New York State, and 2020 Property Maintenance Code of New York State.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):

- (1) State Energy Conservation Construction Code (Part 1240).
- (2) The following documents by reference: 2020 Energy Conservation Construction Code, 2016 ASHRAE 90.1, and 2007 ASHRAE 183.

- l. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.
- m. Any other standards mentioned in this Division's Specifications.

**B. Materials and Equipment:**

1. Electrical devices, materials, and packaged equipment shall be listed and labeled by UL, FM, or ETL for the intended use and shall bear their label.
2. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:
  - a. Such covered product complies with the requirements of Chapter 26 of the Building Code of New York State.
  - b. A report of such compliance has been filed with the Department of State in accordance with the Building Code of New York State.

- C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

**1.12 TEMPORARY FACILITIES AND CONTROLS**

- A. Refer to Division 01 Specifications.

**B. Temporary Water:**

1. Make temporary connections for the services requiring them.
2. Use piping materials for each service as called for under the Section describing that service.
3. Test the installed lines.
4. Provide backflow prevention on supply lines.
5. Provide necessary temporary heat or heat trace cable for temporary water supplies.

**1.13 PRODUCT REQUIREMENTS**

- A. Refer to Division 01 Specifications.

- B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.

- C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.

- D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.

- E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.
- F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.
- G. Where the term "or equal" or "or approved equal" is indicated, it shall mean the same as "comparable product."
- H. Where "comparable product" is indicated, it shall mean a product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product. Contractor's request for comparable products will be considered when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. If requested, list of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  5. If requested, samples.
- I. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.
- J. Where the term "substitution" is indicated, it shall mean changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
1. The products described in the Contract Documents establish a standard of required function, dimensions, appearance, and quality to be met by any proposed substitution.
  2. Contractor may make substitutions only with consent of Owner, after evaluation by the Architect/Engineer and in accordance with a Change Order.
  3. Substitution Procedures:
    - a. Follow substitution procedures indicated in Division 01 Specifications.

- K. Wherever subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Available Manufacturers/Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers or products specified.
    - a. This is a non-restricted list. For unnamed manufacturer or unnamed product, product is considered a comparable product, not a substitution, and must be demonstrated and approved through submittal process.
  2. Manufacturers/Products: Subject to compliance with requirements, provide one of the specified products or products by one of specified manufacturers.
    - a. This is a restricted list. For unnamed manufacturer or unnamed product, product is considered a substitution.
  3. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed or a comparable product by one of the listed manufacturers.
    - a. Product by one of the listed manufacturers is considered a comparable product, not a substitution, and must be demonstrated and approved through submittal process.
    - b. For unnamed manufacturer or unnamed product, product is considered a substitution.
- L. Where "Manufacturer" or "Product" is indicated with only one named manufacturer or one named product, provide the product of the named manufacturer or the listed product. Comparable products or substitutions are not permitted.
- M. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.
- N. Delivery, Storage, and Handling:
1. Deliver, store, and handle materials as recommended by the manufacturer.
  2. Handle and store materials in a manner which will not damage materials.
  3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
  4. Schedule deliveries with Owner's Representative prior to shipping.
  5. Be available at site to receive deliveries as scheduled.
  6. Hoist all materials as necessary to complete this Division's scope of work.
- O. Warranties:
1. Refer to Sections of this Division's Specifications for specific warranties.
  2. Refer to Division 01 Specifications for submittal of warranties.

## 1.14 EXECUTION

### A. Examination of Premises and Existing Conditions:

1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
2. Ascertain access to site, available storage, and delivery facilities.
3. Verify all governing dimensions at site.
4. Inspect all adjacent work.
5. Verify the location, sizes, and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; HVAC utility piping and other utilities.
6. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

### B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:
  - a. All services shall be concealed in wall, above ceilings, etc.
  - b. Work shall be exposed only where approved by the Architect.
  - c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

### C. Cutting and Patching:

1. Provide removals, cutting, patching, and replacement required for installation of the work in this Contract, except as noted on the Architectural (A series) Drawings.
  - a. Provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, etc.
2. Before proceeding, meet at Project site with parties involved in cutting and patching, including General Contractor; notify Owner's Representative; review areas of potential interference and conflict; coordinate procedures; and resolve potential conflicts.
3. Patch shall match existing finishes.
4. Refer to Division 01 Specifications for additional requirements.



D. Connections to Equipment Furnished by Others:

1. Various pieces of equipment will be furnished to the Project site and installed by other Divisions.
2. Provide roughing-in and make final connections to equipment as indicated on the Drawings and/or as required.
3. Before proceeding with the work, obtain full information regarding rough-in measurements, equipment layouts, elevations, trim being furnished, and other necessary data.
4. Upon request, Owner's Representative will provide this Division with diagrams, photographs, drawings, and/or specifications and other complete descriptive data showing all mechanical and electrical connections. Do not rough without approved layout from Owner's Representative.
5. Provide accessories so that connections may be made in a manner that shall meet all referenced regulations and codes.
6. See appropriate Sections of this Division's Specifications for materials and methods.

E. Adjustment of Systems:

1. Set aside in the cost breakdown a sum to cover work in adjusting and balancing distribution systems.
2. No payment will be made for balancing until Work of this Division is completed to the satisfaction of the Owner and/or Owner's Representative.

F. Protection of Openings and Equipment:

1. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
2. Protect equipment which is factory-finished using Kraft paper, cardboard, canvas, reinforced polyethylene, etc. Clean and repaint damaged factory finish, matching the original equipment finish.
3. Protect all equipment openings during construction with temporary plugs, caps, or reinforced plastic.
4. Adequately protect existing flooring material, door frames, stairs, wall, etc., during construction. Use any combination of materials, such as plywood, polyethylene sheeting, framing lumber, etc., so that existing finishes are protected. Repair damage to existing finishes that were not completely protected.

G. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

### 1.15 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.

### 1.16 CLOSEOUT PROCEDURES

- A. After all tests are made and installations pronounced satisfactory:
1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
  2. Remove all debris caused by work.
  3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.
- B. Lubrication:
1. Prior to final inspection and in the presence of Owner's Representative:
    - a. Lubricate motors and motor-driven equipment in accordance with manufacturer's recommendations.
    - b. Check for operation without objectionable noise and for correct rotational direction. If noise or vibration is transmitted to occupied portions of the building by piping, equipment, etc., make changes and additions with no cost added to the Contract.
    - c. Check motor protective devices for proper size.
  2. Provide neat, typewritten list of lubricant for each motor and moving parts.
    - a. Frame under Plexiglas.
    - b. Mount as directed by Owner's Representative.
    - c. Include list in operating and maintenance manual.
- C. Valve Tagging Chart:
1. Provide Plexiglas-covered and framed copies of valve tagging chart for mounting as directed by Owner's Representative.
- D. Receipts for Loose Equipment:
1. Prior to request for final payment:
    - a. Deliver to Owner's Representative the following loose equipment:
      - 1) Loose keys on water supply stops, exterior wall hydrants, vandal-resistant-faucet aerators, and hose bibbs.

- 2) All other necessary loose equipment for the operation of the plumbing systems.
  - b. Obtain signed receipt for delivered loose equipment.
2. Include receipt in operations and maintenance manual.
- E. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

#### 1.17 OPERATION AND MAINTENANCE DATA

- A. Submit 3 complete copies of operating and maintenance manuals to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.
  1. Photocopy paragraphs B and C below to be used as a checklist for compliance with materials, format, and data.
  2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
  3. Submit checklist with operating and maintenance manuals.
- B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents.
  1. Binder:
    - a. ☐ Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
    - b. ☐ Cover and spine (binder) identification including:
      - 1) ☐ Manual title: "OPERATION AND MAINTENANCE MANUAL."
      - 2) ☐ Owner.
      - 3) ☐ Project title.
      - 4) ☐ Owner's project number.
      - 5) ☐ Year of construction.
      - 6) ☐ Trade(s).
      - 7) ☐ Volume number and total number of volumes (e.g., Volume 1 of 2).
  2. Contents:
    - a. ☐ Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
    - b. ☐ Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:
      - 1) ☐ Owner.
      - 2) ☐ Architect.
      - 3) ☐ Engineer.

- 4) ☐ Contractor.
- 5) ☐ Subcontractor.

c. ☐ Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):

- 1) ☐ Warranty letter.
- 2) ☐ Summary of scheduled maintenance.
- 3) ☐ Lubrication summary.
- 4) ☐ Valve charts.
- 5) ☐ List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number).
- 6) ☐ Letters of certification for required system tests.
- 7) ☐ Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
220500	Widgets	Acme Company	John Doe	555-1212

d. ☐ Submittals as indicated in "Submittals" Article of this Section, including:

- 1) ☐ Approved copies of all submittals, including parts lists.
- 2) ☐ Material safety data sheets for:
  - a) ☐ Firestopping.
  - b) ☐ Insulations, facings, and adhesives.
- 3) ☐ Installation, operating, and maintenance instructions.
- 4) ☐ Wiring diagrams.
- 5) ☐ Warranties.
- 6) ☐ Test reports.

C. ☐ Product Identification:

- 1. ☐ Provide indexed cardstock dividers between each submittal group.
- 2. ☐ Arrange in an order corresponding to the original Project's Specifications.
- 3. ☐ Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
- 4. ☐ Instructions shall include:
  - a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
  - b. List of types of bearings for each piece of equipment with the type of lubricant required and frequency of lubrication.

- c. Sequence of operating and/or flow diagrams for each of the systems, including emergency procedures.
- d. Normal starting, operating, and shutdown procedures.

#### 1.18 PROJECT RECORD DOCUMENTS

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.
- C. Record Drawings:
  - 1. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
    - a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
      - 1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      - 2) Accurately record information in an acceptable drawing technique.
      - 3) Record data as soon as possible after obtaining it.
      - 4) Record and check the markup before enclosing concealed installations.
      - 5) Cross-reference record prints to corresponding archive photographic documentation.
    - b. Content: Types of items requiring marking include, but are not limited to, the following:
      - 1) Dimensional changes to Drawings.
      - 2) Revisions to details shown on Drawings.
      - 3) Locations and depths of underground utilities.
      - 4) Revisions to routing of piping and conduits.
      - 5) Actual equipment locations.
      - 6) Locations of concealed internal utilities.
      - 7) Locations of isolation valves, balance valves, drain valves, air vents.

- 8) Changes made by Change Order or Construction Change Directive.
  - 9) Changes made following Architect's written orders.
  - 10) Details not on the original Contract Drawings.
  - 11) Field records for variable and concealed conditions.
  - 12) Record information on the Work that is shown only schematically.
- c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  - d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  - e. Mark important additional information that was either shown schematically or omitted from original Drawings.
  - f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- 2. Submittals: Comply with Division 01 Specifications.
- D. Record Specifications: Comply with Division 01 Specifications.
  - E. Refer to Division 01 Specifications.

#### **1.19 DEMONSTRATION AND TRAINING**

- A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.
- B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

#### **1.20 WORK RELATED TO ASBESTOS AND WORK IN ASBESTOS-CONTAMINATED AREAS**

- A. Portions of the existing mechanical systems and general construction are believed to be insulated or constructed with asbestos-containing materials.
- B. Asbestos-containing materials have reportedly contaminated portions of the crawlspace and ceiling plenum.
- C. Do not disturb such materials.

- D. Where work is unavoidable in contaminated areas, employ or subcontract the services of an "Allied Trade Certified Mechanic" (ATCM) to perform the work of this Division.
- E. It is understood that a separate contract has been, or will be, issued for the abatement of portions of the asbestos-containing materials.

## **1.21 INFECTION CONTROL**

- A. The Contractor acknowledges the critical importance of mitigating the risk of transmission of infectious agents and pathogens in the construction and renovation process, and recognizes its responsibility to cooperate fully with the Owner's infection control personnel and to implement procedures directed by the Owner towards maintaining the risk of the spread of infectious agents within acceptable limits. Such procedures may include, but are not necessarily limited to the following:
  - 1. Practicing all social-distancing requirements as much as possible during construction.
  - 2. Phasing of the renovation and new construction work to minimize disruption of existing Owner's operations.
  - 3. Participating in infection control meetings as may be scheduled by the Owner's staff.
  - 4. Cleanup of work areas daily where such area is occupied.
- B. Refer to Division 01 Specifications.

## **PART 2 - PRODUCTS**

### **2.1 PENETRATION FIRESTOPPING**

- A. Available Manufacturers:
  - 1. A/D Fire Protection Systems Inc.
  - 2. Grace Construction Products.
  - 3. Hilti, Inc.
  - 4. Johns Manville.
  - 5. Nelson Firestop Products.
  - 6. NUCO Inc.
  - 7. Passive Fire Protection Partners.
  - 8. RectorSeal Corporation.
  - 9. Specified Technologies Inc.
  - 10. 3M Fire Protection Products.
  - 11. Tremco, Inc.; Tremco Fire Protection Systems Group.
  - 12. USG Corporation.
- B. Provide penetration firestopping materials that are compatible with one another, substrates, and penetrating items if any.



- C. Penetrations in Fire-Resistance-Rated Walls and Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
  - 1. F-Rating at Fire-Resistance-Rated Walls: Not less than that of construction penetrated.
  - 2. F-Rating at Horizontal Assemblies: At least 1 hour, but not less than that of construction penetrated.
- D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.

### **PART 3 - EXECUTION**

#### **3.1 PENETRATION FIRESTOPPING**

- A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

END OF SECTION 220010

## SECTION 220518

### ESCUTCHEONS FOR PLUMBING PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. BrassCraft Manufacturing Co.; a Masco company.
2. Dearborn Brass.
3. Keeney Manufacturing Company (The).
4. McGuire.
5. ProFlo; a Ferguson Enterprises, Inc. brand.

##### 2.2 ESCUTCHEONS

- A. One-Piece, Stainless-Steel Type: With polished stainless-steel finish.
- B. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.
- C. Split-Plate, Stamped-Steel Type: With polished, chrome-plated finish; concealed hinge; and spring-clip fasteners.

## 2.3 FLOOR PLATES

- A. Split Floor Plates: Cast brass with concealed hinge.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
- B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.
  - 1. Escutcheons for New Piping:
    - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep pattern.
    - b. Chrome-Plated Piping: One-piece steel cast brass or split-casting brass with polished, chrome-plated finish.
    - c. Insulated Piping: One-piece cast brass with polished, chrome-plated finish.
    - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece cast brass with polished, chrome-plated finish.
    - e. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece cast brass with polished, chrome-plated finish.
    - f. Bare Piping in Unfinished Service Spaces: One-piece cast brass with polished, chrome-plated finish.
    - g. Bare Piping in Equipment Rooms: One-piece cast brass with polished, chrome-plated finish.
- C. Install floor plates for piping penetrations of equipment-room floors.
- D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
  - 1. New Piping: One-piece, floor plate.

### 3.2 FIELD QUALITY CONTROL

- A. Using new materials, replace broken and damaged escutcheons and floor plates.

END OF SECTION 220518

## SECTION 220523.12

### BALL VALVES FOR PLUMBING PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Brass ball valves.
2. Bronze ball valves.

##### 1.2 DEFINITIONS

- A. CWP: Cold working pressure.
- B. RPTFE: Reinforced polytetrafluoroethylene.
- C. WOG: Water, oil, gas.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of valve.

##### 1.4 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, and soldered ends.
3. Set ball valves open to minimize exposure of functional surfaces.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use operating handles or stems as lifting or rigging points.

## **PART 2 - PRODUCTS**

### **2.1 SOURCE LIMITATIONS**

- A. Obtain each type of valve from single source from single manufacturer.

### **2.2 PERFORMANCE REQUIREMENTS**

A. Standards:

1. Domestic water valves intended to convey or dispense water for human consumption must comply with the SDWA, requirements of authorities having jurisdiction, and NSF 61 and NSF 372, or must be certified to be in compliance with NSF 61 and NSF 372 (by an ANSI-accredited third-party certification body) that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.18 for cast copper solder-joint connections.
3. ASME B16.22 for wrought copper and copper alloy solder-joint connections.
4. ASME B16.34 for flanged and threaded end connections
5. ASME B31.9 for building services piping valves.

C. Provide bronze valves made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

D. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

E. Valve Sizes: Same as upstream piping unless otherwise indicated.

F. Valve Actuator Type:

1. Hand Lever: For quarter-turn valves smaller than NPS 4.

G. Valves in Insulated Piping:

1. Provide 2-inch extended neck stems.
2. Extended operating handles with nonthermal-conductive covering material and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.
3. Memory stops that are fully adjustable after insulation is applied.

## 2.3 BRASS BALL VALVES

A. Brass Ball Valves, Two-Piece with Full Port and Stainless-Steel Trim, Threaded or Soldered Ends:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. A.Y. McDonald Mfg. Co.
  - b. American Valve, Inc.
  - c. Apollo Valves; a part of Aalberts Integrated Piping Systems.
  - d. FNW; Ferguson Enterprises, Inc.
  - e. Hammond Valve.
  - f. Jenkins Valves; a Crane Co. brand.
  - g. Jomar Valve.
  - h. KITZ Corporation.
  - i. Lance Valves.
  - j. Legend Valve & Fitting, Inc.
  - k. Marwin Valve; Richards Industries.
  - l. Milwaukee Valve Company.
  - m. Red-White Valve Corp.
  - n. Stockham; a Crane Co. brand.
  - o. Viega LLC.
  - p. WATTS.
2. Standard: MSS SP-110; MSS SP-145.
3. CWP Rating: 600 psig.
4. Body Design: Two piece.
5. Body Material: Forged brass.
6. Ends: Threaded or soldered.
7. Seats: PTFE.
8. Stem: Stainless steel.
9. Ball: Stainless steel, vented.
10. Port: Full.

## 2.4 BRONZE BALL VALVES

A. Bronze Ball Valves, Two-Piece with Full Port and Stainless-Steel Trim, Threaded or Soldered Ends:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Apollo Valves; a part of Aalberts Integrated Piping Systems.
  - b. Center Line; a Crane Co. brand.
  - c. DynaQuip Controls.

- d. Hammond Valve.
  - e. Jenkins Valves; a Crane Co. brand.
  - f. Milwaukee Valve Company.
  - g. NIBCO INC.
  - h. Red-White Valve Corp.
  - i. Stockham; a Crane Co. brand.
  - j. Viega LLC.
  - k. WATTS.
- 2. Standard: MSS SP-110; MSS SP-145.
  - 3. CWP Rating: 600 psig.
  - 4. Body Design: Two piece.
  - 5. Body Material: Bronze.
  - 6. Ends: Threaded or soldered.
  - 7. Seats: PTFE.
  - 8. Stem: Stainless steel.
  - 9. Ball: Stainless steel, vented.
  - 10. Port: Full.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves. Remove defective valves from site.

#### **3.2 INSTALLATION OF VALVES**

- A. Install valves with unions or flanges at each piece of equipment arranged to allow space for service, maintenance, and equipment removal without system shutdown.
- B. Provide support to piping adjacent to valves such that no force is imposed upon valves.



- C. Locate valves for easy access.
- D. For valves in horizontal piping, install valves with stem at or above center of pipe.
- E. Install valves in position to allow full valve actuation movement.
- F. Valve Tags: Comply with requirements in Section 220553 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
- G. Adhere to manufacturer's written installation instructions. When soldering or brazing valves, do not heat valves above maximum permitted temperature. Do not use solder with melting point temperature above valve manufacturer's recommended maximum.

### **3.3 ADJUSTING**

- A. Adjust or replace valve packing after piping systems have been tested and put into service, but before final adjusting and balancing. Replace valves exhibiting leakage.

### **3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS**

- A. If valves with specified CWP ratings are unavailable, provide the same types of valves with higher CWP ratings.
- B. Select valves with the following end connections:
  - 1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option or press-end option is indicated in valve schedules below.

### **3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE**

- A. Pipe NPS 2 and Smaller:
  - 1. Brass ball valves, two-piece with full port, and stainless-steel trim. Provide with threaded or solder-joint ends.
  - 2. Bronze ball valves, two-piece with full port, and stainless-steel trim. Provide with threaded or solder-joint ends.

END OF SECTION 220523.12

## SECTION 220529

### HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Thermal hanger-shield inserts.
3. Pipe-positioning systems.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

##### 1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

##### 1.4 QUALITY ASSURANCE

- A. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.
- B. Pipe Welding Qualifications: Qualify procedures and operators according to 2015 ASME Boiler and Pressure Vessel Code, Section IX.

#### PART 2 - PRODUCTS

##### 2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or electro-galvanized.
3. Nonmetallic Coatings: Plastic coated or epoxy powder coated.

4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe and Tube Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

## 2.2 THERMAL HANGER-SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Buckaroos, Inc.
2. CADDY; a brand of nVent.
3. Carpenter & Paterson, Inc.
4. Clement Support Services.
5. National Pipe Hanger Corporation.
6. Pipe Shields Inc.
7. Piping Technology & Products, Inc.
8. Rilco Manufacturing Co., Inc.
9. Value Engineered Products, Inc.

B. Insulation-Insert Material for Cold Piping: ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.

C. Insulation-Insert Material for Hot Piping: ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION**

- A. Comply with requirements in Section 220010 "General Requirements for Plumbing" for firestopping materials and installation, for penetrations through fire-rated walls, ceilings, and assemblies.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

### **3.2 HANGER AND SUPPORT INSTALLATION**

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Thermal Hanger-Shield Installation: Install in pipe hanger or shield for insulated piping.
- C. Pipe-Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.
- D. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- E. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- F. Install lateral bracing with pipe hangers and supports to prevent swaying.
- G. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- H. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- I. Insulated Piping:
  - 1. Attach clamps and spacers to piping.
    - a. Piping Operating Above Ambient Air Temperature: Clamp may project through insulation.
    - b. Piping Operating Below Ambient Air Temperature: Use thermal hanger-shield insert with clamp sized to match OD of insert.

- c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
2. Install MSS SP-58, Type 39 protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
  - a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
3. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
  - a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
4. Shield Dimensions for Pipe: Not less than the following:
  - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
  - b. NPS 4: 12 inches long and 0.06 inch thick.
5. Thermal Hanger Shields: Install with insulation of same thickness as piping insulation.

### 3.3 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

### 3.4 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finishes.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports and attachments for general service applications.
- F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.

- G. Use padded hangers for piping that is subject to scratching.
- H. Use thermal hanger-shield inserts for insulated piping and tubing.
- I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated, stationary pipes NPS 1/2 to NPS 30.
  2. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
  3. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
  4. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
  5. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of non-insulated, stationary pipes NPS 3/4 to NPS 8.
  6. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of non-insulated, stationary pipes NPS 1/2 to NPS 8.
  7. Adjustable Band Hangers (MSS Type 9): For suspension of non-insulated, stationary pipes NPS 1/2 to NPS 8.
  8. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of non-insulated, stationary pipes NPS 1/2 to NPS 8.
  9. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of non-insulated, stationary pipes NPS 3/8 to NPS 3.
  10. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
  11. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
  12. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
  13. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
  14. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2 1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
- J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment of up to 6 inches for heavy loads.
  2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
  3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11 split pipe rings.
  4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
  5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
  2. C-Clamps (MSS Type 23): For structural shapes.
- M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
  2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
  3. Thermal Hanger-Shield Inserts: For supporting insulated pipe.

END OF SECTION 220529



## SECTION 220553

### IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Pipe labels.
2. Valve tags.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Valve-numbering scheme.
- C. Valve Schedules: For each piping system. Include in operation and maintenance manuals.

#### PART 2 - PRODUCTS

##### 2.1 PIPE LABELS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. Actioncraft Products, Inc.; a division of Industrial Test Equipment Co., Inc.
  2. Brady Corporation.
  3. Brimar Industries, Inc.
  4. Carlton Industries, LP.
  5. Champion America.
  6. Craftmark Pipe Markers.
  7. emedco.
  8. Kolbi Pipe Marker Co.
  9. LEM Products Inc.
  10. Marking Services Inc.
  11. Seton Identification Products; a Brady Corporation company.
- B. General Requirements for Manufactured Pipe Labels: Preprinted, color coded, with lettering indicating service and showing flow direction in accordance with ASME A13.1.

- C. Letter and Background Color: As indicated for specific application under Part 3.
- D. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- E. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- F. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings. Also include:
  - 1. Pipe size.
  - 2. Flow-Direction Arrows: Include flow-direction arrows on main distribution piping. Arrows may be either integral with label or applied separately.
  - 3. Lettering Size: Size letters in accordance with ASME A13.1 for piping.

## 2.2 VALVE TAGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - 1. Actioncraft Products, Inc.; a division of Industrial Test Equipment Co., Inc.
  - 2. Brady Corporation.
  - 3. Brimar Industries, Inc.
  - 4. Carlton Industries, LP.
  - 5. Champion America.
  - 6. Craftmark Pipe Markers.
  - 7. emedco.
  - 8. Kolbi Pipe Marker Co.
  - 9. LEM Products Inc.
  - 10. Marking Services Inc.
  - 11. Seton Identification Products; a Brady Corporation company.
- B. Description: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.
  - 1. Tag Material: Brass, 0.04-inch minimum thickness, with predrilled or stamped holes for attachment hardware.
  - 2. Fasteners: Brass wire or beaded chain.
- C. Letter and Background Color: As indicated for specific application under Part 3.
- D. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
  - 1. Include valve-tag schedule in operation and maintenance data.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Clean piping and equipment surfaces of incompatible primers, paints, and encapsulants, as well as dirt, oil, grease, release agents, and other substances that could impair bond of identification devices.

### **3.2 INSTALLATION, GENERAL REQUIREMENTS**

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.
- D. Locate identifying devices so that they are readily visible from the point of normal approach.

### **3.3 INSTALLATION OF PIPE LABELS**

- A. Install pipe labels showing service and flow direction with permanent adhesive on pipes.
- B. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
  - 1. Within 3 ft. of each valve and control device.
  - 2. At access doors, manholes, and similar access points that permit view of concealed piping.
  - 3. Within 3 ft. of equipment items and other points of origination and termination.
  - 4. Spaced at maximum intervals of 50 ft. along each run. Reduce intervals to 25 ft. in areas of congested piping and equipment.
- C. Do not apply plastic pipe labels or plastic tapes directly to bare pipes conveying fluids at temperatures of 125 deg F or higher. Where these pipes are to remain uninsulated, use a short section of insulation.
- D. Flow-Direction Flow Arrows: Use arrows, in compliance with ASME A13.1, to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.
- E. Pipe-Label Color Schedule:
  - 1. Domestic Cold-Water Piping: White letters on an ANSI Z535.1 safety-green background.
  - 2. Domestic Hot-Water Piping: White letters on an ANSI Z535.1 safety-green background

3. Domestic Hot-Water Return Piping White letters on an ANSI Z535.1 safety-green background.
4. Sanitary Waste Piping: White letters on an ANSI Z535.1 safety-green background.
5. LPG Piping: Black letters on yellow background.
6. Condensate -Drain Piping: Black letters on yellow background.

### 3.4 INSTALLATION OF VALVE TAGS

- A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, faucets, convenience and lawn-watering hose connections, and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule in the operating and maintenance manual.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in "Valve-Tag Size and Shape" Subparagraph below:
  1. Valve-Tag Size and Shape:
    - a. Domestic Cold Water: 1-1/2 inches, round.
    - b. Domestic Hot Water: 1-1/2 inches, round.
    - c. Domestic Hot-Water Return: 1-1/2 inches, round.
  2. Valve-Tag Colors:
    - a. For each piping system, use the same lettering and background coloring system on valve tags as used in the piping system labels and background.

END OF SECTION 220553

## SECTION 220719

### PLUMBING PIPING INSULATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Domestic recirculating hot-water piping.
4. Supplies and drains for handicap-accessible lavatories and sinks.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied if any).

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

##### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less and smoke-developed index of 50 or less.
  2. Insulation Installed Outdoors: Flame-spread index of 75 or less and smoke-developed index of 150 or less.
- C. Comply with the following applicable standards and other requirements specified for miscellaneous components:
1. Supply and Drain Protective Shielding Guards: ICC A117.1.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

## **1.6 COORDINATION**

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

## **1.7 SCHEDULING**

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

## **PART 2 - PRODUCTS**

### **2.1 INSULATION MATERIALS**

- A. Comply with requirements in "Indoor Piping Insulation Schedule" Article for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come into contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.

- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable in accordance with ASTM C795.
- E. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C534/C534M, Type I for tubular materials.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Aeroflex USA, Inc.
    - b. Armacell LLC.
    - c. K-Flex USA.
- F. Mineral-Fiber, Preformed Pipe: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C547.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Johns Manville; a Berkshire Hathaway company.
    - b. Knauf Insulation.
    - c. Manson Insulation Inc.
    - d. Owens Corning.
  - 2. Preformed Pipe Insulation: Type I, Grade A with factory-applied ASJ-SSL.
  - 3. 850 deg F.
  - 4. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
  - 5. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

## 2.2 INSULATING CEMENTS

- A. Mineral-Fiber Insulating Cement: Comply with ASTM C195.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
    - a. Ramco Insulation, Inc. (Super-Stik) "Thermokote V."

## 2.3 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Flexible Elastomeric Adhesive: Solvent-based adhesive.
  - 1. Products: Subject to compliance with requirements, provide one of the following:



- a. Aeroflex USA, Inc.; Aeroseal.
  - b. Armacell LLC; Armaflex 520 Adhesive.
  - c. Foster Brand; H. B. Fuller Construction Products; 85-75.
  - d. K-Flex USA; R-373 Contact Adhesive.
2. Flame-spread index shall be 25 or less and smoke-developed index shall be 50 or less as tested in accordance with ASTM E84.
3. Wet Flash Point: Below 0 deg F.
4. Service Temperature Range: 40 to 200 deg F.
5. Color: Black.
- C. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Brand; H. B. Fuller Construction Products; CP-127.
    - b. Foster Brand; H. B. Fuller Construction Products; 85-60/85-70.
- D. ASJ Adhesive and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A, for bonding insulation jacket lap seams and joints.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Brand; H. B. Fuller Construction Products; #CP-82.
    - b. Foster Brand; H. B. Fuller Construction Products; #85-20.
    - c. Mon-Eco Industries, Inc. #22-25.
- E. PVC Jacket Adhesive: Compatible with PVC jacket.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Consumer Solutions "Dow Silicone" #739.
    - b. Johns Manville; a Berkshire Hathaway company; "Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive."
    - c. P.I.C. Plastics, Inc. "Welding Adhesive."
    - d. Speedline Corporation "Polyco VP Adhesive."

## 2.4 MASTICS AND COATINGS

- A. Materials shall be compatible with insulation materials, jackets, and substrates.
- B. Vapor-Retarder Mastic, Water Based: Suitable for indoor use on below-ambient services.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Brand; H. B. Fuller Construction Products; "Chil Low" #CP-38.
    - b. Foster Brand; H. B. Fuller Construction Products; #30-80/30-90.

- c. Knauf Insulation "EXPERT Mastics" #KI-900 ASJ.
  - d. Vimasco Corporation #749.
2. Water-Vapor Permeance: Comply with ASTM E96/E96M or ASTM F1249.
3. Service Temperature Range: 0 to plus 180 deg F.
4. Comply with MIL-PRF-19565C, Type II, for permeance requirements.
5. Color: White.

## 2.5 LAGGING ADHESIVES

- A. Adhesives shall comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Brand; H. B. Fuller Construction Products; #CP-50 AHV2.
    - b. Foster Brand; H. B. Fuller Construction Products; #30-36.
    - c. Vimasco Corporation #713 and #714.
  2. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
  3. Service Temperature Range: 20 to plus 180 deg F.
  4. Color: White.

## 2.6 SEALANTS

- A. Materials shall be as recommended by the insulation manufacturer and shall be compatible with insulation materials, jackets, and substrates.
- B. ASJ Flashing Sealants and PVC Jacket Flashing Sealants:
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products; #CP-76.
  2. Fire- and water-resistant, flexible, elastomeric sealant.
  3. Service Temperature Range: Minus 40 to plus 250 deg F.
  4. Color: White.

## 2.7 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C1136, Type I.

## 2.8 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C1136, Type I, unless otherwise indicated.
- B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.
- C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Johns Manville; a Berkshire Hathaway company.
    - b. P.I.C. Plastics, Inc.
    - c. Proto Corporation.
    - d. Speedline Corporation.
  2. Adhesive: As recommended by jacket material manufacturer.
  3. Color: White.
  4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
    - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

## 2.9 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C1136.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. 3M Industrial Adhesives and Tapes Division.
    - b. Avery Dennison Corporation, Specialty Tapes Division; "Fasson" #0836.
    - c. Ideal Tape Co., Inc., an American Biltrite Company; "Ideal Tape Cold Seal" #728 ASJ.
    - d. Knauf Insulation "EXPERT Tapes - ASJ Tape."

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Manufacturers: Subject to compliance with requirements, provide product by one of the following:
  - a. 3M Industrial Adhesives and Tapes Division.
  - b. Ideal Tape Co., Inc., an American Biltrite Company.
2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

## **2.10 PROTECTIVE SHIELDING GUARDS**

A. Protective Shielding Pipe Covers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. McGuire Manufacturing.
  - b. Plumberex Specialty Products, Inc.
  - c. Truebro.
2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless steel surfaces, use demineralized water.

### 3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and of thicknesses required for each item of pipe system, as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during storage, application, and finishing. Replace insulation materials that get wet.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
  1. Install insulation continuously through hangers and around anchor attachments.
  2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends attached to structure with vapor-barrier mastic.

3. Install insert materials and insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
  4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
1. Draw jacket tight and smooth.
  2. Cover circumferential joints with 3-inch-wide strips of same material as insulation jacket. Secure strips with adhesive.
  3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap.
  4. Cover joints and seams with tape, in accordance with insulation material manufacturer's written instructions, to maintain vapor seal.
  5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 25 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches in similar fashion to butt joints.
- P. For above-ambient services, do not install insulation to the following:
1. Vibration-control devices.
  2. Testing agency labels and stamps.
  3. Nameplates and data plates.
  4. Cleanouts.

### 3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
1. Seal penetrations with flashing sealant.
  2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation,

- install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
  4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.
- C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.
  2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
  4. Seal jacket to wall flashing with flashing sealant.
- D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
1. Comply with requirements in Section 220010 "General Requirements for Plumbing" for firestopping and fire-resistive joint sealers.
- F. Insulation Installation at Floor Penetrations:
1. Pipe: Install insulation continuously through floor penetrations.
  2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 220010 "General Requirements for Plumbing."

### 3.5 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials, except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, Mechanical Couplings, and Unions:
1. Install insulation over fittings, valves, strainers, flanges, mechanical couplings, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.



2. Insulate pipe elbows using preformed fitting insulation made from same material and density as that of adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
  3. Insulate tee fittings with preformed fitting insulation of same material and thickness as that used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
  4. Insulate valves using preformed fitting insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
  5. Insulate strainers using preformed fitting insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers, so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
  6. Insulate flanges, mechanical couplings, and unions, using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Stencil or label the outside insulation jacket of each union with the word "union" matching size and color of pipe labels.
  7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
  8. For services not specified to receive a field-applied jacket, except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing, using PVC tape.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as that of adjoining pipe insulation.
  2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union at least 2 times the insulation thickness over adjacent pipe

- insulation on each side of flange or union. Secure flange cover in place with stainless steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
  4. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

### **3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION**

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- B. Insulation Installation on Pipe Flanges:
  1. Install pipe insulation to outer diameter of pipe flange.
  2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
  3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as that of pipe insulation.
  4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- C. Insulation Installation on Pipe Fittings and Elbows:
  1. Install mitered sections of pipe insulation.
  2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
- D. Insulation Installation on Valves and Pipe Specialties:
  1. Install preformed valve covers manufactured of same material as that of pipe insulation when available.
  2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
  3. Install insulation to flanges as specified for flange insulation application.
  4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

### **3.7 INSTALLATION OF MINERAL-FIBER INSULATION**

- A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.

**B. Insulation Installation on Pipe Flanges:**

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

**C. Insulation Installation on Pipe Fittings and Elbows:**

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

**D. Insulation Installation on Valves and Pipe Specialties:**

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

**3.8 FIELD-APPLIED JACKET INSTALLATION**

- A.** Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.
1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

### 3.9 FINISHES

- A. Insulation with ASJ or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
  - 1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
    - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

### 3.10 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections: Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- C. All insulation applications will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

### 3.11 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
  - 1. Drainage piping located in crawl spaces.
  - 2. Underground piping.
  - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

### 3.12 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold Water:

1. NPS 1 and Smaller: Insulation shall be one of the following:
  - a. Flexible Elastomeric: 1 inch thick.
  - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
2. NPS 1-1/4 and Larger: Insulation shall be one of the following:
  - a. Flexible Elastomeric: 1 inch thick.
  - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

B. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be one of the following:
  - a. Flexible Elastomeric: 1 inch thick.
  - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
2. NPS 1-1/2 and Larger: Insulation shall be one of the following:
  - a. Flexible Elastomeric: 1-1/2 inches thick.
  - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inches thick.

C. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be one of the following:
  - a. Flexible Elastomeric: 1/2 inch thick.
  - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch thick.

END OF SECTION 220719

## SECTION 221316

### SANITARY WASTE AND VENT PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. PVC pipe and fittings.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

##### 1.3 WARRANTY

A. Listed manufacturers to provide labeling and warranty of their respective products.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

A. Components and installation are capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10 ft. head of water.

##### 2.2 PIPING MATERIALS

- A. Piping materials to bear label, stamp, or other markings of specified testing agency.
- B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

## 2.3 COPPER TUBE AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. Cambridge-Lee Industries, LLC.
  2. Cerro Flow Products, LLC.
  3. Mueller Industries, Inc.
  4. Wieland Copper Products, LLC.
- B. Copper Type DWV Tube: ASTM B306, drainage tube, drawn temper.
- C. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.
- D. Hard Copper Tube: ASTM B88, Type L and Type M, water tube, drawn temper.
- E. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.
1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
  2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- F. Solder: ASTM B32, lead free with ASTM B813, water-flushable flux.

## 2.4 PVC PIPE AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. Charlotte Pipe and Foundry Company.
  2. GF Piping Systems.
  3. JM Eagle; J-M Manufacturing Co., Inc.
  4. Mueller Industries, Inc.
  5. National Pipe and Plastic, Inc.
  6. North America Pipe Corporation.
  7. Rocky Mountain Colby Pipe Company.
  8. Silver-line Plastics.
- B. Comply with NSF 14 for plastic piping components. Include "NSF-dwv" marking for plastic drain, waste, and vent piping and "NSF-sewer" marking for plastic sewer piping.
- C. Solid-Wall PVC Pipe: ASTM D2665 drain, waste, and vent.
- D. PVC Socket Fittings: ASTM D2665, made in accordance with ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.



E. Adhesive Primer: ASTM F656.

1. Adhesive primer shall have a VOC content of 550 g/L or less.
2. Adhesive primer shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

F. Solvent Cement: ASTM D2564.

1. Solvent cement shall have a VOC content of 510 g/L or less.

### **PART 3 - EXECUTION**

#### **3.1 PIPING INSTALLATION**

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.
1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
  2. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping at indicated slopes.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install piping to allow application of insulation.
- I. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.
1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.

2. Use long-turn, double Y-branch, and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.
  - a. Straight tees, elbows, and crosses may be used on vent lines.
3. Do not change direction of flow more than 90 degrees.
4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.
  - a. Reducing size of waste piping in direction of flow is prohibited.
- J. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:
  1. Building Sanitary Waste: Two percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
  2. Horizontal Sanitary Waste Piping: Two percent downward in direction of flow.
  3. Vent Piping: One percent down toward vertical fixture vent or toward vent stack.
- K. Install aboveground copper tubing in accordance with CDA's "Copper Tube Handbook."
- L. Install aboveground PVC piping in accordance with ASTM D2665.
- M. Plumbing Specialties:
  1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary waste gravity-flow piping.
    - a. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
    - b. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."
- N. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
- O. Install sleeves for piping penetrations of walls, ceilings, and floors.
  1. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- P. Install escutcheons for piping penetrations of walls, ceilings, and floors.
  1. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

### 3.2 JOINT CONSTRUCTION

- A. Join copper tube and fittings with soldered joints in accordance with ASTM B828. Use ASTM B813, water-flushable, lead-free flux and ASTM B32, lead-free-alloy solder.
- B. Plastic, Non-Pressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings in accordance with the following:
  - 1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. PVC Piping: Join in accordance with ASTM D2855 and ASTM D2665 appendixes.

### 3.3 SPECIALTY PIPE FITTING INSTALLATION

- A. Transition Couplings:
  - 1. Install transition couplings at joints of piping with small differences in ODs.
  - 2. In Waste Drainage Piping: Unshielded, non-pressure transition couplings.
- B. Dielectric Fittings:
  - 1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
  - 2. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.
  - 3. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric nipples.

### 3.4 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment".
  - 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
  - 2. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
  - 3. Vertical Piping: MSS Type 8 or Type 42 clamps.
  - 4. Install individual, straight, horizontal piping runs:
    - a. 100 Ft. and Less: MSS Type 1, adjustable, steel clevis hangers.
  - 5. Base of Vertical Piping: MSS Type 52 spring hangers.
- B. Install hangers for copper soil piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Install hangers for PVC piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

- D. Support horizontal piping and tubing within 12 inches of each fitting, valve, and coupling.
- E. Support vertical runs of copper soil piping to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- F. Support vertical runs of PVC piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

### 3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect waste and vent piping to the following:
  - 1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
  - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
  - 3. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
  - 4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
  - 5. Comply with requirements for cleanouts, specified in Section 221319 "Sanitary Waste Piping Specialties."
- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- E. Make connections in accordance with the following unless otherwise indicated:
  - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
  - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

### 3.6 IDENTIFICATION

- A. Identify exposed sanitary waste and vent piping.
- B. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

### 3.7 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
  2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary waste and vent piping in accordance with procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.
    - a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
  2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.
    - a. Expose work that was covered or concealed before it was tested.
  3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.
    - a. Close openings in piping system and fill with water to point of overflow, but not less than 10 ft. head of water.
    - b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
    - c. Inspect joints for leaks.
  4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.
    - a. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1 inch wg.
    - b. Use U-tube or manometer inserted in trap of water closet to measure this pressure.
    - c. Air pressure must remain constant without introducing additional air throughout period of inspection.
    - d. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

### **3.8 CLEANING AND PROTECTION**

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.
- D. Exposed PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.
- E. Repair damage to adjacent materials caused by waste and vent piping installation.

### **3.9 PIPING SCHEDULE**

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 and smaller are to be any of the following:
  1. Copper Type DWV tube, copper drainage fittings, and soldered joints.
  2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
  3. Dissimilar Pipe-Material Couplings: Unshielded, non-pressure transition couplings.
- C. Aboveground, vent piping NPS 4 and smaller is to be any of the following:
  1. Copper Type DWV tube, copper drainage fittings, and soldered joints.
    - a. Option for Vent Piping, NPS 2-1/2 and NPS 3-1/2: Hard copper tube, Type M; copper pressure fittings; and soldered joints.
  2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
  3. Dissimilar Pipe-Material Couplings: Unshielded, non-pressure transition couplings.

END OF SECTION 221316

## SECTION 221319

### SANITARY WASTE PIPING SPECIALTIES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Cleanouts.

##### 1.2 DEFINITIONS

- A. PVC: Polyvinyl chloride.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For sanitary waste piping specialties to include in emergency, operation, and maintenance manuals.

#### PART 2 - PRODUCTS

##### 2.1 ASSEMBLY DESCRIPTIONS

- A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

##### 2.2 CLEANOUTS

- A. Plastic Floor Cleanouts, FPCO:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



- a. Plastic Oddities.
  - b. Sioux Chief Manufacturing Company, Inc.
  - c. Zurn Industries, LLC.
2. Size: Same as connected branch.
3. Body: PVC.
4. Closure Plug: PVC.
5. Riser: Drainage pipe fitting and riser to cleanout of same material as drainage piping.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
  1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
  2. Locate at each change in direction of piping greater than 45 degrees.
  3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
  4. Locate at base of each vertical soil and waste stack.
- B. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

### **3.2 PIPING CONNECTIONS**

- A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment, to allow service and maintenance.

### **3.3 PROTECTION**

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319

**SECTION 224213.13**  
**COMMERCIAL WATER CLOSETS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Floor-mounted, bottom-outlet water closets.
2. Toilet seats.

**1.2 ACTION SUBMITTALS**

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for water closets.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

**1.3 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For flushometer valves and electronic sensors to include in operation and maintenance manuals.

**1.4 MAINTENANCE MATERIAL SUBMITTALS**

- A. Extra Stock Materials: Furnish extra materials to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than one of each type.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Standards:

1. Comply with ASME A112.19.2/CSA B45.1 for water closets.
2. Comply with ASME A112.19.5/CSA B45.15 for flush valves and spuds for water closets and tanks.
3. Comply with ASSE 1037/ASME A112.1037/CSA B125.37 for flush valves.
4. Comply with IAMPO/ANSI Z124.5 for water-closet (toilet) seats.
5. Comply with ASME A112.6.1M for water-closet supports.
6. Comply with ICC A117.1 for ADA-compliant water closets.
7. Comply with ASTM A1045 for flexible PVC gaskets used in connection of vitreous-china water closets to sanitary drainage systems.
8. Comply with ASME A112.4.3 for plastic fittings used in connection of vitreous-china water closets to sanitary drainage systems.

## **2.2 FLOOR-MOUNTED, BOTTOM-OUTLET WATER CLOSETS**

### **A. Water Closets - Floor Mounted, Bottom Outlet: WC-A.**

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. American Standard.
  - b. Kohler Co.
  - c. Sloan Valve Company.
  - d. Zurn Industries, LLC.
2. Source Limitations: Obtain water closets from single source from single manufacturer.
3. Bowl:
  - a. Material: Vitreous china.
  - b. Type: Siphon jet.
  - c. Style: Flushometer tank, gravity.
  - d. Height: ADA compliant.
  - e. Rim Contour: Elongated.
  - f. Water Consumption: 1.28 gal. per flush.
  - g. Color: White.
4. Toilet Seat: Type 1.

## **2.3 TOILET SEATS**

### **A. Toilet Seats: Type 1.**

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

- a. Bemis Manufacturing Company.
  - b. Centoco Manufacturing Corporation.
  - c. Church Seats; Bemis Manufacturing Company.
2. Source Limitations: Obtain toilet seat from single source from single manufacturer
  3. Material: Plastic.
  4. Type: Commercial (Heavy duty).
  5. Shape: Elongated rim, open front.
  6. Hinge: Self-sustaining, check.
  7. Hinge Material: Noncorroding metal.
  8. Seat Cover: Required.
  9. Color: White.
  10. Surface Treatment: Antimicrobial.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine roughing-in for water-supply piping and sanitary drainage and vent piping systems to verify actual locations of piping connections before water-closet installation.
- B. Examine walls and floors for suitable conditions where water closets will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION, GENERAL**

- A. Water-Closet Installation:
  1. Install level and plumb.
  2. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
- B. Install toilet seats on water closets.
- C. Wall Flange and Escutcheon Installation:
  1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
  2. Install deep-pattern escutcheons if required to conceal protruding fittings.
  3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

D. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.

**3.3 PIPING CONNECTIONS**

- A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."
- D. Where installing piping adjacent to water closets, allow space for service and maintenance.

**3.4 ADJUSTING**

- A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.

**3.5 CLEANING AND PROTECTION**

- A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.
- B. Install protective covering for installed water closets and fittings.
- C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

END OF SECTION 224213.13

**SECTION 224216.13**  
**COMMERCIAL LAVATORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Vitreous-china, wall-mounted lavatories.
2. Automatically operated lavatory faucets.
3. Supply fittings.
4. Waste fittings.
5. Lavatory supports.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for lavatories.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

**1.3 CLOSEOUT SUBMITTALS**

A. Operation and Maintenance Data: For lavatories and faucets to include in operation and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
  - a. Servicing and adjustments of automatic faucets.

**1.4 MAINTENANCE MATERIAL SUBMITTALS**

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Faucet Washers and O-Rings: Equal to 5 percent of amount of each type and size installed.
2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.

## **PART 2 - PRODUCTS**

### **2.1 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES**

#### **A. Lavatory - Vitreous China, Wall Mounted, with Back: LAV-A.**

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. American Standard.
  - b. Briggs Plumbing Products, Inc.
  - c. Gerber Plumbing Fixtures LLC.
  - d. Kohler Co.
  - e. Mansfield Plumbing Products LLC.
  - f. Peerless Pottery Sales, Inc.
  - g. Sloan Valve Company.
  - h. Zurn Industries, LLC.
2. Fixture:
  - a. Standard: ASME A112.19.2/CSA B45.1.
  - b. Type: For wall hanging.
  - c. Nominal Size: Refer to Drawings
  - d. Faucet-Hole Punching: Refer to Drawings.
  - e. Faucet-Hole Location: Top.
  - f. Color: White.
  - g. Mounting Material: Chair carrier.
3. Faucet: Type 1.
4. Support: Type II, concealed-arm lavatory carrier. Include rectangular, steel uprights.
5. Lavatory Mounting Height: Handicapped/elderly in accordance with ICC A117.1.

### **2.2 AUTOMATICALLY OPERATED LAVATORY FAUCETS**

- A. NSF Standard: Comply with NSF 61 and NSF 372 for faucet materials that will be in contact with potable water.
- B. Lavatory Faucets - Automatic Type: Battery Powered Electronic Sensor Operated, Mixing, Type 1:



1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. American Standard.
  - b. Bradley Corporation.
  - c. Chicago Faucets; Geberit Company.
  - d. Gerber Plumbing Fixtures LLC.
  - e. GROHE America, Inc.
  - f. Kohler Co.
  - g. Moen Incorporated.
  - h. Sloan Valve Company.
  - i. Speakman Company.
  - j. Stern Engineering Ltd.
  - k. T&S Brass and Bronze Works, Inc.
  - l. TOTO USA, INC.
  - m. Zurn Industries, LLC.
2. Standards: ASME A112.18.1/CSA B125.1 and UL 1951.
3. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
4. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
5. Body Type: Single hole.
6. Body Material: Commercial, solid-brass, or die-cast housing with brazed copper and brass waterway.
7. Finish: Polished chrome plate.
8. Maximum Flow Rate: 0.5 gpm.
9. Mounting Type: Deck, concealed.
10. Spout: Rigid type.
11. Drain: Not part of faucet.

### 2.3 SUPPLY FITTINGS

- A. NSF Standard: Comply with NSF 61 and NSF 372 for supply-fitting materials that will be in contact with potable water.
- B. Standard: ASME A112.18.1/CSA B125.1.
- C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.
- D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type valve with inlet connection matching supply piping.
- E. Operation: Loose key.

F. Risers:

1. NPS 3/8.
2. ASME A112.18.6/CSA B125.6, braided- or corrugated-stainless steel, flexible hose riser.

**2.4 WASTE FITTINGS**

A. Standard: ASME A112.18.2/CSA B125.2.

B. Drain: Grid type with NPS 1-1/4 offset and straight tailpiece.

C. Trap:

1. Size: NPS 1-1/2 by NPS 1-1/4.
2. Material:
  - a. Chrome-plated, two-piece, cast-brass trap and swivel elbow with 0.032-inch-thick brass tube to wall or two-piece, cast-brass trap and ground-joint swivel elbow with 0.032-inch-thick brass tube to wall; and chrome-plated, brass or steel wall flange.

**2.5 LAVATORY SUPPORTS**

A. Lavatory Carrier:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. Jay R. Smith Mfg Co; a division of Morris Group International.
  - b. Josam Company.
  - c. MIFAB, Inc.
  - d. Wade; a subsidiary of McWane Inc.
  - e. WAITS.
  - f. Zurn Industries, LLC.
2. Standard: ASME A112.6.1M.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before lavatory installation.

- B. Examine counters and walls for suitable conditions where lavatories will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install lavatories level and plumb in accordance with roughing-in drawings.
- B. Install supports, affixed to building substrate, for wall-mounted lavatories.
- C. Install accessible wall-mounted lavatories at handicapped/elderly mounting height for people with disabilities or the elderly, in accordance with ICC A117.1.
- D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
- E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color.
- F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

### **3.3 PIPING CONNECTIONS**

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

### **3.4 ADJUSTING**

- A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.
- B. Install new batteries in battery-powered, electronic-sensor mechanisms.

### **3.5 CLEANING AND PROTECTION**

- A. After completing installation of lavatories, inspect and repair damaged finishes.
- B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed lavatories and fittings.
- D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

END OF SECTION 224216.13

**SECTION 224216.16**  
**COMMERCIAL SINKS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:
1. Service sinks.
  2. Manually operated sink faucets.
  3. Supply fittings.
  4. Waste fittings.
  5. Grout.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for sinks.
  2. Include rated capacities, operating characteristics and furnished specialties and accessories.

**1.4 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For sinks and faucets to include in operation and maintenance manuals.

**1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.

2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.

## **PART 2 - PRODUCTS**

### **2.1 SERVICE SINKS**

#### **A. Service Sinks - Molded Stone, Floor Mounted MSB-A: .**

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. Fiat Products.
  - b. Florestone Products Co., Inc.
2. Source Limitations: Obtain sinks from single source from single manufacturer.
3. Fixture:
  - a. Standard: ASME A112.18.2/CSA B125.2.
  - b. Nominal Size: Refer to Drawings..
  - c. Height: Refer to Drawings..
  - d. Rim Guard: On all top surfaces.
  - e. Color: Not applicable.
  - f. Drain: Grid with NPS 2 outlet.
4. Mounting: On floor and flush to wall.
5. Faucet: Type 1.

### **2.2 MANUALLY OPERATED SINK FAUCETS**

- A. Sink faucets intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), with requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 and NSF 372, or be certified in compliance with NSF 61 and NSF 372 by an ANSI-accredited third-party certification body, in that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

#### **B. Commercial Service Sink Faucets – Manual Type: Type 1.**

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. American Standard.
  - b. Chicago Faucets; Geberit Group.
  - c. Fiat Products.
  - d. Kohler Co.
  - e. T&S Brass and Bronze Works, Inc.

- f. Zurn Industries, LLC.
- 2. Source Limitations: Obtain sink faucets from single source from single manufacturer.
- 3. Description: Wall/back mounted, brass body, with integral service stops, checks, spout with bucket/pail hook, 3/4-inch hose thread end, integral vacuum breaker, inlets 8 inches o.c., and two-handle mixing.
- 4. Faucet:
  - a. Standards:
    - 1) ASME A112.18.1/CSA B125.1.
    - 2) NSF 61 and NSF 372.
    - 3) ICC A117.1.
    - 4) ASSE 1001 (VB).
  - b. Finish: Rough chrome plated.
  - c. Handles: Refer to Drawings..
  - d. Cartridges: Ceramic.
  - e. Brace: Adjustable top brace.

## 2.3 SUPPLY FITTINGS

- A. NSF Standard: Comply with NSF 61 and NSF 372 for supply-fitting materials that will be in contact with potable water.
- B. Standard: ASME A112.18.1/CSA B125.1.
- C. Supply Piping: Chrome-plated brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated brass or stainless steel wall flange.

## 2.4 WASTE FITTINGS

- A. Standard: ASME A112.18.2/CSA B125.2.

## 2.5 GROUT

- A. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000 psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine roughing-in for water-supply piping and sanitary drainage and vent piping systems to verify actual locations of piping connections before sink installation.
- B. Examine walls, floors, and counters for suitable conditions where sinks will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install sinks level and plumb in accordance with rough-in drawings.
- B. Set floor-mounted sinks in leveling bed of cement grout.
- C. Install water-supply piping with stop on each supply to each sink faucet.
  - 1. Exception: Use ball or gate valves if supply stops are not specified with sink. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping".
  - 2. Install stops in locations where they can be easily reached for operation.
- D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
- E. Seal joints between sinks and counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

### **3.3 PIPING CONNECTIONS**

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."



**3.4 ADJUSTING**

- A. Operate and adjust sinks and controls. Replace damaged and malfunctioning sinks, fittings, and controls.

**3.5 CLEANING AND PROTECTION**

- A. After completing installation of sinks, inspect and repair damaged finishes.
- B. Clean sinks, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed sinks and fittings.
- D. Do not allow use of sinks for temporary facilities unless approved in writing by Owner.

END OF SECTION 224216.16

**SECTION 224716**  
**PRESSURE WATER COOLERS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Pressure water coolers.
2. Supports.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of pressure water cooler and bottle filling station.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Include diagrams for power wiring.

**1.3 CLOSEOUT SUBMITTALS**

A. Maintenance Data: For pressure water coolers and bottle filling stations to include in maintenance manuals.

**1.4 MAINTENANCE MATERIAL SUBMITTALS**

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filter Cartridges: Equal to 10 percent of quantity installed for each type and size indicated, but no fewer than 1 of each.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

#### A. Standards:

1. Pressure water coolers and bottle filling stations intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 or NSF 372, or be certified in compliance with NSF 61 or NSF 372 by an ANSI-accredited third-party certification body, that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.
2. Comply with ASHRAE 34 for water coolers. Provide HFC 134a (tetrafluoroethane) refrigerant unless otherwise indicated.
3. Comply with UL 399.
4. Comply with ASME A112.19.3/CSA B45.4.
5. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
6. Comply with NSF 42 and NSF 53 for water filters for water coolers and bottle filling stations.
7. Comply with ICC A117.1 for accessible water coolers and bottle filling stations.

### 2.2 PRESSURE WATER COOLERS

#### A. Pressure Water Coolers - Surface Wall-Mounted, Stainless Steel: EWC-A .

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. Elkay.
  - b. Halsey Taylor.
  - c. Oasis International.
2. Source Limitations: Obtain surface wall-mounted, stainless steel, pressure water coolers from single source from single manufacturer.
3. Bubbler: One, with adjustable stream regulator, located on each cabinet deck.
4. Control: Push bar.
5. Glass filler.
6. Drain: Grid with NPS 1-1/4 tailpiece.
7. Supply: NPS 3/8 with shutoff valve.
8. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 brass P-trap.
9. Filter: One or more water filters with capacity sized for unit peak flow rate.

10. Cooling System: Electric, with hermetically sealed compressor, cooling coil, air-cooled condensing unit, corrosion-resistant tubing, refrigerant, corrosion-resistant-metal storage tank, and adjustable thermostat.
11. Support: Water-cooler carrier.
12. Water-Cooler Mounting Height: Accessible in accordance with ICC A117.1.
13. Capacities and Characteristics: Refer to Drawings.

## **2.3 SUPPORTS**

### **A. Water-Cooler Carrier:**

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Jay R. Smith Mfg Co; a division of Morris Group International.
  - b. Josam Company.
  - c. MIFAB, Inc.
  - d. Wade; a subsidiary of McWane Inc.
  - e. Zurn Industries, LLC.
2. Standard: ASME A112.6.1M.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.
- B. Examine walls and floors for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install fixtures level and plumb according to roughing-in drawings.
- B. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.
- C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523.12 "Ball Valves for Plumbing Piping."

- D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
- E. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
- F. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color.

### **3.3 PIPING CONNECTIONS**

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Install ball shutoff valve on water supply to each fixture. Install valve upstream from filter for water cooler. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping."
- D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

### **3.4 ELECTRICAL CONNECTIONS**

- A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.
- C. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
  - 1. Nameplates to be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch high.

### **3.5 ADJUSTING**

- A. Adjust fixture flow regulators for proper flow and stream height.
- B. Adjust pressure water-cooler temperature settings.

**3.6 CLEANING**

- A. After installing fixture, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.
- C. Provide protective covering for installed fixtures.
- D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224716

## SECTION 230010

### GENERAL REQUIREMENTS FOR HVAC

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to the Work of this Division.
  - 1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
  - 2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.
- B. Thoroughly study all Drawings and Specifications before submitting bids.
- C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.
- D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

##### 1.2 SUMMARY

- A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.
- B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.
- C. Guarantee workmanship, materials, and performance of this Division's systems in accordance with the requirements of the Contract Documents.
- D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:
  - 1. HVAC systems including:

- a. Common motor requirements for HVAC equipment.
  - b. Sleeves and sleeve seals for HVAC piping.
  - c. Meters and gages for HVAC piping.
  - d. General-duty valves for HVAC piping.
  - e. Hangers and supports for HVAC piping and equipment.
  - f. Vibration controls for HVAC piping and equipment.
  - g. Identification for HVAC piping and equipment.
  - h. Testing, adjusting, and balancing for HVAC.
  - i. Duct and HVAC piping and insulation.
  - j. Direct digital control (DDC) system for HVAC.
  - k. Control valves.
  - l. Pressure temperature instruments.
  - m. Hydronic piping and hydronic piping specialties.
  - n. Hydronic pumps.
  - o. Refrigerant piping.
  - p. Water treatment for closed-loop hydronic systems.
  - q. Metal ducts.
  - r. Air duct accessories.
  - s. Flexible ducts.
  - t. Diffusers, registers, and grilles.
  - u. Air-to-air energy recovery units.
  - v. Variable-refrigerant-flow HVAC systems.
  - w. Finned-tube radiation heaters.
  - x. Wall and ceiling unit heaters.
  - y. Fixed louvers.
2. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in this Section.
  3. Submittals.
  4. Record Documents.
  5. Permits and Inspections: Apply for and obtain all required permits and inspections for all work in this Contract; pay all related fees and charges.

### 1.3 PRODUCTS ORDERED IN ADVANCE

- A. The Owner's Representative may elect to prepurchase certain items specified in this Division's Specifications. Verify with Owner's Representative any prepurchased arrangements prior to submitting bid.
- B. The Owner's Representative shall assign the prepurchased items to this Division on award of the Contract. This Division shall be responsible for respective items as though purchased originally. Responsibilities shall include but not be limited to the following:
  1. Expediting.
  2. Shop Drawings.



3. Delivery.
4. Unloading.
5. Storage.
6. Installation.
7. Guarantees.
8. Payment.

- C. Turn over all prepurchased equipment that is not used in the Project to the Owner's Representative at completion of the work.

#### **1.4 ALLOWANCES**

- A. Refer to Division 01 Specifications.

#### **1.5 UNIT PRICES**

- A. Refer to Division 01 Specifications.

#### **1.6 ALTERNATES**

- A. Refer to Division 01 Specifications.

#### **1.7 PROJECT MANAGEMENT AND COORDINATION**

- A. General Requirements:

1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. DO NOT SCALE DRAWINGS.
2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

- B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.

2. Interference:

a. Thoroughly coordinate work with other Divisions and:

- 1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.
- 2) Maintain maximum headroom.
- 3) Obtain Engineer's review before installing any work below 7'-0" clear headroom in mechanical areas.
- 4) Install work of this Division so that all equipment is serviceable and operable.

b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.

C. Coordination with Drawings: Review all Drawings and, if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.

D. Coordination Drawings:

1. Before construction work commences, subcontractors for all trades shall submit coordination drawings in the form of reproducible transparencies drawn at not less than 1/4 inch = 1 foot in scale, noting Contract work below floor slab and penetrating floor slab. Such drawings will be required throughout all areas for all trades. These drawings shall show resolutions of trade conflicts in congested areas. All utilities, piping, ductwork, wiring, etc., shall be dimensioned from column centerlines.
2. Coordination drawings are intended for the respective Contractor's use during construction and shall not be construed as replacing any Shop Drawings or Record Drawings required elsewhere in these Contract Documents. Generally, drawing details and sections are required only at places of conflict among trades. The drawings may be done on an area basis so as not to delay the overall project.
3. Submit coordinated drawings for review as Shop Drawings. The Owner's Representative's review of coordination drawings shall not relieve this Division from the responsibility for coordinating their work with the work of other trades nor shall it authorize any extra cost, omission, or deviation from the requirements of the Contract Documents. Any costs arising from errors or omissions in the coordination process shall be borne by this Division.

E. Scheduling and Procedure of Work:

1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.

2. As work occurs within or attached to existing structures:
  - a. Perform all work only on approved schedule.
  - b. Do not interfere with normal operation of existing systems.
  - c. Do not shut off any services without written authorization of Owner's Representative.
  - d. Do as much work as possible prior to the shutdown to minimize the downtime.
  - e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.
3. No radios, tape players, compact disc players, etc., shall be permitted on-site.
4. Proper work attire shall be worn at all times.
5. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

## 1.8 SUBMITTALS

- A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.
- B. Wiring Diagrams: Electrically operated equipment shall include factory-approved wiring diagram illustrating proper connections to be made between equipment and power and equipment and auxiliary controls (where applicable).
- C. Penetration Firestopping: Submit product data and installer certificates signed by installer certifying that products have been installed in compliance with requirements.
- D. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.
- E. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

## 1.9 QUALITY REQUIREMENTS

- A. Contractor shall be licensed in accordance with New York State General Business Law, Article 6-D.
- B. Observation of the Work:
  1. Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.

C. Conflict Requirements:

1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

- D. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

## 1.10 REFERENCES

A. Industry Standards:

1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.
  - a. Local and state building codes.
  - b. Local utility companies.
  - c. National Electrical Manufacturer's Association ("NEMA").
  - d. American Institute of Electronic and Electrical Engineers ("IEEE")
  - e. National Electrical Safety Code ("NESC").
  - f. National Electric Code ("NEC").
  - g. ETL, Factory Mutual ("FM"), or Underwriters Laboratories, Inc. ("UL"), approved or listed, wherever applicable to materials.
  - h. American National Standards Institute ("ANSI").
  - i. National Fire Protection Association ("NFPA").
  - j. Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR") for education, health, and sanitary rules and regulations, including:
    - 1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:
      - a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):
        - (1) Uniform Fire Prevention and Building Code (Part 1219).
        - (2) Residential Construction (Part 1220).
        - (3) Building Construction (Part 1221).
        - (4) Plumbing Systems (Part 1222).
        - (5) Mechanical Systems (Part 1223).
        - (6) Fuel Gas Equipment and Systems (Part 1224).
        - (7) Fire Prevention (Part 1225).

- (8) Property Maintenance (Part 1226).
- (9) Existing Buildings (Part 1227).
- (10) The following documents by reference: 2020 Residential Code of New York State, 2020 Plumbing Code of New York State, 2020 Mechanical Code of New York State, 2020 Building Code of New York State, 2020 Fire Code of New York State, 2020 Existing Building Code of New York State, 2020 Fuel Gas Code of New York State, and 2020 Property Maintenance Code of New York State.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):

- (1) State Energy Conservation Construction Code (Part 1240).
- (2) The following documents by reference: 2020 Energy Conservation Construction Code, 2016 ASHRAE 90.1, and 2007 ASHRAE 183.

- k. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.
- l. Any other standards mentioned in this Division's Specifications.

B. Materials and Equipment:

- 1. Electrical devices, materials, and packaged equipment shall be listed and labeled by UL, FM, or ETL for the intended use and shall bear their label.
- 2. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:
  - a. Such covered product complies with the requirements of Chapter 26 of the Building Code of New York State.
  - b. A report of such compliance has been filed with the Department of State in accordance with the Building Code of New York State.

C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

**1.11 TEMPORARY FACILITIES AND CONTROLS**

A. Refer to Division 01 Specifications.

B. Temporary Heat and Ventilation:

- 1. General:
  - a. Provide temporary heat as required for performance of the work, curing or drying of recently installed work or protection of work in place from adverse effects of

low temperatures or high humidity. Select facilities known to be safe and without affect upon the work in place or being installed. Coordinate with ventilation requirements to produce the indicated ambient conditions required and to minimize the consumption of fuel or energy. Coordinate temporary heat with temporary equipment and appropriate temporary enclosures as required for protection of all exterior construction work for the total construction period.

- b. Maintain a minimum temperature of 55 deg F in permanently enclosed portions of the building and areas where finished work has been installed.
- c. The contractor responsible for temporary heat and ventilation shall conduct operations so as to protect work of other contractors from lack of or excessive heat or accumulation of moisture.
- d. The contractor responsible for temporary heat and ventilation shall pay for any damage caused by low temperatures or high humidity resulting from lack of heating and ventilating protection.

2. Heating Facilities:

- a. Coordinate temporary heat inside building from the beginning of construction operations until substantial completion of the building.
- b. Temporary heating before use of permanent system or when permanent systems cannot be used for temporary heat shall be provided. Provide a system of gas or fuel oil heaters as required to maintain temperatures for all contractors and trades. Systems used shall be gas-fired type, AGA-certified, and UL-listed or fuel oil heaters with individual space thermostatic control for temporary heat. Gas-fired heaters may be radiant type, natural convection type, or forced recirculation type, but all shall be UL-listed and AGA-approved for non-vent use.
- c. Gas heaters shall be ducted if heater is approved for ducted use. If bottled gas-type units are used, storage tanks shall be located outside building. Pay for all fuel, maintenance, and attendance required in connection with temporary gas heating system. Replace or refinish any surface damaged by use of the temporary gas heating system. Provide safety precautions and features including suitable fire extinguishers. (Use of electric heaters will not be allowed for temporary heat.)
- d. Do not use open burning or salamander-type heating units where prohibited by governing regulation or when combustible materials are located in or near the space being heated or when the work installed or being installed includes work that will be exposed to view in the completed project.

- 3. Completion and Removal of Equipment: Remove temporary piping, temporary heating units, temporary connections, and other equipment installed upon conclusion of the temporary heating period, and pay all costs in connection with repairing any damage caused by the installation or removal of temporary equipment, and thoroughly clean and recondition those parts of the permanent heating and ventilation systems used for temporary service.

## 1.12 PRODUCT REQUIREMENTS

- A. Refer to Division 01 Specifications.
- B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.
- C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.
- D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.
- E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.
- F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.
- G. Where the term "or equal" or "or approved equal" is indicated, it shall mean the same as "comparable product."
- H. Where "comparable product" is indicated, it shall mean a product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product. Contractor's request for comparable products will be considered when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:
  - 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  - 3. Evidence that proposed product provides specified warranty.
  - 4. If requested, list of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  - 5. If requested, samples.
- I. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the



Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.

- J. Where the term "substitution" is indicated, it shall mean changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
1. The products described in the Contract Documents establish a standard of required function, dimensions, appearance, and quality to be met by any proposed substitution.
  2. Contractor may make substitutions only with consent of Owner, after evaluation by the Architect/Engineer and in accordance with a Change Order.
  3. Substitution Procedures:
    - a. Follow substitution procedures indicated in Division 01 Specifications.
- K. Wherever subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Available Manufacturers/Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers or products specified.
    - a. This is a non-restricted list. For unnamed manufacturer or unnamed product, product is considered a comparable product, not a substitution, and must be demonstrated and approved through submittal process.
  2. Manufacturers/Products: Subject to compliance with requirements, provide one of the specified products or products by one of specified manufacturers.
    - a. This is a restricted list. For unnamed manufacturer or unnamed product, product is considered a substitution.
  3. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed or a comparable product by one of the listed manufacturers.
    - a. Product by one of the listed manufacturers is considered a comparable product, not a substitution, and must be demonstrated and approved through submittal process.
    - b. For unnamed manufacturer or unnamed product, product is considered a substitution.
- L. Where "Manufacturer" or "Product" is indicated with only one named manufacturer or one named product, provide the product of the named manufacturer or the listed product. Comparable products or substitutions are not permitted.
- M. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.



N. Delivery, Storage, and Handling:

1. Deliver, store, and handle materials as recommended by the manufacturer.
2. Handle and store materials in a manner which will not damage materials.
3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
4. Schedule deliveries with Owner's Representative prior to shipping.
5. Be available at site to receive deliveries as scheduled.
6. Hoist all materials as necessary to complete this Division's scope of work.

O. Warranties:

1. Refer to Sections of this Division's Specifications for specific warranties.
2. Refer to Division 01 Specifications for submittal of warranties.

**1.13 EXECUTION**

A. Examination of Premises and Existing Conditions:

1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
2. Ascertain access to site, available storage, and delivery facilities.
3. Verify all governing dimensions at site.
4. Inspect all adjacent work.
5. Verify the location, sizes, and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; HVAC utility piping and other utilities.
6. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:
  - a. All services shall be concealed in wall, above ceilings, etc.
  - b. Work shall be exposed only where approved by the Architect.

- c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

C. Cutting and Patching:

1. Provide removals, cutting, patching, and replacement required for installation of the work in this Contract, except as noted on the Architectural (A series) Drawings.
  - a. Provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, etc.
2. Before proceeding, meet at Project site with parties involved in cutting and patching, including General Contractor; notify Owner's Representative; review areas of potential interference and conflict; coordinate procedures; and resolve potential conflicts.
3. Patch shall match existing finishes.
4. Refer to Division 01 Specifications for additional requirements.

D. Connections to Equipment Furnished by Others:

1. Various pieces of equipment will be furnished to the Project site and installed by other Divisions.
2. Provide roughing-in and make final connections to equipment as indicated on the Drawings and/or as required.
3. Before proceeding with the work, obtain full information regarding rough-in measurements, equipment layouts, elevations, trim being furnished, and other necessary data.
4. Upon request, Owner's Representative will provide this Division with diagrams, photographs, drawings, and/or specifications and other complete descriptive data showing all mechanical and electrical connections. Do not rough without approved layout from Owner's Representative.
5. Provide accessories so that connections may be made in a manner that shall meet all referenced regulations and codes.
6. See appropriate Sections of this Division's Specifications for materials and methods.

E. Adjustment of Systems:

1. Set aside in the cost breakdown a sum to cover work in adjusting and balancing distribution systems.
2. No payment will be made for balancing until Work of this Division is completed to the satisfaction of the Owner and/or Owner's Representative.

F. Protection of Openings and Equipment:

1. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion. Provide final protection and

- maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
2. Protect equipment which is factory-finished using Kraft paper, cardboard, canvas, reinforced polyethylene, etc. Clean and repaint damaged factory finish, matching the original equipment finish.
  3. Protect all equipment openings during construction with temporary plugs, caps, or reinforced plastic.
  4. Adequately protect existing flooring material, door frames, stairs, wall, etc., during construction. Use any combination of materials, such as plywood, polyethylene sheeting, framing lumber, etc., so that existing finishes are protected. Repair damage to existing finishes that were not completely protected.
- G. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

#### **1.14 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

- A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.

#### **1.15 CLOSEOUT PROCEDURES**

- A. After all tests are made and installations pronounced satisfactory:
1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
  2. Remove all debris caused by work.
  3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.
- B. Repair damage to wall and to ceiling surface treatments caused by airborne dirt and debris from within ductwork systems.
- C. Lubrication:
1. Prior to final inspection and in the presence of Owner's Representative:
    - a. Lubricate motors and motor-driven equipment in accordance with manufacturer's recommendations.
    - b. Check for operation without objectionable noise and for correct rotational direction. If noise or vibration is transmitted to occupied portions of the building by piping, equipment, etc., make changes and additions with no cost added to the Contract.
    - c. Check motor protective devices for proper size.

2. Provide neat, typewritten list of lubricant for each motor and moving parts.
  - a. Frame under Plexiglas.
  - b. Mount as directed by Owner's Representative.
  - c. Include list in operating and maintenance manual.
- D. Valve Tagging Chart:
  1. Provide Plexiglas-covered and framed copies of valve tagging chart for mounting as directed by Owner's Representative.
- E. Receipts for Loose Equipment:
  1. Prior to request for final payment:
    - a. Deliver to Owner's Representative the following loose equipment:
      - 1) Thermostat control knobs from electric wall heaters.
      - 2) Diffuser and register adjustment keys.
      - 3) Valve charts.
      - 4) Control cabinet keys and any special tools needed to access/operate HVAC equipment.
      - 5) List of passwords/codes for access to and use of control system/energy management system (EMS).
    - b. Obtain signed receipt for delivered loose equipment.
  2. Include receipt in operations and maintenance manual.
- F. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

#### **1.16 OPERATION AND MAINTENANCE DATA**

- A. Submit 3 complete copies of operating and maintenance manuals to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.
  1. Photocopy paragraphs B and C below to be used a checklist for compliance with materials, format, and data.
  2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
  3. Submit checklist with operating and maintenance manuals.
- B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents.

1. Binder:

- a. ☐ Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
- b. ☐ Cover and spine (binder) identification including:
  - 1) ☐ Manual title: "OPERATION AND MAINTENANCE MANUAL."
  - 2) ☐ Owner.
  - 3) ☐ Project title.
  - 4) ☐ Owner's project number.
  - 5) ☐ Year of construction.
  - 6) ☐ Trade(s).
  - 7) ☐ Volume number and total number of volumes (e.g., Volume 1 of 2).

2. Contents:

- a. ☐ Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
- b. ☐ Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:
  - 1) ☐ Owner.
  - 2) ☐ Architect.
  - 3) ☐ Engineer.
  - 4) ☐ Contractor.
  - 5) ☐ Subcontractor.
- c. ☐ Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):
  - 1) ☐ Warranty letter.
  - 2) ☐ Summary of scheduled maintenance.
  - 3) ☐ Lubrication summary.
  - 4) ☐ Valve charts.
  - 5) ☐ Replacement filter media and size summary.
  - 6) ☐ List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number).
  - 7) ☐ Letters of certification for required system tests.
  - 8) ☐ Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
230500	Widgets	Acme Company	John Doe	555-1212

- d. ☐ Submittals as indicated in "Submittals" Article of this Section, including:
  - 1) ☐ Approved copies of all submittals, including parts lists.
  - 2) ☐ Material safety data sheets for:

- a) ☐ Firestopping.
- b) ☐ Insulations, facings, and adhesives.
- c) ☐ Chemical treatment chemicals.
- d) ☐ Duct sealants.

- 3) ☐ Installation, operating, and maintenance instructions.
- 4) ☐ Wiring diagrams.
- 5) ☐ Warranties.
- 6) ☐ Test reports.

C. ☐ Product Identification:

- 1. ☐ Provide indexed cardstock dividers between each submittal group.
- 2. ☐ Arrange in an order corresponding to the original Project's Specifications.
- 3. ☐ Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
- 4. ☐ Instructions shall include:
  - a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
  - b. List of types of bearings for each piece of equipment with the type of lubricant required and frequency of lubrication.
  - c. Sequence of operating and/or flow diagrams for each of the systems, including emergency procedures.
  - d. Normal starting, operating, and shutdown procedures.

**1.17 PROJECT RECORD DOCUMENTS**

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.
- C. Record Drawings:
  - 1. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

- a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
- 1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
  - 2) Accurately record information in an acceptable drawing technique.
  - 3) Record data as soon as possible after obtaining it.
  - 4) Record and check the markup before enclosing concealed installations.
  - 5) Cross-reference record prints to corresponding archive photographic documentation.
- b. Content: Types of items requiring marking include, but are not limited to, the following:
- 1) Dimensional changes to Drawings.
  - 2) Revisions to details shown on Drawings.
  - 3) Locations and depths of underground utilities.
  - 4) Revisions to routing of piping and conduits.
  - 5) Revisions to electrical circuitry pertaining to the work of this Contract.
  - 6) Actual equipment locations.
  - 7) Locations of concealed internal utilities.
  - 8) Duct size and routing.
  - 9) Locations of terminal units.
  - 10) Locations of isolation valves, balance valves, drain valves, air vents.
  - 11) Locations of sensors for temperatures, pressures, smoke, carbon monoxide, and carbon dioxide.
  - 12) Locations of fire, smoke, and volume dampers.
  - 13) Changes made by Change Order or Construction Change Directive.
  - 14) Changes made following Architect's written orders.
  - 15) Details not on the original Contract Drawings.
  - 16) Field records for variable and concealed conditions.
  - 17) Record information on the Work that is shown only schematically.
- c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
- d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
- e. Mark important additional information that was either shown schematically or omitted from original Drawings.
- f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

2. Submittals: Comply with Division 01 Specifications.



- D. Record Specifications: Comply with Division 01 Specifications.
- E. Refer to Division 01 Specifications.

#### **1.18 DEMONSTRATION AND TRAINING**

- A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.
- B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.
- D. Training shall include, but not be limited to, the following systems:
  - 1. VRF systems

#### **1.19 WORK RELATED TO ASBESTOS AND WORK IN ASBESTOS-CONTAMINATED AREAS**

- A. Portions of the existing mechanical systems and general construction are believed to be insulated or constructed with asbestos-containing materials.
- B. Asbestos-containing materials have reportedly contaminated portions of the crawlspace and ceiling plenum.
- C. Do not disturb such materials.
- D. Where work is unavoidable in contaminated areas, employ or subcontract the services of an "Allied Trade Certified Mechanic" (ATCM) to perform the work of this Division.
- E. It is understood that a separate contract has been, or will be, issued for the abatement of portions of the asbestos-containing materials.

#### **1.20 INFECTION CONTROL**

- A. The Contractor acknowledges the critical importance of mitigating the risk of transmission of infectious agents and pathogens in the construction and renovation process, and recognizes its responsibility to cooperate fully with the Owner's infection control personnel and to implement procedures directed by the Owner towards maintaining the risk of the spread of infectious



agents within acceptable limits. Such procedures may include, but are not necessarily limited to the following:

1. Practicing all social-distancing requirements as much as possible during construction.
2. Phasing of the renovation and new construction work to minimize disruption of existing Owner's operations.
3. Participating in infection control meetings as may be scheduled by the Owner's staff.
4. Cleanup of work areas daily where such area is occupied.

B. Refer to Division 01 Specifications.

## **PART 2 - PRODUCTS**

### **2.1 PENETRATION FIRESTOPPING**

A. Available Manufacturers:

1. A/D Fire Protection Systems Inc.
2. Grace Construction Products.
3. Hilti, Inc.
4. Johns Manville.
5. Nelson Firestop Products.
6. NUCO Inc.
7. Passive Fire Protection Partners.
8. RectorSeal Corporation.
9. Specified Technologies Inc.
10. 3M Fire Protection Products.
11. Tremco, Inc.; Tremco Fire Protection Systems Group.
12. USG Corporation.

B. Provide penetration firestopping materials that are compatible with one another, substrates, and penetrating items if any.

C. Penetrations in Fire-Resistance-Rated Walls and Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating at Fire-Resistance-Rated Walls: Not less than that of construction penetrated.
2. F-Rating at Horizontal Assemblies: At least 1 hour, but not less than that of construction penetrated.

D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.

**PART 3 - EXECUTION**

**3.1 PENETRATION FIRESTOPPING**

- A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

END OF SECTION 230010

## SECTION 230513

### COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on alternating-current power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

##### 1.2 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
  - 1. Motor controllers.
  - 2. Torque, speed, and horsepower requirements of the load.
  - 3. Ratings and characteristics of supply circuit and required control sequence.
  - 4. Ambient and environmental conditions of installation location.

#### PART 2 - PRODUCTS

##### 2.1 GENERAL MOTOR REQUIREMENTS

- A. Comply with NEMA MG 1 unless otherwise indicated.

##### 2.2 MOTOR CHARACTERISTICS

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

##### 2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.

- B. Efficiency: Premium efficient, as defined in NEMA MG 1.
- C. Service Factor: 1.15.
- D. Multispeed Motors: Variable torque.
  - 1. For motors with 2:1 speed ratio, consequent pole, single winding.
  - 2. For motors with other than 2:1 speed ratio, separate winding for each speed.
- E. Rotor: Random-wound, squirrel cage.
- F. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- G. Temperature Rise: Match insulation rating.
- H. Insulation: Class F.
- I. Code Letter Designation:
  - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
  - 2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.

## **2.4 ADDITIONAL REQUIREMENTS FOR POLYPHASE MOTORS**

- A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
- B. Motors Used with Variable-Frequency Controllers:
  - 1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width-modulated inverters.
  - 2. Premium-Efficient Motors: Class B temperature rise; Class F insulation.
  - 3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
  - 4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

## **2.5 SINGLE-PHASE MOTORS**

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
  - 1. Permanent-split capacitor.
  - 2. Capacitor start, inductor run.

3. Capacitor start, capacitor run.
  4. Electrically commutated, permanent magnet motors.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

**PART 3 - EXECUTION (Not Applicable)**

END OF SECTION 230513

## SECTION 230517

### SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Sleeves without waterstop.
2. Sleeves with waterstop.
3. Sleeve-seal systems.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

#### PART 2 - PRODUCTS

##### 2.1 SLEEVES WITHOUT WATERSTOP

- A. Cast-Iron Pipe Sleeves: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends.
- B. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, hot-dip galvanized, with plain ends.
- C. Steel Sheet Sleeves: ASTM A653/A653M, 0.0239-inch minimum thickness; hot-dip galvanized, round tube closed with welded longitudinal joint.
- D. PVC Pipe Sleeves: ASTM D1785, Schedule 40.
- E. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.
- F. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

## 2.2 SLEEVES WITH WATERSTOP

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Advance Products & Systems, LLC.
  2. CALPICO, Inc.
  3. GPT; an EnPro Industries company.
  4. Metraflex Company (The).
- B. Description: Manufactured PVC/HDPE, sleeve-type, waterstop assembly, made for imbedding in concrete slab or wall.

## 2.3 SLEEVE-SEAL SYSTEMS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Advance Products & Systems, LLC.
  2. Airex Manufacturing Inc.
  3. CALPICO, Inc.
  4. GPT; an EnPro Industries company.
  5. Metraflex Company (The).
  6. Proco Products, Inc.
- B. Description: Modular sealing element unit, designed for field assembly, for filling annular space between piping and sleeve.
1. Designed to form a hydrostatic seal of 20 psig.
  2. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size.
  3. Pressure Plates: Carbon steel or composite plastic.
  4. Connecting Bolts and Nuts: Carbon steel, with ASTM B633 coating of length required to secure pressure plates to sealing elements.

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF SLEEVES - GENERAL

- A. Install sleeves for piping passing through penetrations in floors, partitions, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
1. Sleeves are not required for core-drilled holes in concrete.

- C. Install sleeves in concrete floors and concrete walls as new slabs and walls are constructed.
  - 1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
  - 2. Cut sleeves to length for mounting flush with both surfaces.
    - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas as detailed above finished floor level.
  - 3. Using silicone sealant or firestop sealant, seal space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sheet metal sleeves for pipes passing through interior drywall partitions.
  - 1. Cut sleeves to length for mounting flush with both surfaces.
  - 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
  - 3. Seal annular space between sleeve and piping or piping insulation; use sealants appropriate for size, depth, and location of joint.
- E. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke-Barrier Penetrations: Maintain indicated fire or smoke rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping and fill materials specified in Section 230010 "General Requirements for HVAC."

### 3.2 INSTALLATION OF SLEEVES WITH WATERSTOP

- A. Install sleeve with waterstop as new walls and slabs are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout or silicone sealant, seal space around outside of sleeves.

### 3.3 INSTALLATION OF SLEEVE-SEAL SYSTEMS

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building, and passing through exterior walls.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal-system components, and install in annular space between piping and



sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

### 3.4 SLEEVE SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above and below Grade:
  - a. Sleeves with waterstops.
    - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
2. Concrete Slabs-on-Grade:
  - a. Sleeves with waterstops.
    - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
3. Interior Walls and Partitions:
  - a. Sleeves without waterstops.

END OF SECTION 230517

## SECTION 230519

### METERS AND GAGES FOR HVAC PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Liquid-in-glass thermometers.
  - 2. Thermowells.
  - 3. Dial-type pressure gages.
  - 4. Gage attachments.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

#### PART 2 - PRODUCTS

##### 2.1 LIQUID-IN-GLASS THERMOMETERS

- A. Industrial-Style, Liquid-in-Glass Thermometers:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Terice, H. O. Co.
    - b. Weiss Instruments, Inc.
    - c. Weksler Glass Thermometer Corp.
    - d. Winters Instruments - U.S.

2. Standard: ASME B40.200.
3. Case: Cast aluminum or plastic 9-inch nominal size unless otherwise indicated.
4. Case Form: Adjustable angle unless otherwise indicated.
5. Tube: Glass with magnifying lens and blue or red organic liquid.
6. Tube Background: Non-reflective aluminum with permanently etched scale markings graduated in deg F
7. Window: Glass or plastic.
8. Stem: Of length to suit installation.
  - a. Design for Thermowell Installation: Bare stem.
9. Connector: 1-1/4 inches, with ASME B1.1 screw threads.
10. Accuracy: Plus or minus 1 percent of scale range or one scale division, to a maximum of 1.5 percent of scale range.

## 2.2 THERMOWELLS

### A. Thermowells:

1. Standard: ASME B40.200.
2. Description: Pressure-tight, socket-type fitting made for insertion into piping tee fitting.
3. Material for Use with Copper Tubing: CNR or CUNI.
4. Material for Use with Steel Piping: CRES or CSA.
5. Type: Stepped shank unless straight or tapered shank is indicated.
6. External Threads: ASME B1.20.1 pipe threads.
7. Internal Threads: with ASME B1.1 screw threads.
8. Bore: Diameter required to match thermometer bulb or stem.
9. Insertion Length: Length required to match thermometer bulb or stem.
10. Lagging Extension: Include on thermowells for insulated piping and tubing.
11. Bushings: For converting size of thermowell's internal screw thread to size of thermometer connection.

### B. Heat-Transfer Medium: Mixture of graphite and glycerin.

## 2.3 PRESSURE GAGES

### A. Direct-Mounted, Plastic-Case, Dial-Type Pressure Gages:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Flo Fab Inc.
  - b. Marsh Bellofram.
  - c. Palmer Wahl Instrumentation Group.
  - d. Trerice, H. O. Co.
  - e. Weiss Instruments, Inc.

2. Standard: ASME B40.100.
3. Case: Sealed type; plastic; 4-1/2-inch nominal diameter.
4. Pressure-Element Assembly: Bourdon tube unless otherwise indicated.
5. Pressure Connection: Brass, with ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
6. Movement: Mechanical, with link to pressure element and connection to pointer.
7. Dial: Non-reflective aluminum with permanently etched scale markings graduated in psi.
8. Pointer: Dark-colored metal.
9. Window: Glass or plastic.
10. Accuracy: Grade B, plus or minus 2 percent of middle half of scale range.

## **2.4 GAGE ATTACHMENTS**

- A. Snubbers: ASME B40.100, brass; with ASME B1.20.1 pipe threads and piston or porous-metal-type surge-dampening device. Include extension for use on insulated piping.
- B. Valves: Brass ball, with ASME B1.20.1 pipe threads.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install thermowells with socket extending one-third of pipe diameter and in vertical position in piping tees.
- B. Install thermowells of sizes required to match thermometer connectors. Include bushings if required to match sizes.
- C. Install thermowells with extension on insulated piping.
- D. Fill thermowells with heat-transfer medium.
- E. Install direct-mounted thermometers in thermowells and adjust vertical and tilted positions.
- F. Install direct-mounted pressure gages in piping tees with pressure gage located on pipe at the most readable position.
- G. Install valve and snubber in piping for each pressure gage for fluids.
- H. Install thermometers and gages as detailed.

### **3.2 CONNECTIONS**

- A. Install meters and gages adjacent to machines and equipment to allow service and maintenance of meters, gages, machines, and equipment.

### **3.3 ADJUSTING**

- A. Adjust faces of meters and gages to proper angle for best visibility.
- B. Thermometer stems shall be of length to match thermowell insertion length.

### **3.4 THERMOMETER SCALE-RANGE SCHEDULE**

- A. Scale Range for all Piping: Minus 40 to plus 160 deg F.

### **3.5 PRESSURE-GAGE SCALE-RANGE SCHEDULE**

- A. Scale Range for all Piping: 0 to 160 psi.

END OF SECTION 230519

**SECTION 230523.12**  
**BALL VALVES FOR HVAC PIPING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Bronze ball valves.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of valve.

**PART 2 - PRODUCTS**

**2.1 GENERAL REQUIREMENTS FOR VALVES**

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
1. ASME B1.20.1 for threads for threaded-end valves.
  2. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
  3. ASME B16.18 for solder-joint connections.
  4. ASME B31.1 for power piping valves.
  5. ASME B31.9 for building services piping valves.
- C. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- D. Refer to HVAC valve schedule articles for applications of valves.
- E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valve Actuator Types:

1. Gear Actuator: For quarter-turn valves NPS 4 and larger.
2. Handlever: For quarter-turn valves smaller than NPS 4.

H. Valves in Insulated Piping:

1. Include 2-inch stem extensions.
2. Extended operating handle of non-thermal-conductive material, and protective sleeves that allow operation of valves without breaking the vapor seals or disturbing insulation.
3. Memory stops that are fully adjustable after insulation is applied.

I. Valve Bypass and Drain Connections: MSS SP-45.

## 2.2 BRONZE BALL VALVES

A. Bronze Ball Valves, Two-Piece with Full Port and Stainless-Steel Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Conbraco Industries, Inc.
  - b. Hammond Valve.
  - c. Milwaukee Valve Company.
2. Description:
  - a. Standard: MSS SP-110.
  - b. SWP Rating: 150 psig.
  - c. CWP Rating: 600 psig.
  - d. Body Design: Two-piece.
  - e. Body Material: Bronze.
  - f. Ends: Threaded.
  - g. Seats: PTFE.
  - h. Stem: Stainless steel.
  - i. Ball: Stainless steel, vented.
  - j. Port: Full.

## PART 3 - EXECUTION

### 3.1 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

### **3.2 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS**

- A. If valves with specified SWP classes or CWP ratings are unavailable, the same types of valves with higher SWP classes or CWP ratings may be substituted.
- B. Select valves with the following end connections:
  - 1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
  - 2. For Steel Piping, NPS 2 and Smaller: Threaded ends.

### **3.3 WATER/GLYCOL VALVE SCHEDULE**

- A. Pipe NPS 2 and Smaller: Bronze ball valves, two-piece, with stainless-steel trim, and full port.
  - 1. Valves may be provided with solder-joint ends instead of threaded ends.

END OF SECTION 230523.12



## SECTION 230523.13

### BUTTERFLY VALVES FOR HVAC PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Iron, single-flange butterfly valves.
2. Chainwheels.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of valve.

#### PART 2 - PRODUCTS

##### 2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
1. ASME B16.1 for flanges on iron valves.
  2. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
  3. ASME B31.1 for power piping valves.
  4. ASME B31.9 for building services piping valves.
- C. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- D. Valve Sizes: Same as upstream piping unless otherwise indicated.
- E. Valve Actuator Types:
1. Gear Actuator: For valves NPS 8 and larger.
  2. Handlever: For valves NPS 6 and smaller.

3. Chainwheel: Device for attachment to gear, stem, or other actuator of size and with chain for mounting height, according to "Valve Installation" Article.

F. Valves in Insulated Piping: With 2-inch stem extensions with extended necks.

## 2.2 IRON, SINGLE-FLANGE BUTTERFLY VALVES

A. Iron, Single-Flange Butterfly Valves with Ductile-Iron Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Cooper Cameron Valves.
  - b. DeZURIK.
  - c. Hammond Valve.
  - d. NIBCO INC.
  - e. Watts; a Watts Water Technologies company.
2. Description:
  - a. Standard: MSS SP-67, Type I.
  - b. CWP Rating: 150 psig.
  - c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
  - d. Body Material: ASTM A 126, cast iron or ASTM A 536, ductile iron.
  - e. Seat: EPDM.
  - f. Stem: One- or two-piece stainless steel.
  - g. Disc: Nickel-plated or -coated ductile iron.

## 2.3 CHAINWHEELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Babbitt Steam Specialty Co.
2. Roto Hammer Industries.
3. Trumbull Industries.

B. Description: Valve actuation assembly with sprocket rim, chain guides, chain, and attachment brackets for mounting chainwheels directly to hand wheels.

1. Sprocket Rim with Chain Guides: Ductile iron, of type and size required for valve. Include zinc or epoxy coating.
2. Chain: Hot-dip, galvanized steel, of size required to fit sprocket rim.

## **PART 3 - EXECUTION**

### **3.1 VALVE INSTALLATION**

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.
- E. Install chainwheels on operators for butterfly valves NPS 4 and larger and more than 96 inches above floor. Extend chains to 60 inches above finished floor.

### **3.2 ADJUSTING**

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

### **3.3 HEATING-WATER VALVE SCHEDULE**

- A. Pipe NPS 2-1/2 and Larger:
  - 1. Iron, Single-Flange Butterfly Valves, NPS 2-1/2 to NPS 12: 200 CWP, EPDM seat, ductile-iron disc.

END OF SECTION 230523.13

## SECTION 230529

### HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Fastener systems.
5. Equipment supports.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following; include Product Data for components:
1. Trapeze pipe hangers.
  2. Equipment supports.

#### PART 2 - PRODUCTS

##### 2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.

2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel or stainless steel.

## **2.2 TRAPEZE PIPE HANGERS**

- A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

## **2.3 THERMAL-HANGER SHIELD INSERTS**

- A. Insulation-Insert Material for Cold Piping: ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psi minimum compressive strength and vapor barrier.
- B. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- C. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

## **2.4 FASTENER SYSTEMS**

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless-steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

## **2.5 EQUIPMENT SUPPORTS**

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

## **2.6 MISCELLANEOUS MATERIALS**

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, non-shrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Non-staining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

## **PART 3 - EXECUTION**

### **3.1 HANGER AND SUPPORT INSTALLATION**

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
  1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
  2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- D. Fastener System Installation:
  1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
  2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- G. Install hangers and supports to allow controlled thermal movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- H. Install lateral bracing with pipe hangers and supports to prevent swaying.
- I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping.

- J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- L. Insulated Piping:
  - 1. Attach clamps and spacers to piping.
    - a. Piping Operating Above Ambient Air Temperature: Clamp may project through insulation.
    - b. Piping Operating Below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
    - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
  - 2. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
  - 3. Shield Dimensions for Pipe: Not less than the following:
    - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
    - b. NPS 4: 12 inches long and 0.06 inch thick.
    - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
  - 4. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

### 3.2 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

### 3.3 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

### 3.4 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

### 3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. Touchup: Provide cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing repair paint to comply with ASTM A 780.

### 3.6 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use carbon-steel pipe hangers and supports and metal trapeze pipe hangers and attachments for general service applications.



- E. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.
- F. Use thermal-hanger shield inserts for insulated piping and tubing.
- G. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated, stationary pipes NPS 1/2 to NPS 30.
  2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
  3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
  4. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of non-insulated, stationary pipes NPS 1/2 to NPS 8.
  5. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
- H. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- I. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
  2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
- J. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
  2. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
  3. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
  4. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
  5. C-Clamps (MSS Type 23): For structural shapes.
  6. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:

- a. Light (MSS Type 31): 750 lb.
  - b. Medium (MSS Type 32): 1500 lb.
  - c. Heavy (MSS Type 33): 3000 lb.
- 7. Side-Beam Brackets (MSS Type 34): For sides of steel beams.
  - 8. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
- K. Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
- 1. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- L. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- M. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 230529

## SECTION 230548.13

### VIBRATION CONTROLS FOR HVAC

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Elastomeric isolation pads.
2. Elastomeric isolation mounts.
3. Elastomeric hangers.
4. Spring hangers.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show coordination of vibration isolation device installation for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and restraints.
- B. Welding certificates.
- C. Wind-Force Performance Certification: Provide special certification for HVAC components subject to high wind exposure and impact damage and designated on Drawings or in the Specifications to require wind-force performance certification.
1. Provide equipment manufacturer's written certification for each designated HVAC device, stating that it will remain in place and operable following the design wind event and comply with all requirements of authorities having jurisdiction.
  2. Provide manufacturer's written certification for each designated louver, damper, or similar device, stating that it will remain in place and protect opening from penetration of windborne debris and comply with all requirements of authorities having jurisdiction.
  3. Certification must be based on ICC-ES or similar nationally recognized testing standard procedures acceptable to authorities having jurisdiction.

## 1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Wind-Load-Restraint Device Load Ratings: Devices to be tested and rated in accordance with applicable code requirements and authorities having jurisdiction. Devices to be listed by a nationally recognized third party that requires periodic follow-up inspections and has a listing directory available to the public. Provide third-party listing by one or more of the following: ICC-ES product listing, UL product listing, FM Approvals, an evaluation service member of ICC-ES, or an agency acceptable to authorities having jurisdiction.

## PART 2 - PRODUCTS

### 2.1 ELASTOMERIC ISOLATION PADS

- A. Elastomeric Isolation Pads:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Ace Mountings Co., Inc.
    - b. California Dynamics Corporation.
    - c. Isolation Technology, Inc.
    - d. Kinetics Noise Control, Inc.
    - e. Mason Industries, Inc.
    - f. Vibration Eliminator Co., Inc.
    - g. Vibration Isolation.
    - h. Vibration Mountings & Controls, Inc.
  - 2. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area.
  - 3. Size: Factory or field cut to match requirements of supported equipment.
  - 4. Pad Material: Oil- and water-resistant rubber.

### 2.2 ELASTOMERIC ISOLATION MOUNTS

- A. Elastomeric Isolation Mounts:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

- a. Ace Mountings Co., Inc.
- b. California Dynamics Corporation.
- c. Isolation Technology, Inc.
- d. Kinetics Noise Control, Inc.
- e. Mason Industries, Inc.
- f. Vibration Eliminator Co., Inc.
- g. Vibration Isolation.
- h. Vibration Mountings & Controls, Inc.

2. Mounting Plates:

- a. Top Plate: Encapsulated steel load transfer top plates, factory drilled and threaded with threaded studs or bolts.
- b. Baseplate: Encapsulated steel bottom plates with holes provided for anchoring to support structure.

3. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

## 2.3 ELASTOMERIC HANGERS

A. Elastomeric Mount in a Steel Frame with Upper and Lower Steel Hanger Rods: .

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - a. Ace Mountings Co., Inc.
  - b. California Dynamics Corporation.
  - c. Kinetics Noise Control, Inc.
  - d. Mason Industries, Inc.
  - e. Vibration Eliminator Co., Inc.
  - f. Vibration Mountings & Controls, Inc.
2. Frame: Steel, fabricated with a connection for an upper threaded hanger rod and an opening on the underside to allow for a maximum of 30 degrees of angular lower hanger-rod misalignment without binding or reducing isolation efficiency.
3. Damping Element: Molded, oil-resistant rubber, neoprene, or other elastomeric material with a projecting bushing for the underside opening preventing steel-to-steel contact.

## 2.4 SPRING HANGERS

A. Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - a. Ace Mountings Co., Inc.
  - b. California Dynamics Corporation.
  - c. Kinetics Noise Control, Inc.
  - d. Mason Industries, Inc.
  - e. Vibration Eliminator Co., Inc.
  - f. Vibration Isolation.
  - g. Vibration Mountings & Controls, Inc.
2. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
7. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
8. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
9. Self-centering hanger rod cap to ensure concentricity between hanger rod and support spring coil.

## **PART 3 - EXECUTION**

### **3.1 APPLICATIONS**

- A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by an evaluation service member of ICC-ES, OSHPD, or an agency acceptable to authorities having jurisdiction.
- B. Hanger-Rod Stiffeners: Install hanger-rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to wind-load forces.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength is adequate to carry static and wind force loads within specified loading limits.

### **3.2 INSTALLATION OF VIBRATION AND WIND-LOAD CONTROL DEVICES**

- A. Provide vibration and wind-load control devices for systems and equipment where indicated in Equipment Schedules or Vibration-Control Device Schedules on Drawings, where Specifications indicate they are to be installed on specific equipment and systems, and where required by applicable codes.
- B. Installation of vibration isolators and wind-load restraints must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.

### **3.3 ADJUSTING**

- A. Adjust isolators after system is at operating weight.

END OF SECTION 230548.13

## SECTION 230553

### IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

#### PART 2 - PRODUCTS

##### 2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Brady Corporation.
  - b. Craftmark Pipe Markers.
  - c. Marking Services, Inc.
  - d. Seton Identification Products; a Brady Corporation company.
2. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, with predrilled holes for attachment hardware.
3. Letter and Background Color: As indicated for specific application under Part 3.
4. Maximum Temperature: Able to withstand temperatures of up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.



7. Fasteners: Stainless steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

## **2.2 WARNING SIGNS AND LABELS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Brady Corporation.
  2. Craftmark Pipe Markers.
  3. Marking Services Inc.
  4. Seton Identification Products; a Brady Corporation company.
- B. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, with predrilled holes for attachment hardware.
- C. Letter and Background Color: As indicated for specific application under Part 3.
- D. Maximum Temperature: Able to withstand temperatures of up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless steel rivets or self-taping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information plus emergency notification instructions.

## **2.3 PIPE LABELS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Brady Corporation.
  2. Craftmark Pipe Markers.

3. Marking Services Inc.
  4. Seton Identification Products; a Brady Corporation company.
- B. General Requirements for Manufactured Pipe Labels: Preprinted, color coded, with lettering indicating service and showing flow direction in accordance with ASME A13.1.
- C. Letter and Background Color: As indicated for specific application under Part 3.
- D. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.
- E. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- F. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings. Also include:
1. Pipe size.
  2. Flow-Direction Arrows: Include flow-direction arrows on distribution piping. Arrows may be either integral with label or applied separately.
  3. Lettering Size: At least 1-1/2 inches high.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Clean piping and equipment surfaces of incompatible primers, paints, and encapsulants, as well as dirt, oil, grease, release agents, and other substances that could impair bond of identification devices.

### **3.2 INSTALLATION, GENERAL REQUIREMENTS**

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.
- D. Locate identifying devices so that they are readily visible from the point of normal approach.

### **3.3 INSTALLATION OF EQUIPMENT LABELS, WARNING SIGNS, AND LABELS**

- A. Permanently fasten labels on each item of mechanical equipment.
- B. Sign and Label Colors:
  - 1. Black letters on a white background.
- C. Locate equipment labels where accessible and visible.

### **3.4 INSTALLATION OF PIPE LABELS**

- A. Install pipe labels showing service and flow direction with permanent adhesive on pipes.
- B. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
  - 1. Within 3 ft. of each valve and control device.
  - 2. At access doors, manholes, and similar access points that permit view of concealed piping.
  - 3. Within 3 ft. of equipment items and other points of origination and termination.
  - 4. Spaced at maximum intervals of 50 ft. along each run. Reduce intervals to 25 ft. in areas of congested piping, ductwork, and equipment.
- C. Do not apply plastic pipe labels or plastic tapes directly to bare pipes conveying fluids at temperatures of 125 deg F or higher. Where these pipes are to remain uninsulated, use a short section of insulation or use stenciled labels.
- D. Flow-Direction Arrows: Use arrows to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.
- E. Pipe-Label Color Schedule:
  - 1. Heating Piping: Red letters on white background.
  - 2. Refrigerant Piping: Black letters on an ANSI Z535.1 safety-orange background.

END OF SECTION 230553

## SECTION 230593

### TESTING, ADJUSTING, AND BALANCING FOR HVAC

#### PART 1 - GENERAL

##### 1.1 SECTION REQUIREMENTS

- A. Submittals:
  - 1. Certified TAB reports.
  - 2. Documentation of work performed per ASHRAE 62.1, Section 7.2.2 - "Air Balancing."
  - 3. Documentation of work performed per ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."
- B. TAB Firm Qualifications: AABC, NEBB, or TABB certified.
- C. TAB Report Forms: Standard TAB contractor's forms approved by Architect.
- D. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine the approved submittals for HVAC systems and equipment.
- C. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- D. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- E. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

- F. Examine terminal units and verify that they are accessible and their controls are connected and functioning.
- G. Examine automatic temperature system components to verify the following:
  - 1. Dampers, valves, and other controlled devices are operated by the intended controller.
  - 2. Dampers and valves are in the position indicated by the controller.
  - 3. Integrity of dampers and valves for free and full operation and for tightness of fully closed and fully open positions. This includes dampers in multi-zone units, mixing boxes, and variable-air-volume terminals.
  - 4. Automatic modulating and shutoff valves, including two-way valves, are properly connected.
  - 5. Thermostats are located to avoid adverse effects of sunlight, drafts, and cold walls.
  - 6. Sensors are located to sense only the intended conditions.
  - 7. Sequence of operation for control modes is according to the Contract Documents.
  - 8. Controller set points are set at indicated values.
  - 9. Interlocked systems are operating.
  - 10. Changeover from heating to cooling mode occurs according to indicated values.
- H. Report deficiencies discovered before and during performance of test and balance procedures.

### **3.2 GENERAL PROCEDURES FOR TESTING AND BALANCING**

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance"; ASHRAE 111; NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems"; or SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing"; and in this Section.
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

### **3.3 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS**

- A. Prepare schematic diagrams of systems' "as-built" duct layouts.
- B. Determine the best locations in main and branch ducts for accurate duct airflow measurements.
- C. Verify that motor starters are equipped with properly sized thermal protection.

- D. Check for airflow blockages.
- E. Check condensate drains for proper connections and functioning.
- F. Check for proper sealing of air-handling unit components.
- G. Check for proper sealing of air duct system.

### **3.4 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS**

- A. Prepare test reports with pertinent design data; number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against approved pump flow rate.
- B. Prepare schematic diagrams of systems' "as-built" piping layouts.
- C. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above:
  - 1. Open all manual valves for maximum flow.
  - 2. Check liquid level in expansion tank.
  - 3. Check makeup-water-station pressure gage for adequate pressure for highest vent.
  - 4. Set system controls so automatic valves are wide open.
  - 5. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.

### **3.5 TOLERANCES**

- A. Set HVAC system airflow and water flow rates within the following tolerances:
  - 1. All Air and Water Outlets: Plus or minus 10 percent.

END OF SECTION 230593

**SECTION 230713**  
**DUCT INSULATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes insulating the following duct services:
1. Indoor, concealed supply and outdoor air.
  2. Indoor, exposed supply and outdoor air.
  3. Indoor, concealed return located in unconditioned space.
  4. Indoor, exposed return located in unconditioned space.
  5. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
  6. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
  7. Outdoor, concealed supply and return.
  8. Outdoor, exposed supply and return.
- B. Related Sections:
1. Section 230719 "HVAC Piping Insulation."
  2. Section 233113 "Metal Ducts" for duct liners.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
  2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
  3. Detail application of field-applied jackets.
  4. Detail application at linkages of control devices.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Field quality-control reports.

## 1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
  2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

## PART 2 - PRODUCTS

### 2.1 INSULATION MATERIALS

- A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Mineral Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. CertainTeed Corporation.
    - b. Johns Manville; a Berkshire Hathaway company.
    - c. Knauf Insulation.
    - d. Manson Insulation Inc.
    - e. Owens Corning.



- G. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
- a. CertainTeed Corporation.
  - b. Johns Manville; a Berkshire Hathaway company.
  - c. Knauf Insulation.
  - d. Manson Insulation Inc.
  - e. Owens Corning.

## 2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
- a. Childers Brand; H. B. Fuller Construction Products.
  - b. Eagle Bridges - Marathon Industries.
  - c. Foster Brand; H. B. Fuller Construction Products.
  - d. Mon-Eco Industries, Inc.
- C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
- a. Childers Brand; H. B. Fuller Construction Products.
  - b. Eagle Bridges - Marathon Industries.
  - c. Foster Brand; H. B. Fuller Construction Products.
  - d. Mon-Eco Industries, Inc.

## 2.3 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Foster Brand; H. B. Fuller Construction Products.
    - b. Knauf Insulation.
    - c. Vimasco Corporation.
  - 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
  - 3. Service Temperature Range: Minus 20 to plus 180 deg F.
  - 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
  - 5. Color: White.
- C. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below ambient services.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. Eagle Bridges - Marathon Industries.
    - c. Foster Brand; H. B. Fuller Construction Products.
  - 2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
  - 3. Service Temperature Range: Minus 50 to plus 220 deg F.
  - 4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
  - 5. Color: White.

## 2.4 SEALANTS

- A. FSK and Metal Jacket Flashing Sealants:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. Eagle Bridges - Marathon Industries.

- c. Foster Brand; H. B. Fuller Construction Products.
  - d. Mon-Eco Industries, Inc.
- 2. Materials shall be compatible with insulation materials, jackets, and substrates.
  - 3. Fire- and water-resistant, flexible, elastomeric sealant.
  - 4. Service Temperature Range: Minus 40 to plus 250 deg F.
  - 5. Color: Aluminum.

## **2.5 FACTORY-APPLIED JACKETS**

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
  - 1. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.
  - 2. FSP Jacket: Aluminum-foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C 1136, Type II.

## **2.6 FIELD-APPLIED FABRIC-REINFORCING MESH**

- A. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for ducts.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products.

## **2.7 FIELD-APPLIED JACKETS**

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. ITW Insulation Systems; Illinois Tool Works, Inc.
    - c. RPR Products, Inc.
  - 2. Sheet and roll stock ready for shop or field sizing.

3. Finish and thickness are indicated in field-applied jacket schedules.
  4. Moisture Barrier for Outdoor Applications: Heat-bonded polyethylene and kraft paper or 2.5-mil-thick polysurlyn.
- C. Self-Adhesive Outdoor Jacket: 60-mil-thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a cross-laminated polyethylene film covered with stucco-embossed aluminum-foil facing.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Polyguard Products, Inc.

## 2.8 TAPES

- A. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Avery Dennison Corporation, Specialty Tapes Division.
    - b. Compac Corporation.
    - c. Ideal Tape Co., Inc., an American Biltrite Company.
    - d. Knauf Insulation.
    - e. Venture Tape.
  2. Width: 3 inches.
  3. Thickness: 6.5 mils.
  4. Adhesion: 90 ounces force/inch in width.
  5. Elongation: 2 percent.
  6. Tensile Strength: 40 lbf/inch in width.
  7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- B. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Avery Dennison Corporation, Specialty Tapes Division.
    - b. Compac Corporation.
    - c. Ideal Tape Co., Inc., an American Biltrite Company.

- d. Knauf Insulation.
- e. Venture Tape.
- 2. Width: 2 inches.
- 3. Thickness: 3.7 mils.
- 4. Adhesion: 100 ounces force/inch in width.
- 5. Elongation: 5 percent.
- 6. Tensile Strength: 34 lbf/inch in width.

## 2.9 SECUREMENTS

- A. Aluminum Bands: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing seal or closed seal.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. ITW Insulation Systems; Illinois Tool Works, Inc.
    - b. RPR Products, Inc.
- B. Insulation Pins and Hangers:
  - 1. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
    - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      - 1) AGM Industries, Inc.
      - 2) Gemco.
      - 3) Harcast, Inc.
      - 4) Midwest Fasteners, Inc.
      - 5) Nelson Stud Welding.
    - b. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
    - c. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
    - d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.

2. Nonmetal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate fastened to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
  - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - 1) Gemco.
    - 2) Midwest Fasteners, Inc.
  - b. Baseplate: Perforated, nylon sheet, 0.030 inch thick by 1-1/2 inches in diameter.
  - c. Spindle: Nylon, 0.106-inch-diameter shank, length to suit depth of insulation indicated, up to 2-1/2 inches.
  - d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.
3. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick, aluminum or stainless-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
  - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - 1) AGM Industries, Inc.
    - 2) Gemco.
    - 3) Hardcast, Inc.
    - 4) Midwest Fasteners, Inc.
    - 5) Nelson Stud Welding.
  - b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.
4. Nonmetal Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick nylon sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
  - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - 1) Gemco.
    - 2) Midwest Fasteners, Inc.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

- D. Wire: 0.062-inch soft-annealed, stainless steel.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
- a. C & F Wire.

## **2.10 CORNER ANGLES**

- A. Aluminum Corner Angles: 0.040-inch-thick, minimum 1 by 1 inch, aluminum according to ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

### **3.2 GENERAL INSTALLATION REQUIREMENTS**

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Keep insulation materials dry during application and finishing.
- G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- H. Install insulation with least number of joints practical.

- I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
1. Install insulation continuously through hangers and around anchor attachments.
  2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
  3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
- J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- K. Install insulation with factory-applied jackets as follows:
1. Draw jacket tight and smooth.
  2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
  3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.
    - a. For below ambient services, apply vapor-barrier mastic over staples.
  4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
  5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

### 3.3 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.



1. Seal penetrations with flashing sealant.
  2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
  4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
1. Seal penetrations with flashing sealant.
  2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
  4. Seal jacket to wall flashing with flashing sealant.
- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.
1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.
- E. Insulation Installation at Floor Penetrations:
1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
  2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

### **3.4 INSTALLATION OF MINERAL-FIBER INSULATION**

- A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
  2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.

3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
    - a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    - b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    - d. Do not overcompress insulation during installation.
    - e. Impale insulation over pins and attach speed washers.
    - f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
  4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
    - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
    - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
  5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
  6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
  7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.
- B. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
  2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.

3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
  - a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
  - b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
  - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
  - d. Do not over-compress insulation during installation.
  - e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1-inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
  - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
  - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

### **3.5 FIELD-APPLIED JACKET INSTALLATION**

- A. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.

4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch-wide joint strips at end joints.
  5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.
- B. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

### 3.6 FINISHES

- A. Insulation with ASJ or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
    - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.
- C. Do not field paint aluminum or stainless-steel jackets.

### 3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

### 3.8 DUCT INSULATION SCHEDULE

- A. Refer to Drawings.

### 3.9 FIELD-APPLIED JACKET SCHEDULE

- A. Refer to Drawings.

**END OF SECTION 230713**

## SECTION 230719

### HVAC PIPING INSULATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section includes insulating the following HVAC piping systems:

1. Heating hot-water and hot-glycol piping, indoors.
2. Condensate drain piping, indoors.
3. Refrigerant suction and hot-gas piping, indoors and outdoors.

B. Related Sections:

1. Section 230713 "Duct Insulation."

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail attachment and covering of heat tracing inside insulation.
3. Detail insulation application at pipe expansion joints for each type of insulation.
4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
5. Detail removable insulation at piping specialties.
6. Detail application of field-applied jackets.
7. Detail application at linkages of control devices.

##### 1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

##### 1.4 QUALITY ASSURANCE

A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive,

mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

## 1.5 ADDITIONAL GENERAL REQUIREMENTS

- A. All outdoor, exposed piping shall have a protective jacket.
- B. On all outdoor, chilled-water piping insulation should be completely vapor-sealed before protective jacketing is applied.
- C. For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:
  1.  $T = r\{(1 + t/r)^{K/k} - 1\}$  where:
    - a. T = minimum insulation thickness,
    - b. r = actual outside radius of pipe,
    - c. t = insulation thickness listed in the table for applicable fluid temperature and pipe size,
    - d. K = conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature (Btu x in/h x ft<sup>2</sup> x deg F), and
    - e. K = the upper value of the conductivity range listed in the table for the applicable fluid temperature.

## PART 2 - PRODUCTS

### 2.1 INSULATION MATERIALS

- A. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- E. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Aeroflex USA, Inc.
- b. Armacell LLC.
- c. K-Flex USA.

F. Mineral-Fiber, Preformed Pipe Insulation:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Johns Manville; a Berkshire Hathaway company.
- b. Knauf Insulation.
- c. Manson Insulation Inc.
- d. Owens Corning.

2. Type I, 850 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

## 2.2 INSULATING CEMENTS

A. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Ramco Insulation, Inc.

## 2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Aeroflex USA, Inc.
- b. Armacell LLC.

- c. Foster Brand; H. B. Fuller Construction Products.
  - d. K-Flex USA.
- C. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. Eagle Bridges - Marathon Industries.
    - c. Foster Brand; H. B. Fuller Construction Products.
    - d. Mon-Eco Industries, Inc.
- D. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. Eagle Bridges - Marathon Industries.
    - c. Foster Brand; H. B. Fuller Construction Products.
    - d. Mon-Eco Industries, Inc.
- E. PVC Jacket Adhesive: Compatible with PVC jacket.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Dow Corning Corporation.
    - b. Johns Manville; a Berkshire Hathaway company.
    - c. P.I.C. Plastics, Inc.
    - d. Speedline Corporation.

## 2.4 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:



- a. Foster Brand; H. B. Fuller Construction Products.
    - b. Knauf Insulation.
    - c. Vimasco Corporation.
  2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
  3. Service Temperature Range: Minus 20 to plus 180 deg F.
  4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
  5. Color: White.
- C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below-ambient services.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. Eagle Bridges - Marathon Industries.
    - c. Foster Brand; H. B. Fuller Construction Products.
    - d. Mon-Eco Industries, Inc.
  2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
  3. Service Temperature Range: 0 to 180 deg F.
  4. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
  5. Color: White.
- D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below-ambient services.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Childers Brand; H. B. Fuller Construction Products.
    - b. Eagle Bridges - Marathon Industries.
    - c. Foster Brand; H. B. Fuller Construction Products.
  2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
  3. Service Temperature Range: Minus 50 to plus 220 deg F.
  4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
  5. Color: White.
- E. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Childers Brand; H. B. Fuller Construction Products.
  - b. Eagle Bridges - Marathon Industries.
  - c. Foster Brand; H. B. Fuller Construction Products.
  - d. Knauf Insulation.
  - e. Mon-Eco Industries, Inc.
  - f. Vimasco Corporation.
2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
  3. Service Temperature Range: Minus 20 to plus 180 deg F.
  4. Solids Content: 60 percent by volume and 66 percent by weight.
  5. Color: White.

## 2.5 SEALANTS

### A. Joint Sealants:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Childers Brand; H. B. Fuller Construction Products.
  - b. Eagle Bridges - Marathon Industries.
  - c. Foster Brand; H. B. Fuller Construction Products.
  - d. Mon-Eco Industries, Inc.
  - e. Pittsburgh Corning Corporation.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Permanently flexible, elastomeric sealant.
4. Service Temperature Range: Minus 100 to plus 300 deg F.
5. Color: White or gray.

### B. FSK and Metal Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Childers Brand; H. B. Fuller Construction Products.
  - b. Eagle Bridges - Marathon Industries.
  - c. Foster Brand; H. B. Fuller Construction Products.
  - d. Mon-Eco Industries, Inc.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Childers Brand; H. B. Fuller Construction Products.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.

**2.6 FACTORY-APPLIED JACKETS**

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. Vinyl Jacket: White vinyl with a permeance of 1.3 perms when tested according to ASTM E 96/E 96M, Procedure A, and complying with NFPA 90A and NFPA 90B.

**2.7 FIELD-APPLIED JACKETS**

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Johns Manville; a Berkshire Hathaway company.
  - b. P.I.C. Plastics, Inc.
  - c. Proto Corporation.
  - d. Speedline Corporation.
2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White.
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

- a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

## 2.8 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Avery Dennison Corporation, Specialty Tapes Division.
    - b. Compac Corporation.
    - c. Ideal Tape Co., Inc., an American Biltrite Company.
    - d. Knauf Insulation.
    - e. Venture Tape.
  2. Width: 3 inches.
  3. Thickness: 11.5 mils.
  4. Adhesion: 90 ounces force/inch in width.
  5. Elongation: 2 percent.
  6. Tensile Strength: 40 lbf/inch in width.
  7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Compac Corporation.
    - b. Ideal Tape Co., Inc., an American Biltrite Company.
    - c. Venture Tape.
  2. Width: 2 inches.
  3. Thickness: 6 mils.
  4. Adhesion: 64 ounces force/inch in width.
  5. Elongation: 500 percent.
  6. Tensile Strength: 18 lbf/inch in width.

## 2.9 SECUREMENTS

- A. Aluminum Bands: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 3/4 inch wide with wing seal or closed seal.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. ITW Insulation Systems; Illinois Tool Works, Inc.
    - b. RPR Products, Inc.
- B. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.
- C. Wire: 0.062-inch soft-annealed, stainless steel.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, C & F Wire.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

### 3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
  - 1. Install insulation continuously through hangers and around anchor attachments.
  - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
  - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
  - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
  - 1. Draw jacket tight and smooth.
  - 2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
  - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
    - a. For below-ambient services, apply vapor-barrier mastic over staples.
  - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
  - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- P. For above-ambient services, do not install insulation to the following:
  - 1. Vibration-control devices.
  - 2. Testing agency labels and stamps.
  - 3. Nameplates and data plates.
  - 4. Manholes.
  - 5. Handholes.
  - 6. Cleanouts.

### 3.3 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
  - 1. Seal penetrations with flashing sealant.
  - 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  - 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
  - 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.
- C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
  - 1. Seal penetrations with flashing sealant.
  - 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  - 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
  - 4. Seal jacket to wall flashing with flashing sealant.
- D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.



- E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
  - 1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.
- F. Insulation Installation at Floor Penetrations:
  - 1. Pipe: Install insulation continuously through floor penetrations.
  - 2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

### 3.4 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
  - 1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
  - 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
  - 3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
  - 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
  - 5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.



6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
  7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
  8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
  9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
  2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
  3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
  4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
  5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

### **3.5 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION**

- A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

### 3.6 INSTALLATION OF MINERAL-FIBER PREFORMED PIPE INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

**3.7 FIELD-APPLIED JACKET INSTALLATION**

A. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

**3.8 FINISHES**

A. Do not field-paint aluminum or stainless-steel jackets.

### **3.9 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
- B. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

### **3.10 PIPING INSULATION SCHEDULE, GENERAL**

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
  - 1. Drainage piping located in crawl spaces.
  - 2. Underground piping.
  - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

### **3.11 PIPING INSULATION AND JACKET SCHEDULES**

- A. Refer to Drawings.

END OF SECTION 230719

**SECTION 232113**  
**HYDRONIC PIPING**

**PART 1 - GENERAL**

**1.1 SECTION REQUIREMENTS**

**A. Submittals:**

1. Product Data: For each type of product indicated.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A.** Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature:

1. All Piping: 150 psig at 200 deg F.

**2.2 PIPES, TUBES, AND FITTINGS**

- A.** Hard Copper Tubing: ASTM B 88, Type L or ASTM B 88, Type M with ASME B16.22 wrought-copper solder fittings and ASTM B 32, 95-5 tin antimony solder.
- B.** Steel Pipe: ASTM A 53, Schedule 40, plain ends with cast- or malleable-iron threaded fittings, Class 125.
- C.** Unions: ASME B16.39, malleable-iron, Class 150, hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends.
- D.** Flexible Connectors: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket; 150-psig minimum working pressure, 250 deg F maximum operating temperature.
- E.** Dielectric Unions: ASSE 1079; 150-psig minimum pressure rating; solder-joint copper alloy and threaded ferrous end connections.
- F.** Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, ends.

## 2.3 SPECIAL-DUTY VALVES

- A. Calibrated Plug Valves: 125-psig water working pressure, 250 deg F maximum operating temperature; bronze body with calibrated orifice. Provide with connections for portable differential pressure meter with integral check valves and seals. Valve shall have integral pointer and calibrated scale to register degree of valve opening.
- B. Pressure-Reducing Valves: Diaphragm-operated, cast-iron or brass-body valve, with low-inlet pressure check valve, inlet strainer removable without system shutdown, and noncorrosive valve seat and stem.
- C. Safety Relief Valves: Brass or bronze body with brass and rubber, wetted, internal working parts; to suit system pressure and heat capacity; according to ASME Boiler and Pressure Vessel Code: Section IV.

## 2.4 HYDRONIC SPECIALTIES

- A. Manual Air Vent: Bronze body and nonferrous internal parts; 150-psig working pressure, 225 deg F operating temperature; manually operated with screwdriver or thumbscrew.
- B. Y-Pattern Strainers: 125-psig working pressure; cast-iron body (ASTM A 126, Class B), flanged ends for NPS 2-1/2 and larger, threaded connections for NPS 2 and smaller, bolted cover, perforated Type 304 stainless-steel basket, and bottom drain connection.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping free of sags and bends and install fittings for changes in direction and branch connections.
- D. Use the fewest number of joints belowground and within floor slabs.
- E. Install piping at a uniform slope of 0.2 percent upward in the direction of flow.
- F. Make reductions in pipe sizes using eccentric reducer fitting installed with level side up.

- G. Install branch connections to mains using tee fittings in main with takeoff out the bottom of the main, except for up-feed risers, which shall have swing joint and takeoff out the top of the main line.
- H. Install unions in pipes adjacent to each valve, at final connections with each piece of equipment, and elsewhere as indicated.
- I. Install flexible connectors at inlet and discharge connections to pumps (except in-line pumps) and other vibration-producing equipment.
- J. Remove stems, seats, and packing of valves and accessible internal parts at piping specialties before soldering or brazing.

### 3.2 VALVE INSTALLATIONS

- A. Shutoff Duty: Use ball valves.
- B. Throttling Duty: Use balance valves.
- C. Install shutoff-duty valves at each branch connection to supply mains, at supply connection to each piece of equipment, and elsewhere as indicated.
- D. Install throttling-duty valves at each branch connection to return mains, at return connections to each piece of equipment, and elsewhere as indicated.
- E. Install calibrated plug valves on the outlet of each heating or cooling element and elsewhere as required to facilitate system balancing.
- F. Install drain valves at low points in mains, risers, branch lines, and elsewhere as required for system drainage, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple and cap.
- G. Install safety relief valves on hot-water generators and elsewhere as required by authorities having jurisdiction. Pipe discharge to floor drain without valves.
- H. Install manual air vents at high points in the system, at heat-transfer coils, all piping drops, and elsewhere as required for system air venting.
- I. Install valves with stem up. Allow clearance above stem for check mechanism removal.

### 3.3 SPECIALTIES INSTALLATIONS

- A. Install strainers on inlet side of each control valve, pressure-reducing valve, solenoid valve, and elsewhere as indicated.

### **3.4 TESTING, ADJUSTING, AND BALANCING**

- A. Clean and flush hydronic piping systems. Remove, clean, and replace strainer screens.
- B. Hydrostatically test completed piping at a pressure one and one-half times operating pressure. Isolate equipment before testing piping. Repair leaks and retest piping until there are no leaks.
- C. Balance water flow as required by Section 230593 "Testing, Adjusting, and Balancing for HVAC."

### **3.5 PIPING SCHEDULE**

- A. All Water, NPS 2 and Smaller: Drawn-temper copper tubing with soldered joints, or steel pipe with threaded joints.
- B. All Water, NPS 2-1/2 and Larger: Steel pipe with threaded or welded joints.

END OF SECTION 232113



**SECTION 232116**  
**HYDRONIC PIPING SPECIALTIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Hydronic specialty valves.
2. Air-control devices.
3. Strainers.
4. Connectors.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of product:

1. Include construction details and material descriptions for hydronic piping specialties.
2. Include rated capacities, operating characteristics, and furnished specialties and accessories.
3. Include flow and pressure drop curves based on manufacturer's testing for calibrated-orifice balancing valves and automatic flow-control valves.

**1.3 CLOSEOUT SUBMITTALS**

A. Operation and maintenance data.

**1.4 QUALITY ASSURANCE**

- A. Pipe Welding: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code: Section IX.
- B. Safety Valves and Pressure Vessels: Shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

## PART 2 - PRODUCTS

### 2.1 HYDRONIC SPECIALTY VALVES

#### A. Bronze, Calibrated-Orifice, Balancing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Armstrong Pumps, Inc.
  - b. Bell & Gossett; a Xylem brand.
  - c. TACO Comfort Solutions, Inc.
  - d. Victaulic Company.
2. Body: Bronze, ball or plug type with calibrated orifice or venturi.
3. Ball: Brass or stainless steel.
4. Plug: Resin.
5. Seat: PTFE.
6. End Connections: Threaded or socket.
7. Pressure Gage Connections: Integral seals for portable differential pressure meter.
8. Handle Style: Lever, with memory stop to retain set position.
9. CWP Rating: Minimum 125 psig.
10. Maximum Operating Temperature: 250 deg F.
11. Provide shutoff-duty valve.

### 2.2 AIR-CONTROL DEVICES

#### A. Manual Air Vents:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Armstrong Pumps, Inc.
  - b. Bell & Gossett; a Xylem brand.
  - c. TACO Comfort Solutions, Inc.
2. Body: Bronze.
3. Internal Parts: Nonferrous.
4. Operator: Screwdriver or thumbscrew.
5. Inlet Connection: NPS 1/2.
6. Discharge Connection: NPS 1/8.
7. CWP Rating: 150 psig.
8. Maximum Operating Temperature: 225 deg F.

## 2.3 STRAINERS

### A. Y-Pattern Strainers:

1. Body: ASTM A126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: Stainless-steel, 60-mesh strainer or perforated stainless-steel basket.
4. CWP Rating: 125 psig.

## 2.4 CONNECTORS

### A. Stainless-Steel Bellow, Flexible Connectors:

1. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.
2. End Connections: Threaded or flanged to match equipment connected.
3. Performance: Capable of 3/4-inch misalignment.
4. CWP Rating: 150 psig.
5. Maximum Operating Temperature: 250 deg F.

## PART 3 - EXECUTION

### 3.1 VALVE APPLICATIONS

- A. Install shutoff-duty valves at each branch connection to supply mains and at supply connection to each piece of equipment.
- B. Install calibrated-orifice, balancing valves at each branch connection to return main.
- C. Install calibrated-orifice, balancing valves in the return pipe of each heating or cooling terminal.

### 3.2 HYDRONIC SPECIALTIES INSTALLATION

- A. Install manual air vents at high points in piping, at heat-transfer coils, and elsewhere as required for system air venting.

END OF SECTION 232116

**SECTION 232300**  
**REFRIGERANT PIPING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Refrigerant pipes and fittings.
2. Refrigerant piping valves and specialties.
3. Refrigerants.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of valve, refrigerant piping, and refrigerant piping specialty.

B. Shop Drawings:

1. Show piping size and piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.

**1.3 INFORMATIONAL SUBMITTALS**

A. Field quality-control reports.

**1.4 CLOSEOUT SUBMITTALS**

A. Operation and Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals.

**1.5 QUALITY ASSURANCE**

- A. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."
- B. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Line Test Pressure for Refrigerant R-134a:
  - 1. Suction Lines for Air-Conditioning Applications: 115 psig.
  - 2. Suction Lines for Heat-Pump Applications: 225 psig.
  - 3. Hot-Gas and Liquid Lines: 225 psig.
- B. Line Test Pressure for Refrigerant R-407C:
  - 1. Suction Lines for Air-Conditioning Applications: 230 psig.
  - 2. Suction Lines for Heat-Pump Applications: 380 psig.
  - 3. Hot-Gas and Liquid Lines: 380 psig.
- C. Line Test Pressure for Refrigerant R-410A:
  - 1. Suction Lines for Air-Conditioning Applications: 300 psig.
  - 2. Suction Lines for Heat-Pump Applications: 535 psig.
  - 3. Hot-Gas and Liquid Lines: 535 psig.

### **2.2 COPPER TUBE AND FITTINGS**

- A. Copper Tube: ASTM B 280, Type ACR.
- B. Wrought-Copper Fittings: ASME B16.22.
- C. Wrought-Copper Unions: ASME B16.22.
- D. Brazing Filler Metals: AWS A5.8/A5.8M.

### **2.3 VALVES AND SPECIALTIES**

- A. Diaphragm Packless Valves:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Danfoss Inc.
    - b. Heldon Products; Henry Technologies.
    - c. Parker Hannifin Corp.
    - d. Paul Mueller Company.

2. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
3. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
4. Operator: Rising stem and hand wheel.
5. Seat: Nylon.
6. End Connections: Socket, union, or flanged.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 275 deg F.

B. Packed-Angle Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
  - d. Paul Mueller Company.
2. Body and Bonnet: Forged brass or cast bronze.
3. Packing: Molded stem, back seating, and replaceable under pressure.
4. Operator: Rising stem.
5. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
6. Seal Cap: Forged-brass or Valox hex cap.
7. End Connections: Socket, union, threaded, or flanged.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 275 deg F.

C. Check Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
  - d. Paul Mueller Company.
2. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
3. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
4. Piston: Removable polytetrafluoroethylene seat.
5. Closing Spring: Stainless steel.
6. Manual Opening Stem: Seal cap, plated-steel stem, and graphite seal.
7. End Connections: Socket, union, threaded, or flanged.
8. Maximum Opening Pressure: 0.50 psig.
9. Working Pressure Rating: 500 psig.
10. Maximum Operating Temperature: 275 deg F.

D. Service Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
  - d. Paul Mueller Company.
2. Body: Forged brass with brass cap including key end to remove core.
3. Core: Removable ball-type check valve with stainless-steel spring.
4. Seat: Polytetrafluoroethylene.
5. End Connections: Copper spring.
6. Working Pressure Rating: 500 psig.

E. Safety Relief Valves: Comply with 2010 ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
  - d. Paul Mueller Company.
2. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
3. Piston, Closing Spring, and Seat Insert: Stainless steel.
4. Seat: Polytetrafluoroethylene.
5. End Connections: Threaded.
6. Working Pressure Rating: 400 psig.
7. Maximum Operating Temperature: 240 deg F.

F. Thermostatic Expansion Valves: Comply with AHRI 750.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Emerson Climate Technologies.
  - c. Heldon Products; Henry Technologies.
  - d. Paul Mueller Company.
2. Body, Bonnet, and Seal Cap: Forged brass or steel.
3. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
4. Packing and Gaskets: Non-asbestos.
5. Capillary and Bulb: Copper tubing filled with refrigerant charge.

6. Reverse-flow option (for heat-pump applications).
7. End Connections: Socket, flare, or threaded union.
8. Working Pressure Rating: To match refrigerant operating pressure..

G. Straight-Type Strainers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
2. Body: Welded steel with corrosion-resistant coating.
3. Screen: 100-mesh stainless steel.
4. End Connections: Socket or flare.
5. Working Pressure Rating: 500 psig.
6. Maximum Operating Temperature: 275 deg F.

H. Angle-Type Strainers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
2. Body: Forged brass or cast bronze.
3. Drain Plug: Brass hex plug.
4. Screen: 100-mesh monel.
5. End Connections: Socket or flare.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 275 deg F.

I. Moisture/Liquid Indicators:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
2. Body: Forged brass.
3. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
4. Indicator: Color coded to show moisture content in parts per million (ppm).



5. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
6. End Connections: Socket or flare.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 240 deg F.

J. Replaceable-Core Filter Dryers: Comply with AHRI 730.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
2. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
3. Filter Media: 10 microns, pleated with integral end rings; stainless-steel support.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Rated Flow: Match capacity of condensing unit.
9. Working Pressure Rating: 500 psig.
10. Maximum Operating Temperature: 240 deg F.

K. Permanent Filter Dryers: Comply with AHRI 730.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Danfoss Inc.
  - b. Heldon Products; Henry Technologies.
  - c. Parker Hannifin Corp.
2. Body and Cover: Painted-steel shell.
3. Filter Media: 10 microns, pleated with integral end rings; stainless-steel support.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Rated Flow: Match capacity of condensing unit.
9. Working Pressure Rating: 500 psig.
10. Maximum Operating Temperature: 240 deg F.

## 2.4 REFRIGERANTS

### A. ASHRAE 34, R-134a: Tetrafluoroethane.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Arkema Inc.
  - b. DuPont Fluorochemicals Div.
  - c. Genetron Refrigerants; Honeywell International Inc.
  - d. Mexichem Fluor Inc.

### B. ASHRAE 34, R-407C: Difluoromethane/Pentafluoroethane/1,1,1,2-Tetrafluoroethane.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Arkema Inc.
  - b. DuPont Fluorochemicals Div.
  - c. Genetron Refrigerants; Honeywell International Inc.
  - d. Mexichem Fluor Inc.

### C. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Arkema Inc.
  - b. DuPont Fluorochemicals Div.
  - c. Genetron Refrigerants; Honeywell International Inc.
  - d. Mexichem Fluor Inc.

## PART 3 - EXECUTION

### 3.1 PIPING APPLICATIONS FOR REFRIGERANT R-134a

- A. Suction Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.
- B. Hot-Gas and Liquid Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.
- C. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with soldered joints.

### 3.2 PIPING APPLICATIONS FOR REFRIGERANT R-407C

- A. Suction Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.
- B. Hot-Gas and Liquid Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.
- C. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with soldered joints.

### 3.3 PIPING APPLICATIONS FOR REFRIGERANT R-410A

- A. Suction Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.
- B. Hot-Gas and Liquid Lines: Copper, Type ACR, annealed- or drawn-temper tubing and wrought-copper fittings with brazed joints.
- C. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, annealed- or drawn-temper tubing and wrought-copper fittings with or joints.

### 3.4 VALVE AND SPECIALTY APPLICATIONS

- A. Install diaphragm packless valves in suction and discharge lines of compressor.
- B. Install service valves for gage taps at inlet and outlet of hot-gas bypass valves and strainers if they are not an integral part of valves and strainers.
- C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.
- D. Except as otherwise indicated, install diaphragm packless valves on inlet and outlet side of filter dryers.
- E. Install a full-size, three-valve bypass around filter dryers.
- F. Install solenoid valves upstream from each expansion valve and hot-gas bypass valve. Install solenoid valves in horizontal lines with coil at top.
- G. Install thermostatic expansion valves as close as possible to distributors on evaporators.
  - 1. Install valve so diaphragm case is warmer than bulb.
  - 2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.

3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.
- H. Install safety relief valves where required by 2010 ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.
- I. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.
- J. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for the device being protected:
  1. Solenoid valves.
  2. Thermostatic expansion valves.
  3. Hot-gas bypass valves.
  4. Compressor.
- K. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.
- L. Install receivers sized to accommodate pump-down charge.
- M. Install flexible connectors at compressors.

### 3.5 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping adjacent to machines to allow service and maintenance.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.

- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
- K. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection.
- L. Slope refrigerant piping as follows:
  - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
  - 2. Install horizontal suction lines with a uniform slope downward to compressor.
  - 3. Install traps and double risers to entrain oil in vertical runs.
  - 4. Liquid lines may be installed level.
- M. When brazing remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- N. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.
- O. Identify refrigerant piping and valves according to Section 230553 "Identification for HVAC Piping and Equipment."
- P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."

### 3.6 **PIPE JOINT CONSTRUCTION**

- A. Ream ends of pipes and tubes and remove burrs.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

- C. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
1. Use Type BCuP (copper-phosphorus) alloy for joining copper socket fittings with copper pipe.
  2. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze or steel.

### 3.7 HANGERS AND SUPPORTS

- A. Comply with requirements for pipe hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Install the following pipe attachments:
1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
  2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
  3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
  4. Spring hangers to support vertical runs.
  5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
- C. Install hangers for copper tubing with the following maximum spacing and minimum rod diameters:
1. NPS 1/2: Maximum span, 60 inches; minimum rod, 1/4 inch.
  2. NPS 5/8: Maximum span, 60 inches; minimum rod, 1/4 inch.
  3. NPS 1: Maximum span, 72 inches; minimum rod, 1/4 inch.
  4. NPS 1-1/4: Maximum span, 96 inches; minimum rod, 3/8 inch.
  5. NPS 1-1/2: Maximum span, 96 inches; minimum rod, 3/8 inch.
  6. NPS 2: Maximum span, 96 inches; minimum rod, 3/8 inch.
  7. NPS 2-1/2: Maximum span, 108 inches; minimum rod, 3/8 inch.
  8. NPS 3: Maximum span, 10 feet; minimum rod, 3/8 inch.
  9. NPS 4: Maximum span, 12 feet; minimum rod, 1/2 inch.
- D. Support multi-floor vertical runs at least at each floor.

### 3.8 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
1. Comply with ASME B31.5, Chapter VI.
  2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.

3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in "Performance Requirements" Article.
  - a. Fill system with nitrogen to the required test pressure.
  - b. System shall maintain test pressure at the manifold gage throughout duration of test.
  - c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
  - d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.
- B. Prepare test and inspection reports.

### 3.9 SYSTEM CHARGING

- A. Charge system using the following procedures:
  1. Install core in filter dryers after leak test but before evacuation.
  2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
  3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
  4. Charge system with a new filter-dryer core in charging line.

### 3.10 ADJUSTING

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
  1. Open shutoff valves in condenser water circuit.
  2. Verify that compressor oil level is correct.
  3. Open compressor suction and discharge valves.
  4. Open refrigerant valves except bypass valves that are used for other purposes.
  5. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION 232300

## SECTION 233113

### METAL DUCTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Single-wall round ducts and fittings.
3. Sheet metal materials.
4. Duct liner.
5. Sealants and gaskets.
6. Hangers and supports.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.

B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Factory- and shop-fabricated ducts and fittings.
3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
4. Elevation of bottom of ducts.
5. Fittings.
6. Reinforcement and spacing.
7. Seam and joint construction.
8. Penetrations through fire-rated and other partitions.
9. Equipment installation based on equipment being used on Project.
10. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
11. Hangers and supports, including methods for duct and building attachment and vibration isolation.
12. Provide sheet metal Shop Drawings for all areas and systems shown.



### **1.3 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Field quality-control reports.

### **1.4 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
  - 2. AWS D9.1/D9.1M, "Sheet Metal Welding Code," for duct joint and seam welding.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible".
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment," and Section 7 - "Construction and System Startup."
- C. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
- D. Duct Dimensions: Unless otherwise indicated, all duct dimensions indicated on Drawings are inside clear dimensions and do not include insulation or duct wall thickness.

### **2.2 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS**

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
  - 1. Construct ducts of galvanized sheet steel unless otherwise indicated.
  - 2. For ducts exposed to weather, construct of galvanized steel indicated by manufacturer to be suitable for outdoor installation.
- B. Transverse Joints: Fabricate joints in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. For ducts with longest side less than 36 inches, select joint types in accordance with Figure 2-1.
  2. For ducts with longest side 36 inches or greater, use flange joint connector Type T-22, T-24, T-24A, T-25a, or T-25b. Factory-fabricated flanged duct connection system may be used if submitted and approved by engineer of record.
- C. Longitudinal Seams: Select seam types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

## 2.3 SINGLE-WALL ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.
1. Construct ducts of galvanized sheet steel unless otherwise indicated.
  2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Ductmate Industries, Inc.
    - b. McGill AirFlow LLC.
    - c. SEMCO LLC.
- B. Transverse Joints: Select joint types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.
- C. Longitudinal Seams: Select seam types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
- D. Tees and Laterals: Select types and fabricate in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

## **2.4 SHEET METAL MATERIALS**

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
  1. Galvanized Coating Designation: G90.
  2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- D. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in "Duct Schedule" Article.
- E. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.
- F. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
  1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.
- G. Tie Rods: Galvanized steel, 1/4-inch-minimum diameter for lengths 36 inches or less; 3/8-inch-minimum diameter for lengths longer than 36 inches.

## **2.5 DUCT LINER**

- A. Fibrous-Glass Duct Liner: Comply with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard." Duct dimension shown on Drawings are inside dimensions.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation.
    - b. Johns Manville; a Berkshire Hathaway company.
    - c. Knauf Insulation.
    - d. Owens Corning.
  2. Maximum Thermal Conductivity:
    - a. Type I, Flexible: 0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
    - b. Type II, Rigid: 0.23 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
  3. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
  4. Solvent-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.
- B. Insulation Pins and Washers:
1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
  2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized steel; with beveled edge sized as required to hold insulation securely in place, but not less than 1-1/2 inches in diameter.
- C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."
1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
  2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
  3. Butt transverse joints without gaps, and coat joint with adhesive.
  4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
  5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
  6. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm or greater.
  7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.

8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
  - a. Fan discharges.
  - b. Intervals of lined duct preceding unlined duct.
  - c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.
9. Secure insulation between perforated sheet metal inner duct of same thickness as specified for outer shell. Use mechanical fasteners that maintain inner duct at uniform distance from outer shell without compressing insulation.
  - a. Sheet Metal Inner Duct Perforations: 3/32-inch diameter, with an overall open area of 23 percent.
10. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.

## **2.6 SEALANT AND GASKETS**

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested in accordance with UL 723; certified by an NRTL.
- B. Two-Part Tape Sealing System:
  1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
  2. Tape Width: 4 inches.
  3. Sealant: Modified styrene acrylic.
  4. Water resistant.
  5. Mold and mildew resistant.
  6. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
  7. Service: Indoor and outdoor.
  8. Service Temperature: Minus 40 to plus 200 deg F.
  9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
- C. Water-Based Joint and Seam Sealant:
  1. Application Method: Brush on.
  2. Solids Content: Minimum 65 percent.
  3. Shore A Hardness: Minimum 20.

4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
10. Maximum Static-Pressure Class: 10-inch wg, positive or negative.
11. Service: Indoor or outdoor.
12. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

## 2.7 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Galvanized-steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
- E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.
- F. Steel Cable End Connections: Galvanized-steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- H. Trapeze and Riser Supports:
  1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

## PART 3 - EXECUTION

### 3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and coordination drawings.
- B. Install ducts in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install ducts in maximum practical lengths with fewest possible joints.
- D. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- E. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- F. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- G. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- H. Route ducts to avoid passing through stairs, transformer vaults, and electrical equipment rooms and enclosures. Also route to avoid passing under or over electrical panels.
- I. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- J. Install fire and smoke dampers where indicated on Drawings. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers and specific installation requirements of the damper UL listing.
- K. Protect duct interiors from moisture, construction debris and dust, and other foreign materials both before and after installation. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."



- L. Elbows: Use long-radius elbows wherever they fit.
  - 1. Fabricate 90-degree rectangular mitered elbows to include turning vanes.
  - 2. Fabricate 90-degree round elbows with a minimum of three segments for 12 inches and smaller and a minimum of five segments for 14 inches and larger.
- M. Branch Connections: Use lateral or conical branch connections.

### **3.2 INSTALLATION OF EXPOSED DUCTWORK**

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
- B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
- C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
- D. Maintain consistency, symmetry, and uniformity in arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
- E. Repair or replace damaged sections and finished work that does not comply with these requirements.

### **3.3 DUCT SEALING**

- A. Seal all ducts and all pressure classes to SMACNA Seal Class A.

### **3.4 HANGER AND SUPPORT INSTALLATION**

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
  - 1. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
  - 2. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
  - 3. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum



Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

### **3.5 CONNECTIONS**

- A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

### **3.6 PAINTING**

- A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer.

### **3.7 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
- B. Duct System Cleanliness Tests:
  - 1. Visually inspect duct system to ensure that no visible contaminants are present.
- C. Duct system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

### **3.8 DUCT SCHEDULE**

- A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:
  - 1. Fabricate all ducts to achieve SMACNA pressure class, seal class, and leakage class as indicated below.

B. Duct Construction:

1. All Ductwork:

- a. Pressure Class: Positive or negative 3-inch wg.
- b. Minimum SMACNA Seal Class: A.
- c. SMACNA Leakage Class for Rectangular: 6.
- d. SMACNA Leakage Class for Round: 6.

C. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel, Carbon steel coated with zinc-chromate primer, or Galvanized steel or carbon steel coated with zinc-chromate primer.
2. Stainless-Steel Ducts:
  - a. Exposed to Airstream: Match duct material.
  - b. Not Exposed to Airstream: Match duct material.
3. Aluminum Ducts: Aluminum.

D. Liner:

1. Supply-Air Ducts: Fibrous glass, Type I, 1-inch thick.
2. Return-Air Ducts: Fibrous glass, Type I, 1-inch thick.
3. Exhaust-Air Ducts: Fibrous glass, Type I, 1-inch thick.
4. Supply Fan Plenums: Fibrous glass, Type II, 1-inch thick.
5. Return- and Exhaust-Fan Plenums: Fibrous glass, Type II, 1-inch thick.

E. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
  - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
  - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
  - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
  - a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
    - 1) Radius-to Diameter Ratio: 1.5.

- b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
- c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam or welded.

F. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
  - a. Rectangular Main to Rectangular Branch: 45-degree entry.
  - b. Rectangular Main to Round Branch: Conical spin in.
2. Round: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
  - a. Velocity 1000 fpm or Lower: 90-degree tap.
  - b. Velocity 1000 to 1500 fpm: Conical tap.
  - c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION 233113

**SECTION 233300**  
**AIR DUCT ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Manual volume dampers.
2. Fire dampers.
3. Flange connectors.
4. Turning vanes.
5. Duct-mounted access doors.
6. Flexible connectors.
7. Duct accessory hardware.

**1.2 ACTION SUBMITTALS**

- A. Product Data:** For each type of product.
- B. Shop Drawings:** For duct accessories. Include plans, elevations, sections, details, and attachments to other work.

**1.3 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.**

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Comply with NFPA 90A and NFPA 90B.**
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.**

## 2.2 MANUAL VOLUME DAMPERS

### A. Standard, Steel, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Air Balance; a division of MESTEK, Inc.
  - b. Aire Technologies.
  - c. American Warming and Ventilating; a Mestek Architectural Group company.
  - d. Arrow United Industries.
  - e. Cesco Products; a division of MESTEK, Inc.
  - f. Greenheck Fan Corporation.
  - g. Lloyd Industries, Inc.
  - h. McGill AirFlow LLC.
  - i. Nailor Industries Inc.
  - j. Pottorff.
  - k. Ruskin Company.
  - l. Safe Air - Dowco Products.
  - m. United Enertech.
  - n. Vent Products Co., Inc.
2. Performance:
  - a. Leakage Rating Class III: Leakage not exceeding 40 cfm/sq. ft. against 1-inch wg differential static pressure.
3. Construction:
  - a. Linkage out of airstream.
  - b. Suitable for horizontal or vertical airflow applications.
4. Frames:
  - a. Hat-shaped, 16-gauge-thick, galvanized sheet steel.
  - b. Mitered and welded corners.
  - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
5. Blades:
  - a. Multiple or single blade.
  - b. Parallel- or opposed-blade design.
  - c. Stiffen damper blades for stability.
  - d. Galvanized steel; 16-gauge thick.
6. Blade Axles: Galvanized steel, stainless steel, or nonferrous metal.

7. Bearings:
  - a. Oil-impregnated bronze, molded synthetic, oil-impregnated stainless-steel sleeve, or stainless-steel sleeve.
  - b. Dampers mounted with vertical blades to have thrust bearing at each end of every blade.
8. Tie Bars and Brackets: Galvanized steel.
9. Locking device to hold damper blades in a fixed position without vibration.

## 2.3 FIRE DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Air Balance; a division of MESTEK, Inc.
  2. Aire Technologies.
  3. Arrow United Industries.
  4. Cesco Products; a division of MESTEK, Inc.
  5. CL WARD & Family Inc.
  6. Greenheck Fan Corporation.
  7. NCA Manufacturing, Inc.
  8. Pottorff.
  9. Prefco.
  10. Ruskin Company.
  11. Safe Air - Dowco Products.
  12. United Enertech.
  13. Vent Products Co., Inc.
- B. Type: Static and dynamic; rated and labeled in accordance with UL 555 by an NRTL.
- C. Closing rating in ducts up to 4-inch-wg static pressure class and minimum 2000-fpm velocity.
- D. Fire Rating: 1-1/2 hours.
- E. Frame: Curtain type with blades outside airstream except when located behind grille where blades may be inside airstream]; fabricated with roll-formed galvanized steel; with mitered and interlocking corners; gauge in accordance with UL listing.
- F. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel; gauge in accordance with UL listing.
- G. Mounting Orientation: Vertical or horizontal as indicated.
- H. Blades: Roll-formed galvanized sheet steel, interlocking full-length steel blade connectors. Material gauge is to be in accordance with UL listing.

- I. Horizontal Dampers: Include blade lock and stainless-steel closure spring.
- J. Heat-Responsive Device:
  - 1. Replaceable, 165 deg F rated, fusible links.

## **2.4 FLANGE CONNECTORS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. CL WARD & Family Inc.
  - 2. Ductmate Industries, Inc.
  - 3. DynAir; a Carlisle Company.
  - 4. Elgen Manufacturing.
  - 5. Ward Industries; a brand of Hart & Cooley, Inc.
- B. Description: Add-on or roll-formed, factory fabricated, slide-on transverse flange connectors, gaskets, and components.
- C. Material: Galvanized steel.
- D. Gauge and Shape: Match connecting ductwork.

## **2.5 TURNING VANES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Aero-Dyne Sound Control Co.
  - 2. CL WARD & Family Inc.
  - 3. Ductmate Industries, Inc.
  - 4. Duro Dyne Inc.
  - 5. DynAir; a Carlisle Company.
  - 6. Elgen Manufacturing.
  - 7. Ward Industries; a brand of Hart & Cooley, Inc.
- B. Manufactured Turning Vanes for Metal Ducts: Fabricate curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
  - 1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

- C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
- D. Vane Construction: Double wall.

## 2.6 DUCT-MOUNTED ACCESS DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Aire Technologies.
  - 2. Arrow United Industries.
  - 3. Cesco Products; a division of MESTEK, Inc.
  - 4. CL WARD & Family Inc.
  - 5. Ductmate Industries, Inc.
  - 6. Duro Dyne Inc.
  - 7. Elgen Manufacturing.
  - 8. Flexmaster U.S.A., Inc.
  - 9. McGill AirFlow LLC.
  - 10. Ruskin Company.
  - 11. United Enertech.
  - 12. Ventfabrics, Inc.
  - 13. Ward Industries; a brand of Hart & Cooley, Inc.
- B. Duct-Mounted Access Doors: Fabricate access panels in accordance with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figure 7-2 (7-2M), "Duct Access Doors and Panels," and Figure 7-3, "Access Doors - Round Duct."
  - 1. Door:
    - a. Double wall, rectangular.
    - b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
    - c. 24-gauge-thick galvanized steel or 0.032-inch-thick aluminum or 24-gauge-thick stainless steel door panel.
    - d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
    - e. Fabricate doors airtight and suitable for duct pressure class.
  - 2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
    - a. 24-gauge-thick galvanized steel or 0.032-inch-thick aluminum frame.
  - 3. Number of Hinges and Locks:
    - a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
    - b. Access Doors up to 18 Inches Square: Two hinges and two sash locks.



## 2.7 FLEXIBLE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. CL WARD & Family Inc.
  2. Ductmate Industries, Inc.
  3. Duro Dyne Inc.
  4. DynAir; a Carlisle Company.
  5. Elgen Manufacturing.
  6. Ventfabrics, Inc.
  7. Ward Industries; a brand of Hart & Cooley, Inc.
- B. Fire-Performance Characteristics: Adhesives, sealants, fabric materials, and accessory materials shall have flame-spread index not exceeding 25 and smoke-developed index not exceeding 50 when tested in accordance with ASTM E84.
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
- D. Materials: Flame-retardant or noncombustible fabrics.
- E. Coatings and Adhesives: Comply with UL 181, Class 1.
- F. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inch-wide, 0.028-inch-thick, galvanized sheet steel or 0.032-inch-thick aluminum sheets. Provide metal compatible with connected ducts.
- G. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
1. Minimum Weight: 26 oz./sq. yd.
  2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
  3. Service Temperature: Minus 40 to plus 200 deg F.

## 2.8 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

## 2.9 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A653/A653M.

1. Galvanized Coating Designation: G90.
  2. Exposed-Surface Finish: Mill phosphatized.
- B. Stainless Steel Sheets: Comply with ASTM A480/A480M, Type 304, and having finishes as noted for concealed ducts and for exposed ducts.
- C. Aluminum Sheets: Comply with ASTM B209, Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, one-side bright finish for exposed ducts.
- D. Extruded Aluminum: Comply with ASTM B221, Alloy 6063, Temper T6.
- E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- F. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install duct accessories in accordance with applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless steel accessories in stainless steel ducts, and aluminum accessories in aluminum ducts.
- C. Where multiple damper sections are necessary to achieve required dimensions, provide reinforcement to fully support damper assembly when fully closed at full system design static pressure.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
1. Install steel volume dampers in steel ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.
- F. Install test holes at fan inlets and outlets and elsewhere as indicated and as needed for testing and balancing.
- G. Install fire in accordance with UL listing.

- H. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
1. On both sides of duct coils.
  2. At outdoor-air intakes and mixed-air plenums.
  3. At drain pans and seals.
  4. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
  5. Adjacent to and close enough to fire dampers, to reset or reinstall fusible links. Access doors for access to fire dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
  6. At each change in direction and at maximum 50-ft. spacing.
  7. Upstream from turning vanes.
  8. For grease ducts, install at locations and spacing as required by NFPA 96.
  9. Control devices requiring inspection.
  10. Elsewhere as indicated.
- I. Install access doors with swing against duct static pressure.
- J. Access Door Size: 12 by 12 minimum size.
- K. Install flexible connectors to connect ducts to equipment.
- L. Install duct test holes where required for testing and balancing purposes.

### 3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections:
1. Operate dampers to verify full range of movement.
  2. Inspect locations of access doors, and verify that size and location of access doors are adequate to perform required operation.
  3. Operate fire, smoke, and combination fire dampers to verify full range of movement and that proper heat-response device is installed.
  4. Inspect turning vanes for proper and secure installation, and verify that vanes do not move or rattle.
  5. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 233300

**SECTION 233346**  
**FLEXIBLE DUCTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Insulated flexible ducts.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of product.

B. Shop Drawings: For flexible ducts.

1. Include plans showing locations and mounting and attachment details on duct Shop Drawings.

**PART 2 - PRODUCTS**

**2.1 ASSEMBLY DESCRIPTION**

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- C. Comply with the Air Diffusion Council's "ADC Flexible Air Duct Test Code FD 72-R1."
- D. Comply with ASTM E96/E96M, "Test Methods for Water Vapor Transmission of Materials."

**2.2 INSULATED FLEXIBLE DUCTS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Flexmaster U.S.A., Inc.
2. McGill AirFlow LLC.
3. Thermaflex; a Flex-Tek Group company.
4. Ward Industries; a brand of Hart & Cooley, Inc.

B. Insulated, Flexible Duct: UL 181, Class 1, two-ply vinyl film supported by helically wound, spring-steel wire; fibrous-glass insulation; aluminized vapor-barrier film.

1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 10 to plus 160 deg F.
4. Insulation R-Value: R6.

### **2.3 FLEXIBLE DUCT CONNECTORS**

A. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install flexible ducts according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts.
- B. Connect terminal units to supply ducts with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.
- C. Connect diffusers to ducts with maximum 60-inch lengths of flexible duct clamped or strapped in place. Maximum one 90-degree bend in flexible duct.
- D. Install duct test holes where required for testing and balancing purposes.
- E. Installation:
  1. Install ducts fully extended.
  2. Do not bend ducts across sharp corners.
  3. Bends of flexible ducting shall not exceed a minimum of one duct diameter.
  4. Avoid contact with metal fixtures, water lines, pipes, or conduits.
  5. Install flexible ducts in a direct line, without sags, twists, or turns.

F. Supporting Flexible Ducts:

1. Suspend flexible ducts with bands 1-1/2 inches wide or wider and spaced a maximum of 48 inches apart. Maximum centerline sag between supports shall not exceed 1/2 inch per 12 inches.
2. Install extra supports at bends placed approximately one duct diameter from center line of the bend.
3. Ducts may rest on ceiling joists or truss supports. Spacing between supports shall not exceed the maximum spacing per manufacturer's written installation instructions.
4. Vertically installed ducts shall be stabilized by support straps at a maximum of 72 inches o.c.

END OF SECTION 233346

## SECTION 233713

### DIFFUSERS, REGISTERS, AND GRILLES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Rectangular and square ceiling diffusers.
  2. Fixed face grilles.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
  2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by Price Industries as indicated in this Section or comparable product by one of the following:
1. A-J Manufacturing Co., Inc.
  2. Anemostat Products; a Mestek company.
  3. Carnes Company.
  4. Dayus Register & Grille Inc.
  5. Hart & Cooley Inc.
  6. Kees, Inc.
  7. Krueger.
  8. METALAIRE, Inc.
  9. Nailor Industries Inc.
  10. Price Industries.
  11. Titus.
  12. Tuttle & Bailey.

##### 2.2 DIFFUSERS

- A. Rectangular and Square Ceiling Diffusers Type SA:

1. Basis-of Design Product: Price #SCD.
2. Devices shall be specifically designed for variable-air-volume flows.
3. Material: Steel unless noted otherwise on Drawings.
4. Finish: Powder-coat finish, white.
5. Face Size: 24 by 24 inches unless noted otherwise on Drawings.
6. Face Style: Three cone.
7. Mounting: As indicated on reflected ceiling plan Drawings.
8. Pattern: Fixed.
9. Dampers: Radial opposed blade.

## **2.3 GRILLES**

- A. Fixed Face Grille Type EA/RA:
1. Basis-of Design Product: Price #510ZD.
  2. Material: Steel.
  3. Finish: Powder-coat finish, white.
  4. Face Blade Arrangement: Parallel to long dimension; spaced 3/4-inch apart.
  5. Frame: 1-inch wide.
  6. Mounting: As appropriate for ceiling types shown on Drawings.
  7. Accessory: Opposed-blade steel damper.

## **2.4 SOURCE QUALITY CONTROL**

- A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

# **PART 3 - EXECUTION**

## **3.1 EXAMINATION**

- A. Examine areas where diffusers, registers, and grilles are installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

## **3.2 INSTALLATION**

- A. Install diffusers, registers, and grilles level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the



center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

- C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

### **3.3 ADJUSTING**

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 233713

## SECTION 237223.19

### PACKAGED, INDOOR, FIXED-PLATE ENERGY-RECOVERY UNITS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Fixed-plate, total heat exchangers in packaged, indoor, energy-recovery units.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include packaged, indoor, fixed-plate, energy-recovery unit rated capacities, operating characteristics, furnished specialties, and accessories.
  2. Fans:
    - a. Certified fan-performance curves with system operating conditions indicated.
    - b. Certified fan-sound power ratings.
    - c. Fan construction and accessories.
    - d. Motor ratings, electrical characteristics, and motor accessories.
- B. Shop Drawings: For packaged, indoor, fixed-plate, energy-recovery units.
1. Include plans, elevations, sections, details, and mounting and attachment details.
  2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  3. Include diagrams for power, signal, and control wiring.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air-to-air energy recovery equipment to include in maintenance manuals.

## 1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of packaged, indoor, fixed-plate, energy-recovery units that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period for Fixed-Plate Total Heat Exchangers: 10 years.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of air-handling units and components.
- B. UL Compliance:
  - 1. Packaged heat-recovery ventilators shall comply with requirements in UL 1812 or UL 1815.
- C. Comply with ASTM E84 or UL 723.

### 2.2 PACKAGED, INDOOR, FIXED-PLATE TOTAL ENERGY RECOVERY UNITS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - 1. Greenheck Fan Corporation.
  - 2. RenewAire LLC.
  - 3. Systemair USA.
  - 4. Venmar/Broan Inc.
- B. Source Limitations: Obtain from single source from single manufacturer.
- C. Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
- D. Double-Wall Housing: Manufacturer's standard double-wall construction:
  - 1. 20-gauge steel outer and 24-gauge G-90 steel inner liner with thermal break
  - 2. Polyurethane, closed-cell, spray-foam insulation between walls. Minimum insulating value R=12.
  - 3. Painted exterior finish.
  - 4. Provide gasketed, hinged access doors with neoprene gaskets for inspection and access to internal parts.
  - 5. Knockouts for electrical and piping connections, exterior drain connection.
  - 6. Lifting lugs.
- E. Fixed-Plate Total Heat Exchanger:
  - 1. Casing: Galvanized steel.
  - 2. Plates: Evenly spaced and sealed and arranged for crossflow.

- a. Plate Material: Chemically treated paper or polymer membrane with selective hygroscopicity and moisture permeability, and gas barrier properties.
  - b. 50 percent minimum efficiency in accordance with NYS IECC, C403.2.7.
- F. Supply and Exhaust Fans:
  - 1. Forward-curved centrifugal fans.
- G. Default motor characteristics are specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
  - 1. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements. for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
  - 2. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
- H. Filters:
  - 1. Description: Flat, non-pleated or pleated, factory-fabricated, self-supported, disposable air filters with holding frames.
  - 2. UL Compliance: Comply with UL 900.
  - 3. Media: Spun polyester.
  - 4. Filter Media Frame: Beverage board with perforated metal retainer, or metal grid, on outlet side.
  - 5. Filter Mounting Frames: Arranged with access doors or panels on both sides of unit. Filters shall be removable from one side or lift out from access plenum.
- I. Wiring: Fabricate units with space within housing for electrical conduits. Wire motors and controls, so only external connections are required during installation.
  - 1. Indoor Enclosure: NEMA 250, Type 12 enclosure contains relays, starters, and terminal strip.
  - 2. Include line-cord power supply.
- J. Accessories:
  - 1. Isolation Dampers on Inlet and Exhaust:
    - a. Inlet damper shall be AMCA rated, low-leakage, double-wall insulated, and opposed blade.
    - b. Discharge damper shall be parallel-blade, backdraft type.
    - c. Louvered wall vent with 8-inch round duct connection, 12 inches W x 8 inches H.
    - d. Digital time clock, wall mounted.
- K. Capacities as scheduled on Drawings.

## **2.3 CONTROLS**

- A. Control Panel: Solid-state, programmable, microprocessor-based control unit for wall mounting.
- B. Starting relay, factory mounted and wired, and manual motor starter for field wiring.

- C. Frost Control: Passive frost control without condensing or frosting under normal operating conditions (defined as outside-air temperatures above -10 deg F and inside relative humidity below 40 percent.
- D. Low-Voltage Transformer: Integral transformer to provide control voltage to unit from primary incoming electrical service.

## 2.4 SOURCE QUALITY CONTROL

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and application.
- B. Fan Performance Rating: Comply with AMCA 211 and label fans with AMCA-certified rating seal. Factory test fan performance for airflow, pressure, power, air density, rotation speed, and efficiency according to AMCA 210/ASHRAE 51.
- C. Fan Sound Ratings: Comply with AMCA 301 or AHRI 260 (IP). Air-handling unit fan sound ratings shall comply with AMCA 301 or AHRI 260 (IP).
- D. UL Compliance: Packaged, fixed-plate energy-recovery units shall comply with requirements in UL 1812 or UL 1815.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine casing insulation materials and filter media before packaged, indoor, fixed-plate, energy-recovery unit installation. Replace with new insulation materials and filter media that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Suspended Units: Suspend units from structural-steel support frame, using threaded steel rods and spring hangers. Comply with requirements for vibration-isolation devices specified in Section 230548.13 "Vibration Controls for HVAC."
- B. Install units with clearances for service and maintenance.
- C. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing with new, clean filters.

### **3.3 DUCTWORK CONNECTIONS**

- A. Comply with requirements for ductwork according to Section 233113 "Metal Ducts."
- B. Connect duct to units with flexible connections. Comply with requirements in Section 233300 "Air Duct Accessories."

### **3.4 ELECTRICAL CONNECTIONS**

- A. Install electrical devices furnished with units but not factory mounted.
- B. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

### **3.5 CONTROL CONNECTIONS**

- A. Install control and electrical power wiring to field-mounted control devices.

### **3.6 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
  - 1. Tests and Inspections:
    - a. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
    - b. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Packaged, indoor, fixed-plate, energy-recovery units will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

### **3.7 STARTUP SERVICE**

- A. Engage a factory-authorized service representative to perform startup service.
  - 1. Complete installation and startup checks according to manufacturer's written instructions.

### **3.8 ADJUSTING**

- A. Adjust moving parts to function smoothly, and lubricate as recommended by manufacturer.
- B. Adjust initial temperature and humidity setpoints.

- C. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

### 3.9 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain air-to-air energy-recovery units.

END OF SECTION 237223.19

## SECTION 238129

### VARIABLE-REFRIGERANT-FLOW HVAC SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SYSTEM DESCRIPTION

- A. The variable-capacity, heat-pump, heat-recovery air-conditioning system shall be a variable-refrigerant-flow-type zoning system. The system shall utilize split systems to provide simultaneous cooling and heating.
- B. The system shall consist of a water-source unit, branch-circuit manifolds (single, main, or main with sub(s), multiple indoor units, and integrated manufacturer's controls system. Each indoor unit or group of indoor units shall be capable of operating in any mode independently of other indoor units or groups. Each indoor unit or group of indoor units shall be independently controlled. The sum of connected capacity of all indoor air handlers shall range from 50 to 150 percent of heat-pump rated capacity.

##### 1.2 SUBMITTALS

- A. Product Data: For each model include the following:
  - 1. Complete fan performance curves fan-coil units.
  - 2. Motor ratings, electrical characteristics and motor accessories for fan-coil units and branch controllers.
  - 3. Performance ratings for all water-source heat pumps.
  - 4. Dimensioned drawings for each type of installation, showing isometric and plan views, to include location of attached ductwork and piping connections and service clearance requirements.
  - 5. Estimated gross weight of each installed unit.
  - 6. Installation, Operating and Maintenance manual (IOM) for each model.
  - 7. Microprocessor Controller (DDC) specifications to include available options and operating protocols. Include complete data on all factory-supplied input devices.
  - 8. AHRI-certified coil performance ratings with system operating conditions indicated. Ratings shall be in accordance with Standard 410.

##### 1.3 QUALITY ASSURANCE

- A. The units shall be listed by Electrical Laboratories (ETL) and bear the ETL label.
- B. All wiring shall be in accordance with the National Electrical Code (NEC).



- C. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001, which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
- D. A full charge of R-410A for the heat pump only shall be provided in the heat pump unit.
- E. Project Supervision:
  - 1. VRF manufacturer shall provide on-site project supervision throughout the construction phase, including onsite technical review of installed VRF systems, review of activities related to the installation of the VRF system, VRF-system components, and associated controls. Certified representatives in lieu of manufacturer's representative is not acceptable.
  - 2. The installing contractor shall assist the VRF manufacturer in its completion of the system review and have available onsite a technician with appropriate diagnostic tools, materials and equipment, as required, for the duration of the inspection process. The technician assisting the VRF manufacturer shall be fully licensed and insured to complete necessary duties as directed by the VRF manufacturer.
  - 3. Onsite visits shall be conducted at installation milestones noted below. The installing contractor is responsible to coordinate each visit at the project milestone, including Project kickoff meeting, site visits at 25 percent and 50 percent project completion and at Final Inspection prior to Commissioning of the VRF system.
  - 4. Site visits shall include review of installed VRF systems for compliance with manufacturer's installation, service and engineering specifications, as well as assisting the contractor in updating the VRF design software for as-built purposes and for calculating the appropriate refrigerant charges. VRF manufacturer shall issue a report following each site visit.

#### 1.4 WARRANTY

- A. The units shall be covered by the manufacturer's limited warranty for a period of ten-year parts and ten-year warranty on the unit compressor to the original owner from date of installation. Contractor shall meet certification requirements to ensure the manufacturer's warranty requirements. This requirement includes attending training given by the manufacturer. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of the manufacturer. A manufacturer's written warranty statement must be provided prior to system approval.
- B. All manufacturer technical and service manuals must be readily available for download by any local contractor should emergency service be required. Registering and sign-in requirements which may delay emergency service reference are not allowed.
- C. Manufacturer shall have a minimum of ten years of VRF experience in the U.S. market and must have a minimum of ten installed heat recovery VRF systems within 100 miles of the project site. Alternate manufacturers must provide a reference list of ten installed heat recovery systems within 100 miles of the project site, including Owner contact information.

- D. The VRF system shall be installed by a contractor with extensive VRF installation and service training. The mandatory contractor service and install training must be performed by the manufacturer prior to submittal approval. Training must be a minimum of three days at a manufacturer's approved training facility with equipment present. The Contractor shall submit a copy of successful training certification in compliance with these requirements. All travel and training expenses are the responsibility of the Contractor. At the Owner's request, a visit to the training center shall be required. All expenses for this visit are the responsibility of the Contractor.
- E. Manufacturer must provide controls-integration training to the temperature controls subcontractor. Training must be a minimum of one day at a manufacturer's approved training facility with equipment present. All travel and training expenses are the responsibility of the installing contractor.
- F. Manufacturer must provide startup, startup and commissioning of the complete VRF system, controls-integration assistance, and a minimum of eight hours of Owner's training.
- G. Manufacturer must provide VRF service, maintenance, and diagnostic tool and all software for the Owner and installing contractor. The tool shall allow service and maintenance personnel to monitor and record real-time operating data. The tool shall allow monitoring and recording of operating data by connecting at the control board of any VRF system component, indoor or outdoor.
- H. Each VRF Systems must be able to provide a minimum 5 tons of future expansion and flexibility without having to change size of piping within the system. System must also be able to move existing indoor units around to handle the Owners ever-changing needs without the need to change piping diameter. System must be able to adapt to changing floor layouts.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Basis-of-Design Products: Provide Mitsubishi products indicated in Part 2 below or comparable product by one of the following:
  - 1. Daikin.
  - 2. LG.
  - 3. YORK VRF.

### **2.2 AIR-COOLED HEAT PUMP**

- A. Basis-of-Design Product: Mitsubishi #PURY.
- B. General: The air-cooled units shall be equipped with circuit boards that interface to the DDC control system and shall perform all functions necessary for operation. The air-cooled unit shall be completely factory assembled, piped and wired. Each unit shall be run tested at the factory.

1. The air-cooled units shall have a sound rating no higher than 63 dB(A) individually. If an alternate manufacturer is selected, any additional material, cost, and labor to meet published sound levels shall be incurred by the contractor.
  2. All refrigerant lines from the air-cooled unit to the BC (Branch Circuit) Controller and from the BC Controllers to the indoor unit(s) shall be individually insulated in accordance with the installation manual.
  3. The unit shall have an accumulator with refrigerant level sensors and controls.
  4. The unit shall have a high efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.
  5. The outdoor unit shall have an accumulator with refrigerant level sensors and controls.
  6. The outdoor unit shall have a high-pressure safety switch, overcurrent protection, and DC bus protection.
  7. The outdoor unit shall have the ability to operate with a maximum height difference of 164 feet and have total refrigerant tubing length of 984-1312 feet. The greatest length is not to exceed 492 feet between outdoor unit and the indoor units without the need for line-size changes or traps.
  8. The outdoor unit shall be capable of operating in heating down to -4 deg F ambient temperature without additional low-ambient controls.
  9. The outdoor unit shall not cease operation in any mode based solely on outdoor ambient temperature.
  10. The outdoor unit shall have a high-efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.
- C. Unit Cabinet: The cabinet(s) shall be fabricated of hot-dip galvanized steel sheet and finished with a powder-coated baked enamel.
- D. Fans:
1. Direct-drive, variable-speed, propeller-type fans arranged for vertical airflow.
  2. All fan motors shall have inherent protection, have permanently lubricated bearings, and completely variable speed.
  3. All fans shall be provided with a raised guard to prevent contact with moving parts.
- E. Refrigerant:
1. Refrigerant R410A.
  2. Polyolester (POE) oil shall be required. Prior to bidding, manufacturers using alternate oil types shall submit material safety data sheets (MSDS) and comparison of hygroscopic properties for alternate oil with list of local suppliers stocking alternate oil for approval at least two weeks prior to bidding.
- F. Coil:
1. The outdoor coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.
  2. The coil fins shall have a factory-applied, corrosion-resistant, blue-fin finish.
  3. The coil shall be protected with an integral metal guard.
  4. Refrigerant flow from the outdoor unit shall be controlled by means of an inverter-driven compressor.
  5. The outdoor coil shall include 4 circuits with two-position valves for each circuit, except for the last stage.

G. Compressor:

1. All air-cooled units shall be equipped with one inverter driven scroll hermetic compressor and one scroll hermetic compressor.
2. A crankcase heater shall be factory mounted on the compressors.
3. The air-cooled unit compressor shall have an inverter to modulate capacity. The capacity shall be completely variable down to 16 percent of rated capacity.
4. The compressor shall be equipped with an internal thermal overload.
5. The compressor shall be mounted to avoid the transmission of vibration.

H. Electrical:

1. The outdoor-unit electrical power shall be 460 volts, 3-phase, 60 hertz.
2. The outdoor unit shall be capable of satisfactory operation within voltage limits of 414-506 volts.
3. The outdoor unit shall be controlled by integral microprocessors.
4. The control circuit between the indoor units, BC Controller and the outdoor unit shall be 24-V dc completed using a 2-conductor, twisted-pair shielded cable to provide total integration of the system.

## 2.3 BRANCH CIRCUIT CONTROLLERS

A. Basis-of-Design Product: Mitsubishi #CMB/#CMP

B. General:

1. The BC (Branch Circuit) Controllers shall include multiple branches to allow simultaneous heating and cooling by allowing either hot gas refrigerant to flow to indoor unit(s) for heating or subcooled liquid refrigerant to flow to indoor unit(s) for cooling. Refrigerant used for cooling must always be subcooled for optimal indoor unit LEV performance; alternate branch devices with no sub-cooling risk bubbles in liquid supplied to LEV and are not allowed.
2. The BC (Branch Circuit) Controllers shall be specifically used with R410A R2-Series systems. These units shall be equipped with a circuit board that interfaces to the integrated manufacturer's controls system and shall perform all functions necessary for operation. The unit shall have a galvanized steel finish. The BC Controller shall be completely factory assembled, piped and wired. Each unit shall be run tested at the factory. This unit shall be mounted indoors, with access and service clearance provided for each controller. The sum of connected capacity of all indoor air handlers shall range from 50 to 150 percent of rated capacity. The BC Controller shall be suitable for use in plenums in accordance with UL1995 Ed. 4.
3. Each VRF system shall include at least two unused branches or branch devices for future use. If the manufacturer does not offer spare branches, two additional branch devices must be provided and installed for each refrigeration system. Branches shall be fully installed and wired in central location with capped service shutoff valve and service port.
4. Spare ports shall be provided on each system to allow the addition of indoor units in the future.

C. Each BC Controller branch shall connect to indoor unit(s) not exceeding 54,000 BTU/h per branch.

- D. BC Unit Cabinet:
1. The casing shall be fabricated of galvanized steel.
  2. Each cabinet shall house a liquid-gas separator and multiple refrigeration control valves.
  3. The unit shall house two tube-in-tube heat exchangers.
- E. Refrigerant Branches:
1. All BC Controller refrigerant pipe connections shall be brazed or flared.
- F. Refrigerant Valves:
1. The unit shall be furnished with multiple two position refrigerant valves.
  2. Each circuit shall have one (54,000 BTU/h or smaller indoor unit section) two-position liquid line valve and a two-position suction line valve.
  3. When connecting a 54,000 BTU/h or larger indoor unit section, two branch circuits shall be joined together at the branch controller to deliver an appropriate amount of refrigerant. The two refrigerant valves shall operate simultaneously.
  4. Linear electronic expansion valves shall be used to control the variable refrigerant flow.
- G. Integral Drain Pan:
1. An integral resin drain pan and drain connection shall be provided.
- H. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
  2. The BC Controller shall be controlled by integral microprocessors.
  3. The control circuit between the indoor units and the water source unit shall be 30-V dc completed using a 2-conductor, twisted pair, non-polar shielded cable to provide total integration of the system.

## 2.4 INDOOR CEILING-CONCEALED DUCTED UNITS

- A. Basis-of-Design Product: Mitsubishi #PEFY.
- B. General:
1. The units shall be ceiling-concealed ducted indoor fan coil design that mounts above the ceiling with a 2-position, field adjustable return and a fixed horizontal discharge supply and shall have a modulating linear expansion device. The units shall be compatible with the BC Controllers and support individual control using integrated manufacturer's controls system controllers. The unit shall be suitable for use in plenums in accordance with UL1995 Ed. 4.
- C. Indoor Unit.
1. The unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory.
- D. Unit Cabinet:

1. The unit shall be, ceiling-concealed, ducted.
  2. The cabinet panel shall have provisions for a field installed filtered outside air intake.
- E. Fan:
1. The units shall feature external static pressure settings from 0.14 to 0.60 in. WG for standard units and up to 1.0 in. WG for high-static units.
  2. The indoor unit fan shall be an assembly with one or two fan(s) direct driven by a single motor.
  3. The indoor fan shall be statically and dynamically balanced and run on a motor with permanently lubricated bearings.
  4. The indoor fan shall consist of three speeds (High, Mid, and Low) plus the Auto-Fan function.
  5. The indoor unit shall have a ducted air outlet system and ducted return air system.
  6. Provide high-static motor/model as scheduled on Drawings.
- F. Filter:
1. Factory-furnished filter housing; 20-gauge, G-60 galvanized steel with foam gaskets, connected to inlet of fan-coil unit.
  2. Filters: 2-inch, pleated, MERV 13 filters; tested in accordance with ANSI/ASHRAE 5.2 Standard.
- G. Coil:
1. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing.
  2. The tubing shall have inner grooves for high efficiency heat exchange.
  3. All tube joints shall be brazed with phos-copper or silver alloy.
  4. The coils shall be pressure tested at the factory.
  5. A condensate pan and drain shall be provided under the coil.
  6. The condensate shall be gravity drained from the fan coil.
  7. Both refrigerant lines to the indoor units shall be insulated in accordance with the installation manual.
- H. Electrical:
1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
- I. Controls:
1. This unit shall use controls provided by the manufacturer shall perform functions necessary to operate the system.
  2. Indoor unit shall compensate for the higher temperature sensed by the return air sensor compared to the temperature at level of the occupant when in HEAT mode. Disabling of compensation shall be possible for individual units to accommodate instances when compensation is not required.
  3. Control board shall include contacts for control of external heat source. External heat may be energized as second stage with 1.8–9.0 deg F adjustable deadband from set point.
  4. Indoor unit shall include no less than four digital inputs capable of being used for customizable control strategies.
  5. Indoor unit shall include no less than three digital outputs capable of being used for customizable control strategies.



## 2.5 VRF CONTROLS SYSTEM

### A. General:

1. The VRF Manufacturer's Integrated Controls Network (ICN) shall be capable of supporting remote controllers, centralized controllers, an integrated web-based interface, and graphical user workstation.
2. The Integrated Controls Network (ICN) consists of remote controllers, centralized controllers, and/or integrated web-based interface communicating over a high-speed communication bus. The ICN shall support operation monitoring, scheduling, occupancy, error email distribution, personal web browsers, online maintenance support, and integration with energy management system (EMS) using BACnet® interfaces.

### B. Electrical Characteristics:

1. The ICN shall operate at 30-V dc. Controller power and communications shall be via a common non-polar communications bus.
2. Wiring:
  - a. Control wiring shall be installed in a daisy chain configuration from indoor unit to indoor unit, to the BC controller (main and subs, if applicable) and to the outdoor unit. Control wiring to remote controllers shall be run from the indoor unit terminal block to the controller associated with that unit.
  - b. Control wiring for the Smart ME remote controller shall be from the remote controller to the first associated indoor unit M-NET connection. The Smart ME remote controller shall be assigned an M-NET address.
  - c. Control wiring for the Simple MA and Wireless MA remote controllers shall be from the remote controller (receiver) to the first associated indoor unit then to the remaining associated indoor units in a daisy chain configuration.
  - d. Control wiring for centralized controllers shall be installed in a daisy chain configuration from outdoor unit to outdoor unit, to the system controllers (centralized controllers and/or integrated web-based interface), to the power supply.
  - e. The centralized controller shall be capable of being networked with other centralized controllers for centralized control.
  - f. Wiring Type:
    - 1) Wiring shall be 2-conductor (16 AWG), twisted, stranded, shielded wire as defined by the Diamond System Builder output.
    - 2) Network wiring shall be Category 5 with RJ-45 connection.

### C. Space-temperature sensor, ME Remote Controller, shall be capable of controlling up to 16 indoor units. The Smart ME Remote Controller shall have an auto-timeout touch screen LCD display.

1. The ME Remote Controller shall support a selection from multiple languages (English, Spanish or French) for display information. The Smart ME supports temperature display selection of Fahrenheit or Celsius, and controller shall control the following grouped operations: On/Off, Operation Mode (cool, heat, auto, dry, fan and setback, temperature set point, fan speed setting, and airflow direction setting.
2. The controller shall support timer settings of on/off/temperature up to 8 times in a day in 5-minute increments.
3. The controller shall support an Auto Off timer.

4. The controller shall be able to limit the set temperature range from the Smart ME Remote Controller, or via a PC through a licensed software.
  5. The room temperature shall be sensed at either the Smart ME Remote Controller or the Indoor Unit dependent on the indoor unit dipswitch setting.
  6. The Smart ME Remote Controller shall display a four-digit error code in the event of system abnormality or error.
  7. The controller shall require manual addressing using rotary dial switch to the communication bus.
  8. The controller shall connect using two-wire, stranded, non-polar control wire to TB5 connection terminal on the indoor unit.
- D. Space-temperature sensor, MA Remote Controller, shall be capable of controlling up to 16 indoor units supporting temperature display selection of Fahrenheit or Celsius.
1. The Backlit Simple MA Remote Controller shall allow the user to change on/off, mode (cool, heat, auto only), dry, setback, and fan, temperature setting, and fan speed setting and airflow direction.
  2. The Backlit Simple MA Remote controller shall be capable of night setback control with upper and lower set temperature settings. The room temperature shall be sensed at either the Backlit Simple MA Remote Controller or the Indoor Unit dependent on the indoor unit dipswitch setting.
  3. The Backlit Simple MA Remote Controller shall display a four-digit error code in the event of system abnormality/error.
  4. The Backlit Simple MA Remote Controller shall require no addressing and shall connect using two-wire, stranded, non-polar control wire to connection terminal on the indoor unit.
- E. Centralized Controller (Web-Enabled):
1. The Centralized Controller shall be capable of controlling a maximum of 200 indoor units across multiple water-source heat pump units with the use of three expansion controllers.
  2. The Centralized Controller shall be powered with an integrated 100-240 VAC power supply and shall support system configuration, daily/weekly scheduling, monitoring of operation status, night setback settings, free contact interlock configuration and malfunction monitoring.
  3. Centralized Controller shall include on/off, operation mode selection (cool, heat, auto, dry, setback, and fan), temperature setting, fan speed setting, and airflow direction setting. It shall also enable or disable operation of local remote controllers.
  4. The Centralized Controller shall allow the user to define both daily and weekly schedules (up to 24 scheduled events per day) with operations consisting of ON/OFF, mode selection, temperature setting, air flow (vane) direction, fan speed, and permit/prohibit of remote controllers.
  5. Centralized Controllers shall be equipped with two RJ-45 Ethernet ports to support interconnection with a network PC via a closed/direct Local Area Network (LAN) or to a network switch for IP communication to up to three expansion controllers for display of up to 200 indoor units on the main interface.
  6. The Centralized Controller shall be capable of performing initial settings via the high-resolution, backlit, color touch panel on the controller or via a PC browser using the initial settings.



7. Standard software functions shall be available so that the building manager can securely log into each controller via the PC's web browser to support operation monitoring, scheduling, error email, interlocking and online maintenance diagnostics.
- F. Expansion Controller:
  1. The Expansion Controller shall serve as a standalone centralized controller or as an expansion module to the Centralized Controller for the purpose of adding up to 50 indoor units to either the main touch screen interface of the centralized controller. Expansion controllers can be connected to allow for up to 200 indoor units to be monitored and controlled from the centralized controllers.
  2. The Expansion Controllers have all of the same capabilities to monitor and control their associated indoor units as the features specified above. Even when connected to the centralized controllers and configured to display their units on the main controller, the individual indoor units connected to the expansion controllers can still be monitored and controlled from the interface. The last command entered will take precedence, whether at the wall controller, the expansion controllers or the Centralized Controller.
- G. ICN: System Integration:
  1. The ICN shall be capable of supporting integration with energy management system (EMS).
  2. The BACnet® interface shall be compliant with BACnet® Protocol (ANSI/ASHRAE 135-2004) and be certified by the (BTL) BACnet® Testing Laboratories. The BACnet® interface shall support BACnet Broadcast Management (BBMD). The BACnet® interface shall support a maximum of 50 indoor units. Operation and monitoring points include, but are not limited to, on/off, operation mode, fan speed, prohibit remote controller, filter sign reset, alarm state, error code, and error address.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General:
  1. Rig and install in full accordance with manufacturer's requirements and Contract Documents. Refer to the manufacturer's installation manual for full requirements.
- B. Location:
  1. Locate indoor and outdoor units as indicated on drawings. Provide service clearance per manufacturer's installation manual. Adjust and level outdoor units on support structure.
  2. For climates that experience snowfall, mount the outdoor unit a minimum of 12" above the average snowfall line. In climates where this height requirement proves unfeasible, the outdoor units may be installed at the average snowfall line provided regular snow removal in the area surrounding the units keeps the snow line below the bottom of the units.
- C. Electrical: Installing contractor shall coordinate electrical requirements and connections for all power feeds with electrical contractor. Refer to Division 26 for additional information.

- D. Third-Party Controls: Installing contractor shall coordinate all building energy management system (EMS) control requirements and connections with controls contractor.

### 3.2 MAINTENANCE TOOL SOFTWARE AND MN-CONVERTER

- A. The Maintenance Tool, via the MN-Converter, shall enable the user to monitor and record the following parameters in a centralized system.
1. Water-Source Heat Pump Unit:
    - a. Operation Mode (Cooling Only, Heating Only, Cooling Main, Heating Main)
    - b. Compressor Frequency, amperages, and voltages
    - c. Compressor high- and low-side pressure
    - d. System Temperatures
    - e. Outdoor temperature
    - f. Status of reversing valve
  2. BC Controller:
    - a. Valve ON/OFF status
    - b. Temperatures
    - c. Pressures
  3. Indoor Unit:
    - a. Entering Air Temperature
    - b. Entering/Leaving Refrigerant Temperature
    - c. Superheat/Subcool temperatures
    - d. LEV position
    - e. Room-temperature set point
    - f. Unit Mode and Status (Heat, Cool, Dry, Auto, Fan)
- B. The Maintenance Tool shall have the additional feature of controlling the following system components manually:
1. Indoor Unit:
    - a. Indoor Unit ON/OFF
    - b. Mode (Heat, Cool, Dry, Auto, Fan)
    - c. Room Temperature Set point
    - d. Fan speed
    - e. LEV Position
  2. BC Controller:
    - a. Valve OPEN/CLOSE
    - b. LEV Position
- C. The Maintenance Tool shall be connectable to the communication bus lines on the MNET via alligator connectors.
- D. The Maintenance Tool shall be connectable to a PC via a USB cable.

- E. Trended data from Maintenance Tool shall be available to export to a data file for offline analysis.

END OF SECTION 238129

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## SECTION 238236

### FINNED-TUBE RADIATION HEATERS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section includes:

1. Hydronic, finned-tube radiation heaters.
2. Pipe covers.

##### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include details and dimensions of custom-fabricated enclosures.
4. Indicate location and size of each field connection.
5. Indicate location and arrangement of piping valves and specialties.
6. Indicate location and arrangement of controls.
7. Include enclosure joints, corner pieces, access doors, and other accessories.
8. Include diagrams for power, signal, and control wiring.

##### 1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

#### PART 2 - PRODUCTS

##### 2.1 HOT-WATER FINNED-TUBE RADIATION HEATERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Rosemex Products.
  2. Trane.
  3. Vulcan.
  4. Zehnder Rittling.
- B. Performance Ratings: Rate finned-tube radiation heaters according to Hydronics Institute's "I=B=R Testing and Rating Standard for Finned-Tube (Commercial) Radiation."
- C. Heating Elements: Copper tubing mechanically expanded into flanged collars of evenly spaced aluminum fins resting on element supports. One end of tube shall be belled.
- D. Element Supports: Cradle type to permit longitudinal movement on enclosure brackets.
- E. Rust-Resistant Front Panel: Minimum 16-gage, ASTM A 653/A 653M, G90 galvanized steel.
- F. Wall-Mounted Back Panel: Minimum 22-gage steel, full height, with full-length channel support for front panel without exposed fasteners.
- G. Support Brackets: Locate at maximum 36-inch spacing to support front panel and element.
- H. Finish: Powder-coat enamel finish in manufacturer's standard color as selected by Architect.
- I. Access Doors: Factory made, permanently hinged with tamper-resistant fastener, minimum size 6 by 7 inches, integral with enclosure.
1. Access doors are not required on hinged-top enclosure.
- J. Enclosure Style: Sloped top.
1. Front Outlet Grille: Punched louver; painted to match enclosure.
  2. Enclosure Height and Depth: As scheduled on Drawings.
- K. Accessories: Filler sections, corners, relay sections, and splice plates all matching the enclosure and grille finishes.
- L. Pipe cover shall be similar to fin enclosure without louvers. Size to enclose insulated piping to finned radiation and units.
- M. Pipe riser enclosures shall be as detailed.

### **PART 3 - EXECUTION**

#### **3.1 FINNED-TUBE RADIATION HEATER INSTALLATION**

- A. Install units level and plumb.

- B. Install enclosure continuously around corners, using outside and inside corner fittings.
- C. Join sections with splice plates and filler pieces to provide continuous enclosure.
- D. Install access doors for access to valves.
- E. Install enclosure continuously from wall to wall.
- F. Terminate enclosures with manufacturer's end caps except where enclosures are indicated to extend to adjoining walls.
- G. Install valves within reach of access door provided in enclosure.
- H. Install air-seal gasket between wall and recessed flanges or front cover of fully recessed unit.

### **3.2 CONNECTIONS**

- A. Piping installation requirements are specified in Section 232113 "Hydronic Piping" and Section 232116 "Hydronic Piping Specialties." Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install control valves as required by Section 230900 "Instrumentation and Control for HVAC."
- C. Install piping adjacent to finned-tube radiation heaters to allow service and maintenance.

### **3.3 FIELD QUALITY CONTROL**

- A. Perform the following field tests and inspections:
  - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
  - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Units will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 238236

**SECTION 238239.19**  
**WALL AND CEILING UNIT HEATERS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes wall and ceiling heaters with propeller fans and electric-resistance heating coils.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, and details.
  - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 3. Include details of anchorages and attachments to structure and to supported equipment.
  - 4. Include equipment schedules to indicate rated capacities, operating characteristics, furnished specialties, and accessories.
  - 5. Wiring Diagrams: Power, signal, and control wiring.

**1.3 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For wall and ceiling unit heaters to include in emergency, operation, and maintenance manuals.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Chromalox, Inc.
  - 2. Markel Products; TPI Corporation.

3. QMark; Marley Engineered Products.
4. Trane.

## **2.2 DESCRIPTION**

- A. Assembly including chassis, electric heating coil, fan, motor, and controls. Comply with UL 2021.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## **2.3 CABINET**

- A. Front Panel: Stamped-steel louver, with removable panels fastened with tamperproof fasteners.
- B. Finish: Baked enamel over baked-on primer with manufacturer's standard color selected by Architect, applied to factory-assembled and -tested wall and ceiling heaters before shipping.
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
- D. Surface-Mounted Cabinet Enclosure: Steel with finish to match cabinet.

## **2.4 COIL**

- A. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in corrosion-resistant metallic sheath. Terminate elements in stainless-steel, machine-staked terminals secured with stainless-steel hardware, and limit controls for high-temperature protection.

## **2.5 FAN AND MOTOR**

- A. Fan: Aluminum propeller directly connected to motor.
- B. Motor: Permanently lubricated. Comply with requirements in Section 230513 "Common Motor Requirements for HVAC Equipment."

## **2.6 CONTROLS**

- A. Controls: Unit-mounted thermostat.
- B. Electrical Connection: Factory wire motors and controls for a single field connection with disconnect switch.



## **2.7 CAPACITIES AND CHARACTERISTICS**

- A. As scheduled on Drawings.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas to receive wall and ceiling unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical connections to verify actual locations before unit-heater installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install wall and ceiling unit heaters to comply with NFPA 90A.
- B. Install wall and ceiling unit heaters level and plumb.

END OF SECTION 238239.19

## SECTION 260010

### GENERAL REQUIREMENTS FOR ELECTRICAL

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to the Work of this Division. "This Division" in this Section shall mean Divisions 26, 27, and 28 unless specifically indicated otherwise.
  - 1. The intent of this Section is to complement Division 01 Specifications and to provide supplementary, trade-specific information.
  - 2. Refer conflicting requirements to Architect for a decision before proceeding. If a resolution is not obtained, assume the costliest to apply.
- B. Thoroughly study all Drawings and Specifications before submitting bids.
- C. Drawings and Specifications are to be considered as supplementing each other. Work specified but not shown or shown but not specified shall be performed or furnished as though mentioned in both Specifications and Drawings.
- D. Details on Drawings are to be considered typical for similar applications unless specifically noted otherwise.

##### 1.2 SUMMARY

- A. Bid shall include the cost of all labor, materials, tools, transportation, equipment, insurance, temporary protection, rentals, permits, taxes, and all necessary and miscellaneous items required to provide various systems shown and described complete and in good operating condition whether or not these miscellaneous items are specifically described in the Specifications or shown on the Drawings.
- B. Install all work in accordance with all applicable codes and prepare supplemental detail drawings and Shop Drawings reflecting purchased equipment requirements as necessary to obtain approval of authorities having jurisdiction over this Project.
- C. Guarantee workmanship, materials, and performance of this Division's systems in accordance with the requirements of the Contract Documents.
- D. The following are specifically included without limiting the generality implied by the Drawings or Specifications:

1. Electrical systems (Division 26) including:
  - a. Low-voltage electrical power conductors and cables.
  - b. Grounding and bonding.
  - c. Hangers and supports.
  - d. Raceways and boxes.
  - e. Underground ducts and raceways.
  - f. Identification for electrical systems.
  - g. Lighting control devices.
  - h. Low-voltage electrical transmission, including distribution panels, panelboards, transformers, transient voltage suppression devices, switching and protective equipment, and grounding.
  - i. Wiring devices.
  - j. Fuses.
  - k. Enclosed switches and circuit breakers.
  - l. Manual and magnetic motor controllers.
  - m. Interior, exterior, emergency and exit lighting.
2. Communications systems (Division 27) including:
  - a. Data network system.
3. Electronic safety and security systems (Division 28) including:
  - a. Access control[hardware devices].
  - b. Area and perimeter intrusion detection.
  - c. Refrigerant detection and alarm.
  - d. Addressable fire-alarm system.
4. Earth moving for electrical, communications, and electronic safety and security, including trenching and backfilling and concrete and reinforcing work for electric services, and miscellaneous items. Concrete work is specified in Division 03.
5. Apply firestopping to penetrations of fire-rated construction, to restore original fire-resistance rating of assembly, and as indicated in this Division's Specifications. Comply with requirements in this Section.
6. Submittal of forms and Drawings to review and permit agencies.
7. Submittals.
8. Record Documents.
9. Permits and Inspections: Apply for and obtain all required permits and inspections for all work in this Contract; pay all related fees and charges.

### **1.3 PRODUCTS ORDERED IN ADVANCE**

- A. The Owner's Representative may elect to prepurchase certain items specified in this Division's Specifications. Verify with Owner's Representative any prepurchased arrangements prior to submitting bid.

- B. The Owner's Representative shall assign the prepurchased items to this Division on award of the Contract. This Division shall be responsible for respective items as though purchased originally. Responsibilities shall include but not be limited to the following:
1. Expediting.
  2. Shop Drawings.
  3. Delivery.
  4. Unloading.
  5. Storage.
  6. Installation.
  7. Guarantees.
  8. Payment.
- C. Turn over all prepurchased equipment that is not used in the Project to the Owner's Representative at completion of the work.

#### **1.4 ALLOWANCES**

- A. Refer to Division 01 Specifications.

#### **1.5 UNIT PRICES**

- A. Refer to Division 01 Specifications.

#### **1.6 ALTERNATES**

- A. Refer to Division 01 Specifications.

#### **1.7 PROJECT MANAGEMENT AND COORDINATION**

- A. General Requirements:
1. Drawings show general design arrangement; install work substantially as indicated. Verify exact location and elevations on job. DO NOT SCALE DRAWINGS.
  2. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, interferences, etc. Adjust installation of piping, ductwork, conduit, equipment locations, etc., to accommodate work with obstacles and interferences encountered.
  3. Advise the Owner's Representative in timely manner of questions on equipment locations, heights, etc.
  4. Any reasonable location adjustment of equipment and associated services requested by the Architect/Owner's Representative, prior to work being installed, shall be done with no cost added to the Contract.

B. Coordination with Other Divisions:

1. Provide to other Divisions any information related to their appropriate trade concerning the equipment or any work of this Contract in ample time to prevent delay in building progress.
2. Interference:
  - a. Thoroughly coordinate work with other Divisions and:
    - 1) Determine exact route or location of each piece of equipment, associated services, etc., before fabrication and installation.
    - 2) Maintain maximum headroom.
    - 3) Obtain Engineer's review before installing any work below 7'-0" clear headroom in mechanical areas.
    - 4) Install work of this Division so that all equipment is serviceable and operable.
  - b. Should Architect's details, field conditions, changes in equipment, or Shop Drawing information necessitate an important rearrangement, advise Architect and act in accordance with his directions.

C. Coordination with Drawings: Review all Drawings and if necessary, request copies of Shop Drawings to coordinate work. If potential conflict occurs between this Division's Drawings and another Drawing, advise Owner's Representative and Architect in writing. Do not proceed with work without written directive from Contract-designated authority.

D. Coordination Drawings:

1. Before construction work commences, subcontractors for all trades shall submit coordination drawings in the form of reproducible transparencies drawn at not less than 1/4 inch = 1 foot in scale, noting Contract work below floor slab and penetrating floor slab. Such drawings will be required throughout all areas for all trades. These drawings shall show resolutions of trade conflicts in congested areas. All utilities, piping, ductwork, wiring, etc., shall be dimensioned from column centerlines.
2. Coordination drawings are intended for the respective Contractor's use during construction and shall not be construed as replacing any Shop Drawings or Record Drawings required elsewhere in these Contract Documents. Generally, drawing details and sections are required only at places of conflict among trades. The drawings may be done on an area basis so as not to delay the overall project.
3. Submit coordinated drawings for review as Shop Drawings. The Owner's Representative's review of coordination drawings shall not relieve this Division from the responsibility for coordinating their work with the work of other trades nor shall it authorize any extra cost, omission, or deviation from the requirements of the Contract Documents. Any costs arising from errors or omissions in the coordination process shall be borne by this Division.

E. Scheduling and Procedure of Work:

1. The work of this Division shall be completed in accordance with Project schedule; otherwise, the Owner's Representative shall have the right to install, at this Division's expense, any temporary work of this Division necessary to meet the scheduled completion date.
2. As work occurs within or attached to existing structures:
  - a. Perform all work only on approved schedule.
  - b. Do not interfere with normal operation of existing systems.
  - c. Do not shut off any services without written authorization of Owner's Representative.
  - d. Do as much work as possible prior to the shutdown to minimize the downtime.
  - e. Make temporary connections as necessary to maintain schedule agreed upon, with no cost added to the Contract.
3. No radios, tape players, compact disc players, etc., shall be permitted on-site.
4. Proper work attire shall be worn at all times.
5. Refer to Division 01 Specifications for additional requirements, such as parking permits and identification badges.

**1.8 SUBMITTALS**

- A. Supply submittals indicated in each Section of this Division's Specifications and in accordance with requirements of Division 01 Specifications. Supply separate submittals for each Section of Specifications.
- B. Wiring Diagrams: Electrically operated equipment shall include factory-approved wiring diagram illustrating proper connections to be made between equipment and power and equipment and auxiliary controls (where applicable).
- C. Penetration Firestopping: Submit product data and installer certificates signed by installer certifying that products have been installed in compliance with requirements.
- D. Clearly label each submittal with item name/description; Specifications' section, paragraph and/or subparagraph; and any pertinent Drawing detail reference information.
- E. Submit field quality-control reports when indicated in Part 3 of Division's Specifications.

**1.9 QUALITY REQUIREMENTS**

- A. Contractor shall be licensed in accordance with New York State General Business Law, Article 6-D.

B. Observation of the Work:

1. Architect/Engineer may make periodic visits to the job site to observe the general progress and quality of the work. Architect/Engineer will not make continuous or detailed on-site inspections to check the quality and/or quantity of work and will not be responsible for this Division's failure to carry out construction work in accordance with the Contract Documents, Project schedule, or unsound construction procedures or practices.

C. Conflict Requirements:

1. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

D. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not, including the following:

1. Before request for final payment, submit to the Architect a certificate of approval from one of the listed electrical inspection agencies:
  - a. Middle Department Inspection Agency.
  - b. Independent Consolidated Inspection Service, Inc.

## 1.10 REFERENCES

A. Industry Standards:

1. The following standards shall govern and shall constitute minimum requirements as approved. If the requirements of this Division's Specifications exceed those of the standards mentioned, this Division's Specifications shall govern.
  - a. Local and state building codes.
  - b. Local utility companies.
  - c. National Electrical Manufacturer's Association ("NEMA").
  - d. American Institute of Electronic and Electrical Engineers ("IEEE").
  - e. National Electrical Safety Code ("NESC").
  - f. National Electric Code ("NEC").
  - g. ETL, Factory Mutual ("FM"), or Underwriters Laboratories, Inc. ("UL"), approved or listed, wherever applicable to materials.
  - h. American National Standards Institute ("ANSI").
  - i. National Fire Protection Association ("NFPA").
  - j. Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR") for education, health, and sanitary rules and regulations, including:

1) Chapter XXXIII – State Fire Prevention and Building Code Council, including:

a) Subchapter A – Uniform Fire Prevention and Building Code (Uniform Code):

- (1) Uniform Fire Prevention and Building Code (Part 1219).
- (2) Residential Construction (Part 1220).
- (3) Building Construction (Part 1221).
- (4) Plumbing Systems (Part 1222).
- (5) Mechanical Systems (Part 1223).
- (6) Fuel Gas Equipment and Systems (Part 1224).
- (7) Fire Prevention (Part 1225).
- (8) Property Maintenance (Part 1226).
- (9) Existing Buildings (Part 1227).
- (10) The following documents by reference: 2020 Residential Code of New York State, 2020 Plumbing Code of New York State, 2020 Mechanical Code of New York State, 2020 Building Code of New York State, 2020 Fire Code of New York State, 2020 Existing Building Code of New York State, 2020 Fuel Gas Code of New York State, and 2020 Property Maintenance Code of New York State.

b) Subchapter B – State Energy Conservation Construction Code (Energy Code):

- (1) State Energy Conservation Construction Code (Part 1240).
- (2) The following documents by reference: 2020 Energy Conservation Construction Code, 2016 ASHRAE 90.1, and 2007 ASHRAE 183.

k. Federal Register Americans Disabilities Act ("ADA"); and ICC/ANSI A117.1, the Handicapped Accessibility Code.

l. Any other standards mentioned in this Division's Specifications.

B. Materials and Equipment:

1. Electrical devices, materials, and packaged equipment shall be listed and labeled by UL, FM, or ETL for the intended use and shall bear their label.
2. Plastic materials or equipment with plastic components cannot be installed or used in or as part of a building unless:
  - a. Such covered product complies with the requirements of Chapter 26 of the Building Code of New York State.
  - b. A report of such compliance has been filed with the Department of State in accordance with the Building Code of New York State.



- C. Before submitting bid, consult above codes, regulations, and requirements and make all necessary provisions for same in bid.

#### **1.11 TEMPORARY FACILITIES AND CONTROLS**

- A. Refer to Division 01 Specifications.
- B. Temporary Lighting and Power for Construction:
  - 1. Refer to Division 01 Specifications for additional requirements.
  - 2. Provide all necessary branch circuitry required by temporary heating system(s).

#### **1.12 PRODUCT REQUIREMENTS**

- A. Refer to Division 01 Specifications.
- B. The term "product" shall mean items obtained for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes terms "materials," "equipment," "systems," and terms of similar intent.
- C. The Contract is based on products specified herein, shown on Drawings, and as authorized by addendum.
- D. Ensure all products conform to the Drawings and Specifications with regard to space requirements, performance, capacity, configuration, accessories, and materials of construction.
- E. Products furnished shall be new and, where used for similar purposes, of the same manufacturer. To the fullest extent possible, provide like products from a single source. If quantities from a single source cannot be provided, Architect/Engineer will make determination.
- F. Where the term "provide" is indicated, it shall have the same meaning as "furnish and install." All products listed shall be furnished and installed unless specifically noted to the contrary.
- G. Where the term "or equal" or "or approved equal" is indicated, it shall mean the same as "comparable product."
- H. Where "comparable product" is indicated, it shall mean a product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product. Contractor's request for comparable products will be considered when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. If requested, list of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  5. If requested, samples.
- I. Where the term "basis-of-design product," including manufacturer and model number or other designation, is indicated, intent is to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the Specifications. Bear responsibility and cost for changes made necessary by the use of products other than those of the basis-of-design product.
- J. Where the term "substitution" is indicated, it shall mean changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
1. The products described in the Contract Documents establish a standard of required function, dimensions, appearance, and quality to be met by any proposed substitution.
  2. Contractor may make substitutions only with consent of Owner, after evaluation by the Architect/Engineer and in accordance with a Change Order.
  3. Substitution Procedures: Follow substitution procedures indicated in Division 01 Specifications.
- K. Wherever subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Available Manufacturers/Available Products: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers or products specified.
    - a. This is a non-restricted list. For unnamed manufacturer or unnamed product, product is considered a comparable product, not a substitution, and must be demonstrated and approved through submittal process.
  2. Manufacturers/Products: Subject to compliance with requirements, provide one of the specified products or products by one of specified manufacturers.
    - a. This is a restricted list. For unnamed manufacturer or unnamed product, product is considered a substitution.

3. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed or a comparable product by one of the listed manufacturers.
  - a. Product by one of the listed manufacturers is considered a comparable product, not a substitution, and must be demonstrated and approved through submittal process.
  - b. For unnamed manufacturer or unnamed product, product is considered a substitution.
- L. Where "Manufacturer" or "Product" is indicated with only one named manufacturer or one named product, provide the product of the named manufacturer or the listed product. Comparable products or substitutions are not permitted.
- M. Justification for acceptance or rejection of unnamed products, unnamed manufacturers, comparable products, or product substitutions will not be demonstrated by the Architect/Engineer.
- N. Delivery, Storage, and Handling:
  1. Deliver, store, and handle materials as recommended by the manufacturer.
  2. Handle and store materials in a manner which will not damage materials.
  3. Deliver and store materials throughout floor areas and in locations designated by Owner's Representative. Provide blocking or pallets to prevent materials from becoming soiled.
  4. Schedule deliveries with Owner's Representative prior to shipping.
  5. Be available at site to receive deliveries as scheduled.
  6. Hoist all materials as necessary to complete this Division's scope of work.
- O. Warranties:
  1. Refer to Sections of this Division's Specifications for specific warranties.
  2. Refer to Division 01 Specifications for submittal of warranties.

### 1.13 EXECUTION

- A. Examination of Premises and Existing Conditions:
  1. Examine all existing conditions affecting compliance with Drawings and Specifications by visiting site.
  2. Ascertain access to site, available storage, and delivery facilities.
  3. Verify all governing dimensions at site.
  4. Inspect all adjacent work.
  5. Verify the location, sizes, and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; HVAC utility piping and other utilities.
  6. No consideration shall be given for alleged misunderstandings. Proceeding with the work indicates acceptance of existing conditions.

B. Roughing:

1. This Division's equipment shall be located generally as shown on Drawings; however, check actual field conditions to determine exact locations and avoid interference with other trades. Deviations from the Drawings proposed by this Division must be reviewed by the Owner's Representative before the changes are made. Work improperly installed due to lack of construction verification shall be corrected at the expense of this Division.
2. Before roughing for equipment furnished by others, obtain approved roughing drawings and exact location for each piece of equipment.
3. Obtain Drawings or proper information giving final locations of all wiring, piping, ductwork, and motor and control connections.
4. Unless otherwise detailed or specified:
  - a. All services shall be concealed in wall, above ceilings, etc.
  - b. Work shall be exposed only where approved by the Architect.
  - c. Notify Owner's Representative and Architect if work cannot be concealed as intended.

C. Cutting and Patching:

1. Provide removals, cutting, patching, and replacement required for installation of the work in this Contract, except as noted on the Architectural (A series) Drawings.
  - a. Provide patching for all existing openings caused by the removal of existing ducts, fixtures, equipment, piping, conduit, supports, etc.
2. Before proceeding, meet at Project site with parties involved in cutting and patching, including General Contractor; notify Owner's Representative; review areas of potential interference and conflict; coordinate procedures; and resolve potential conflicts.
3. Patch shall match existing finishes.
4. Refer to Division 01 Specifications for additional requirements.

D. Connections to Equipment Furnished by Others:

1. Various pieces of equipment will be furnished to the Project site and installed by other Divisions.
2. Provide roughing-in and make final connections to equipment as indicated on the Drawings and/or as required.
3. Before proceeding with the work, obtain full information regarding rough-in measurements, equipment layouts, elevations, trim being furnished, and other necessary data.
4. Upon request, Owner's Representative will provide this Division with diagrams, photographs, drawings, and/or specifications and other complete descriptive data showing all mechanical and electrical connections. Do not rough without approved layout from Owner's Representative.

5. Provide accessories so that connections may be made in a manner that shall meet all referenced regulations and codes.
6. See appropriate Sections of this Division's Specifications for materials and methods.

E. Adjustment of Systems:

1. Set aside in the cost breakdown a sum to cover work in adjusting and balancing distribution systems.
2. No payment will be made for balancing until Work of this Division is completed to the satisfaction of the Owner and/or Owner's Representative.

F. Protection of Openings and Equipment:

1. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
2. Protect equipment which is factory-finished using Kraft paper, cardboard, canvas, reinforced polyethylene, etc. Clean and repaint damaged factory finish, matching the original equipment finish.
3. Protect all equipment openings during construction with temporary plugs, caps, or reinforced plastic.
4. Adequately protect existing flooring material, door frames, stairs, wall, etc., during construction. Use any combination of materials, such as plywood, polyethylene sheeting, framing lumber, etc., so that existing finishes are protected. Repair damage to existing finishes that were not completely protected.

G. Progress Cleaning: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

**1.14 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

- A. Salvage of Existing Materials: Obtain from Owner's Representative a list of existing items being removed, to be delivered to on-site storage as directed. Remove from site and legally dispose of items not specifically noted on said list.
1. Dispose of existing lamps associated with luminaires to be removed in accordance with New York State and Federal guidelines and regulations for disposal of mercury-containing lamps.
  2. Dispose of existing ballasts associated with luminaires to be removed in accordance with New York State and Federal guidelines and regulations for disposal of fluorescent ballasts. All fluorescent ballasts shall be treated as hazardous waste unless the ballast clearly indicates that it contains no PCB.

### 1.15 CLOSEOUT PROCEDURES

- A. After all tests are made and installations pronounced satisfactory:
1. Thoroughly clean entire installation (both exposed surfaces and interiors) and leave in clean condition.
  2. Remove all debris caused by work.
  3. Promptly remove tools, surplus materials, and trailer when work is finally accepted.
- B. Receipts for Loose Equipment:
1. Prior to request for final payment:
    - a. Deliver to Owner's Representative the following loose equipment:
      - 1) Keys for panelboards.
      - 2) Circuit-breaker handle locks.
      - 3) Spare fuses for main switchboard and disconnect switches.
      - 4) Spare glass rods for fire alarm system manual stations.
    - b. Obtain signed receipt for delivered loose equipment.
  2. Include receipt in operations and maintenance manual.
- C. Refer to Division 01 Specifications for additional information on Project closeout and cleanup.

### 1.16 OPERATION AND MAINTENANCE DATA

- A. Submit 3 complete copies of operating and maintenance manuals to the Owner's Representative 60 days prior to scheduled date of substantial completion. Noncompliance or incomplete submittal will be rejected and returned for resubmittal.
1. Photocopy paragraphs B and C below to be used as a checklist for compliance with materials, format, and data.
  2. Once items are compiled, place a checkmark in the brackets for items included and strike through the items that do not apply.
  3. Submit checklist with operating and maintenance manuals.
- B. The operating and maintenance manuals shall consist of and will be reviewed for the following format and contents.
1. Binder:
    - a. ☐ Three-ring, plain black, vinyl binder free of vendor/contractor logos, etc.
    - b. ☐ Cover and spine (binder) identification including:

- 1) ☐ Manual title: "OPERATION AND MAINTENANCE MANUAL."
- 2) ☐ Owner.
- 3) ☐ Project title.
- 4) ☐ Owner's project number.
- 5) ☐ Year of construction.
- 6) ☐ Trade(s).
- 7) ☐ Volume number and total number of volumes (e.g., Volume 1 of 2).

2. Contents:

- a. ☐ Project title page (enclosed in clear, transparent plastic sleeve) to match cover identification with at least one-third page blank for review stamp and comments.
- b. ☐ Project directory page (enclosed in a clear transparent plastic sleeve) including name, address, and telephone number of:

- 1) ☐ Owner.
- 2) ☐ Architect.
- 3) ☐ Engineer.
- 4) ☐ Contractor.
- 5) ☐ Subcontractor.

- c. ☐ Table of contents (enclosed in a clear, transparent plastic sleeve) arranged to follow Specifications order (with format as list below):

- 1) ☐ Warranty letter.
- 2) ☐ Summary of scheduled maintenance.
- 3) ☐ List of maintenance parts, repair/replacement parts, and recommended spare parts, including equipment name, part number, and suppliers (name, address, and phone number).
- 4) ☐ Letters of certification for required system tests.
- 5) ☐ Include on table of contents the following information for each product:

Spec. Section Number	Equipment Description	Supplying Company	Local Representative	Telephone Number
260500	Widgets	Acme Company	John Doe	555-1212

- d. ☐ Submittals as indicated in "Submittals" Article of this Section, including:

- 1) ☐ Approved copies of all submittals, including parts lists.
- 2) ☐ Material safety data sheets for firestopping.
- 3) ☐ Installation, operating, and maintenance instructions.
- 4) ☐ Wiring diagrams.
- 5) ☐ Warranties.
- 6) ☐ Test reports.



C. [ ]Product Identification:

1. [ ]Provide indexed cardstock dividers between each submittal group.
2. [ ]Arrange in an order corresponding to the original Project's Specifications.
3. [ ]Where cataloged data covers more than one item, highlight applicable sections and identify corresponding equipment as marked on Drawings.
4. [ ]Instructions shall include:
  - a. Time schedule for maintenance work (list each item of mechanical equipment requiring inspection, lubrication, or service) and description of the performance of such maintenance.
  - b. Normal starting, operating, and shutdown procedures.

**1.17 PROJECT RECORD DOCUMENTS**

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's, Architect's, and/or Engineer's reference during normal working hours.
- C. Record Drawings:
  1. Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
    - a. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
      - 1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      - 2) Accurately record information in an acceptable drawing technique.
      - 3) Record data as soon as possible after obtaining it.
      - 4) Record and check the markup before enclosing concealed installations.
      - 5) Cross-reference record prints to corresponding archive photographic documentation.



- b. Content: Types of items requiring marking include, but are not limited to, the following:
    - 1) Dimensional changes to Drawings.
    - 2) Revisions to details shown on Drawings.
    - 3) Locations and depths of underground utilities.
    - 4) Revisions to routing of piping and conduits.
    - 5) Revisions to electrical circuitry pertaining to the work of this Contract.
    - 6) Actual equipment locations.
    - 7) Locations of concealed internal utilities.
    - 8) Changes made by Change Order or Construction Change Directive.
    - 9) Changes made following Architect's written orders.
    - 10) Details not on the original Contract Drawings.
    - 11) Field records for variable and concealed conditions.
    - 12) Record information on the Work that is shown only schematically.
  - c. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  - d. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  - e. Mark important additional information that was either shown schematically or omitted from original Drawings.
  - f. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
2. Submittals: Comply with Division 01 Specifications.
- D. Record Specifications: Comply with Division 01 Specifications.
- E. Refer to Division 01 Specifications.

#### **1.18 DEMONSTRATION AND TRAINING**

- A. Owner's designated operating personnel shall be instructed in the care and operation of the systems in accordance with manufacturer's instructions and as indicated in these Specifications.
- B. Coordinate instruction schedule with Owner's operations. Notify Owner's personnel in advance of training. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

D. Training shall include, but not be limited to, the following systems:

1. Access control system.
2. Lighting controls.
3. Fire-alarm system.

**1.19 WORK RELATED TO ASBESTOS AND WORK IN ASBESTOS-CONTAMINATED AREAS**

- A. Portions of the existing mechanical systems and general construction are believed to be insulated or constructed with asbestos-containing materials.
- B. Asbestos-containing materials have reportedly contaminated portions of the crawlspace and ceiling plenum.
- C. Do not disturb such materials.
- D. Where work is unavoidable in contaminated areas, employ or subcontract the services of an "Allied Trade Certified Mechanic" (ATCM) to perform the work of this Division.
- E. It is understood that a separate contract has been, or will be, issued for the abatement of portions of the asbestos-containing materials.

**1.20 INFECTION CONTROL**

- A. The Contractor acknowledges the critical importance of mitigating the risk of transmission of infectious agents and pathogens in the construction and renovation process, and recognizes its responsibility to cooperate fully with the Owner's infection control personnel and to implement procedures directed by the Owner towards maintaining the risk of the spread of infectious agents within acceptable limits. Such procedures may include, but are not necessarily limited to the following:
  1. Practicing all social-distancing requirements as much as possible during construction.
  2. Phasing of the renovation and new construction work to minimize disruption of existing Owner's operations.
  3. Participating in infection control meetings as may be scheduled by the Owner's staff.
  4. Cleanup of work areas daily where such area is occupied.
- B. Refer to Division 01 Specifications.

## PART 2 - PRODUCTS

### 2.1 TEMPORARY LIGHT AND POWER FOR CONSTRUCTION

#### A. Lamp Sockets:

1. Low bay, industrial-type LED source with lamp guard.
2. Rated 90 watts, 12,400 lumens, 120/277 volts.
3. Available Product: Baron/Trace-Lite "EHB" series.

#### B. Wire and Receptacles: As specified in Division 26 Section "Wiring Devices."

#### C. Outlet Boxes:

1. Utility type, weatherproof.
2. Available Manufacturer: Red Dot with weatherproof.

#### D. Panelboards:

1. Load-center type, rain tight.
2. Rating: 208Y/120 volts, 3-phase, 4-wire, ampere as required.
3. Breakers: As required, GFI throughout.
4. Manufacturers:
  - a. General Electric.
  - b. Eaton.
  - c. Square D.

#### E. Disconnect Switches:

1. Rain tight, general duty, 250-V ac, 3-pole, fusible, size as required.
2. Manufacturers:
  - a. General Electric.
  - b. Eaton.
  - c. Square D.

#### F. Wireway:

1. Rain tight, size as required.
2. Manufacturers:
  - a. General Electric.
  - b. Square D.
  - c. Keystone.

## 2.2 PENETRATION FIRESTOPPING

### A. Available Manufacturers:

1. A/D Fire Protection Systems Inc.
2. Grace Construction Products.
3. Hilti, Inc.
4. Johns Manville.
5. Nelson Firestop Products.
6. NUCO Inc.
7. Passive Fire Protection Partners.
8. RectorSeal Corporation.
9. Specified Technologies Inc.
10. 3M Fire Protection Products.
11. Tremco, Inc.; Tremco Fire Protection Systems Group.
12. USG Corporation.

### B. Provide penetration firestopping materials that are compatible with one another, substrates, and penetrating items if any.

### C. Penetrations in Fire-Resistance-Rated Walls and Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating at Fire-Resistance-Rated Walls: Not less than that of construction penetrated.
2. F-Rating at Horizontal Assemblies: At least 1 hour, but not less than that of construction penetrated.

### D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.

## PART 3 - EXECUTION

### 3.1 TEMPORARY LIGHT AND POWER FOR CONSTRUCTION

- A. Provide and maintain temporary light and power as specified and as required by the NEC and OSHA.
- B. Relocate temporary work as may be required to avoid delaying work of other trades.
- C. Install suitable temporary lighting to provide a minimum of 5 foot candles at all locations within the buildings.
- D. Install a reasonable number of convenience receptacles to provide power for hand tools and other construction equipment. Locate so that any part of the buildings may be reached with a 100' extension cord.

E. Remove all temporary panels, switches, wiring, etc., upon completion of Project.

F. Special Services:

1. Each trade wishing to use special circuitry for its power tools, etc., shall make the necessary arrangements with this Division's Contractor and pay all costs.
2. Each trade shall provide its own extension cords.

### **3.2 PENETRATION FIRESTOPPING**

A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

END OF SECTION 260010

**SECTION 260015**  
**EARTH MOVING FOR ELECTRICAL**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. This Section includes the following:

1. Excavating and backfilling for structures.
2. Excavating and backfilling for utility trenches.
3. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.
4. Final grading, together with placement and preparation of topsoil for lawns and planting.

**1.2 DEFINITIONS**

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

D. Excavation: Removal of material encountered above subgrade elevations.

E. Fill: Soil materials used to raise existing grades.

F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

H. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

### 1.3 SUBMITTALS

- A. Not required.

### 1.4 QUALITY ASSURANCE

- A. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Specifications.
- B. Codes and Standards: Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.
- C. Testing and inspection service: Refer to Division 1 for requirements.

### 1.5 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.
  - 1. Notify Architect not less than seven days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
  - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

- D. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.
- E. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

## 2.2 GRASS SEED

- A. Provide fresh, clean new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America.
- B. Seed Mixture: 25% Creeping Red Fescue; 40% Kentucky Bluegrass Blend; 35% Fine-Textured Endophytic Perennial Ryegrass.
- C. Percentages of Germination and Purity:

NAME	PURITY	GERMINATION
Creeping Red Fescue	97	85
Kentucky Bluegrass Blend	95	85
Perennial Ryegrass	98	90

- D. Packaging: Supply seed in manufacturer=s sealed containers. Labels on containers shall show a certified analysis of percentages of purity and germination.
- E. Fertilizer: Standard-quality commercial carrier of plant food elements containing nitrogen, phosphoric acid, and potash in the ratio of 1:2:1. Packaged in the manufacturer=s standard containers weighing not over 100 pounds in each with name of material, net weight of concrete, and manufacturer=s name and guaranteed analysis appearing on each container. Material that has become caked or otherwise damaged will be rejected.
- F. Mulch: Shall be stalks of straw, free from noxious weeds.

## 2.3 ASPHALT-AGGREGATE MIXTURE

- A. For patching to match existing pavement, provide asphalt-aggregate mixture as follows:
  - 1. NYSDOT Item 401-1:
    - a. Base material: Type 3.
    - b. Topping: Type 7.



## 2.4 DRAINAGE FABRIC

- A. Non-woven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 110 lbf (490 N); ASTM D 4632.
  2. Tear Strength: 40 lbf (178 N); ASTM D 4533.
  3. Puncture Resistance: 50 lbf (222 N); ASTM D 4833.
  4. Water Flow Rate: 150 gpm per sq. ft. (100 L/s per sq. m); ASTM D 4491.
  5. Apparent Opening Size: No. 50 (0.3 mm); ASTM D 4751.

## 2.5 SEPARATION FABRIC

- A. Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 200 lbf (890 N); ASTM D 4632.
  2. Tear Strength: 75 lbf (333 N); ASTM D 4533.
  3. Puncture Resistance: 90 lbf (400 N); ASTM D 4833.
  4. Water Flow Rate: 4 gpm per sq. ft. (2.7 L/s per sq. m); ASTM D 4491.
  5. Apparent Opening Size: No. 30 (0.6 mm); ASTM D 4751.

## 2.6 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
1. Red: Electric.
  2. Orange: Telephone and other communications.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section(s).
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section(s), during earthwork operations.
- D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- E. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil bearing water runoff or airborne dust to adjacent properties and walkways.

### 3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

### 3.3 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
  - 2. Remove rock to lines and grades indicated to permit installation of permanent construction:

### 3.4 EXCAVATION FOR STRUCTURES

- A. Excavate to a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavation for Electrical Utility Structures: Excavate to a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

### **3.5 EXCAVATION FOR UTILITY TRENCHES**

- A. Excavate trenches to indicated depths and elevations.
  1. Excavate trenches to uniform widths to provide ample working area and a 12" minimum clearance on each side of conduit.
  2. Excavate trenches to depth to allow installation of top of conduit below frost line and/or as indicated on Contract Documents.
  3. Excavate trenches 6" deeper than bottom of conduit elevation to allow for bedding course.
- B. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of conduit. Shape subgrade to provide continuous support for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

### **3.6 SUBGRADE INSPECTION**

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

### **3.7 STORAGE OF SOIL MATERIALS**

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
- B. Dispose of excess excavated soil materials not acceptable for use as backfill or fill.

### **3.8 BACKFILL**

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  2. Surveying locations of underground utilities for Record Documents.
  3. Testing and inspecting underground utilities.

4. Removing concrete formwork.
5. Removing trash and debris.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

### **3.9 UTILITY TRENCH BACKFILL**

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms when indicated. Shape bedding course to provide continuous support for joints, fittings, and bodies of conduits.
- C. Place and compact initial backfill, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the conduit.
- D. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- E. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### **3.10 SOIL FILL**

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  1. Under grass and planted areas, use satisfactory soil material.
  2. Under walks and pavements, use satisfactory soil material.
  3. Under steps and ramps, use engineered fill.
  4. Under building slabs, use engineered fill.
  5. Under footings and foundations, use engineered fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

### **3.11 COMPACTION OF SOIL BACKFILLS AND FILLS**

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

### **3.12 GRADING**

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross-sections, lines, and elevations indicated.
1. Provide a smooth transition between adjacent existing grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
  3. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
    - a. Lawn or Unpaved areas: Plus or minus 1 inch.
    - b. Walks: Plus or minus 1 inch.
    - c. Pavements: Plus or minus ½ inch.
- B. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

### **3.13 CUTTING AND PATCHING**

- A. Where required, cut paved areas perpendicular to surface and in straight lines.
- B. Replace asphalt areas, walks, etc., with materials specified or to match existing construction and in a manner acceptable to and as accepted by the Architect.

### **3.14 PREPARATION FOR PLANTING LAWNS**

- A. Fine-grade lawn areas to smooth, even surface with loose, uniformly fine texture. Roll, rake, and drag lawn areas; remove ridges; fill depressions, as required to meet finish grades. Limit fine grading to areas that can be planted immediately after grading.
- B. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.
- C. Restore lawn areas to specified condition, if eroded or otherwise disturbed, after fine grading and prior to planting.

### **3.15 SEEDING NEW LAWNS**

- A. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
- B. Sow seed using a spreader or seeding machine. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.
- C. Sow not less than the quantity of seed specified or scheduled.
- D. Rake seed lightly into top 1/8" of soil, roll lightly, and water with a fine spray.
- E. Protect seeded areas against erosion by spreading straw mulch after completion of seeding operations. Spread uniformly to form a continuous blanket not less than 1-1/2" loose measurement over seeded areas.

### **3.16 RECONDITIONING EXISTING LAWNS DAMAGED BY CONSTRUCTION WORK**

- A. Recondition existing lawn areas damaged by Contractor=s operations including storage of materials and equipment and movement of vehicles. Also recondition existing lawn areas where minor regrading is required.
- B. Provide seed as specified for new lawns, and as required, to provide a satisfactory reconditioned lawn.
- C. Provide new topsoil, as required, to fill low spots and meet new finish grades.
- D. Cultivate bare and compacted areas thoroughly to provide a satisfactory planting bed.
- E. Remove diseased and unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from Contractor=s operations, including oil drippings, stone, gravel, and other loose building materials.
- F. When substantial lawn remains but is thin, mow, rake, aerate if compacted, fill low spots, remove humps, cultivate soil, and seed. Remove weeds before seeding, or if extensive, apply selective chemical weed killers as required. Apply a seedbed mulch to maintain moist condition.
- G. Water newly planted lawn areas, and keep moist until new grass is established.

### **3.17 MAINTENANCE**

- A. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface

or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### **3.18 PROTECTION**

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### **3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
  - 1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 260015

## SECTION 260500

### COMMON WORK RESULTS FOR ELECTRICAL

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Sleeves for raceways and cables.
3. Sleeve seals.
4. Grout.
5. Common electrical installation requirements.

##### 1.2 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.

##### 1.3 SUBMITTALS

- A. Product Data: For sleeve seals.

##### 1.4 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for conduit installed at required slope.
4. So connecting raceways and cables will be clear of obstructions and of the working and access space of other equipment.

- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

- C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed.



## **PART 2 - PRODUCTS**

### **2.1 SLEEVES FOR RACEWAYS AND CABLES**

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

### **2.2 SLEEVE SEALS**

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

- 1. Manufacturers:

- a. Advance Products & Systems, Inc.
- b. Calpico, Inc.
- c. Metraflex Co.
- d. Pipeline Seal and Insulator, Inc.

- 2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
- 3. Pressure Plates: Plastic. Include two for each sealing element.
- 4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

### **2.3 GROUT**

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, non-corrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

## **PART 3 - EXECUTION**

### **3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION**

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.

### 3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
  - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint.
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials.
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

### **3.3 SLEEVE-SEAL INSTALLATION**

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### **3.4 FIRESTOPPING**

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 26 Section "General Requirements for Electrical."

END OF SECTION 260500

## SECTION 260519

### LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Copper building wire.
2. Aluminum building wire.
3. Metal-clad cable, Type MC.
4. Fire-alarm wire and cable.
5. Connectors and splices.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Field quality-control reports.

#### PART 2 - PRODUCTS

##### 2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. Alpha Wire; brand of Belden, Inc.
  2. General Cable; Prysmian Group North America.
  3. Southwire Company, LLC.
- C. Standards:
1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

E. Conductor Insulation:

1. Type USE-2 and Type SE: Comply with UL 854.
2. Type THHN and Type THWN-2: Comply with UL 83.
3. Type UF: Comply with UL 83 and UL 493.
4. Type XHHW-2: Comply with UL 44.

**2.2 ALUMINUM BUILDING WIRE**

A. Description: Flexible, insulated and uninsulated, drawn aluminum current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Conductors: Aluminum, complying with ASTM B800 and ASTM B801.

D. Conductor Insulation:

1. Type USE-2: Comply with UL 854.
2. Type THHN and Type THWN-2: Comply with UL 83.

**2.3 METAL-CLAD CABLE, TYPE MC**

A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. AFC Cable Systems; Atkore International.
2. General Cable; Prysmian Group North America.
3. Southwire Company, LLC.

C. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Comply with UL 1569.

D. Circuits:

1. Single circuit and multi-circuit with color-coded conductors.
2. Power-Limited Fire-Alarm Circuits: Comply with UL 1424.

- E. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.
- F. Ground Conductor: Insulated.
- G. Conductor Insulation: Type TFN/THHN/THWN-2: Comply with UL 83.
- H. Armor: Aluminum, interlocked.

## **2.4 FIRE-ALARM WIRE AND CABLE**

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - 1. Allied Wire & Cable Inc.
  - 2. Superior Essex Inc.; subsidiary of LS Corp.
  - 3. West Penn Wire; brand of Belden, Inc.
- B. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.
- C. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.
  - 1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70, Article 760, Classification CI, for power-limited fire-alarm signal service Type FPL. NRTL listed and labeled as complying with UL 1424 and UL 2196 for a two-hour rating.
- D. Non-Power-Limited Circuits: Solid-copper conductors with 600 V rated, 75 deg C, color-coded insulation, and complying with requirements in UL 2196 for a two-hour rating.
  - 1. Low-Voltage Circuits: No. 16 AWG, minimum, in pathway.
  - 2. Line-Voltage Circuits: No. 12 AWG, minimum, in pathway.
  - 3. Multiconductor Armored Cable: NFPA 70, Type MC, copper conductors, Type TFN/THHN conductor insulation, copper drain wire, copper armor with red identifier stripe, NRTL listed for fire-alarm and cable tray installation, plenum rated.

## **2.5 CONNECTORS AND SPLICES**

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. AFC Cable Systems; Atkore International.
  2. Ideal Industries, Inc.
  3. TE Connectivity Ltd.
- C. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- D. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
1. Material: Aluminum.
  2. Type: One hole with long barrels.
  3. Termination: Compression.

### **PART 3 - EXECUTION**

#### **3.1 CONDUCTOR MATERIAL APPLICATIONS**

- A. Feeders: Copper for feeders smaller than No. 1/0 AWG; copper or aluminum for feeders No. 1/0 AWG and larger. Conductors must be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
- C. ASD Output Circuits Cable: Extra-flexible stranded for all sizes.
- D. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

#### **3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS**

- A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.
- B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN/THWN-2, single conductors in raceway; armored cable, Type AC; metal-clad cable, Type MC; or nonmetallic-sheathed cable, Type NM.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN/THWN-2, single conductors in raceway.

- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway; armored cable, Type AC; metal-clad cable, Type MC; or mineral-Nonmetallic-sheathed cable, Type NM.
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.
- H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless steel, wire-mesh, strain relief device at terminations to suit application.
- I. ASD Output Circuits: Type TC-ER cable with braided shield.

### 3.3 INSTALLATION, GENERAL

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

### 3.4 INSTALLATION OF FIRE-ALARM WIRE AND CABLE

- A. Comply with NFPA 72.
- B. Wiring Method:
  - 1. Install plenum cable in environmental airspaces, including plenum ceilings.
  - 2. Fire-alarm circuits and equipment control wiring associated with fire-alarm system must be installed in a dedicated pathway system.
    - a. Cables and pathways used for fire-alarm circuits, and equipment control wiring associated with fire-alarm system, may not contain any other wire or cable.



3. Fire-Rated Cables: Use of two-hour, fire-rated fire-alarm cables, NFPA 70, Types MI and CI, is not permitted.
  4. Signaling Line Circuits: Power-limited fire-alarm cables maybe installed in the same cable or pathway as signaling line circuits.
- C. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with fire-alarm system to terminal blocks. Mark each terminal according to system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- D. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes; cabinets; or equipment enclosures where circuit connections are made.
- E. Color-Coding: Color-code fire-alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire-alarm system junction boxes and covers red.
- F. Risers: Install at least two vertical cable risers to serve the fire-alarm system. Separate risers in close proximity to each other with a minimum one-hour-rated wall, so the loss of one riser does not prevent receipt or transmission of signals from other floors or zones.
- G. Wiring to Remote Alarm Transmitting Device: 1 inch conduit between the fire-alarm control panel and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

### 3.5 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material.
1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.
- D. Comply with requirements in Section 283120 "Fire-Alarm System" for connecting, terminating, and identifying wires and cables.

### 3.6 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

### 3.7 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

### 3.8 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Specifications.

### 3.9 FIELD QUALITY CONTROL

- A. Tests and Inspections:
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
  - 2. Perform each of the following visual and electrical tests:
    - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
    - b. Test bolted connections for high resistance using one of the following:
      - 1) A low-resistance ohmmeter.
      - 2) Calibrated torque wrench.
      - 3) Thermographic survey.
    - c. Inspect compression-applied connectors for correct cable match and indentation.
    - d. Inspect for correct identification.
    - e. Inspect cable jacket and condition.
    - f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable for a one-minute duration.
    - g. Continuity test on each conductor and cable.
    - h. Uniform resistance of parallel conductors.

- B. Cables will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports to record the following:
  - 1. Procedures used.
  - 2. Results that comply with requirements.
  - 3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION 260519

## SECTION 260526

### GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment, plus the following special applications:
  - 1. Underground distribution grounding.
- B. Related Sections:
  - 1. Division 26 Section "Low-Voltage Electrical Transmissions."
  - 2. Division 27 Section "Data Network System."

##### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:
  - 1. Ground rods.
  - 2. Grounding arrangements and connections for separately derived systems.

##### 1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.
- C. Provide all grounding in strict accordance with NEC Article 250.
- D. Data Network Systems: Provide grounding in accordance with ANSI-J-STD-607-A.

## **PART 2 - PRODUCTS**

### **2.1 CONDUCTORS**

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
  - 1. Solid Conductors: ASTM B 3.
  - 2. Stranded Conductors: ASTM B 8.
- C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches in cross-section, unless otherwise indicated; with insulators.

### **2.2 CONNECTORS**

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
  - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

### **2.3 GROUNDING ELECTRODES**

- A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet in diameter.

## **PART 3 - EXECUTION**

### **3.1 APPLICATIONS**

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

- B. Underground Grounding Conductors: Unless otherwise indicated, install bare copper conductor, No. 2/0 AWG minimum.
  - 1. Bury at least 30 inches below grade.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
  - 1. Install bus on insulated spacers 1 inch, minimum, from wall 6 inches above finished floor, unless otherwise indicated.
- E. Conductor Terminations and Connections:
  - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
  - 2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
  - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
  - 4. Connections to Structural Steel: Welded connectors.
- F. Each equipment ground bus, ground pad, frame, and enclosure shall have surfaces at point of connection thoroughly cleaned and brightened just prior to actually making the connection.
- G. Splices in wire or cable grounding conductors are prohibited.

### **3.2 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS**

- A. Panel at Athletic Field: Install two ground rods and connect ground ring to the panel. Ground equipment by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground and for connection to equipment grounding terminals. Bury ground connection not less than 6 inches from the foundation.

### **3.3 EQUIPMENT GROUNDING**

- A. Install separate insulated green equipment grounding conductors with all feeders and branch circuits. Install separate grounding conductor for each circuit indicated.
- B. Air-Duct Equipment Circuits: Install insulated green equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

- C. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location. Provide additional grounding in accordance with TIA/EIA, ANSI Standard 607A.
- D. Poles Supporting Outdoor Lighting Fixtures: Install grounding rod and a separate insulated equipment grounding conductor at each pole in addition to grounding conductor installed with branch-circuit conductors.

### 3.4 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 12 inches below finished floor or final grade, unless otherwise indicated.
  - 1. Interconnect ground rods with grounding electrode conductor below grade. Make connections without exposing steel or damaging coating, if any.
  - 2. The length, number, spacing, and location of ground rods shall be as indicated on Contract Documents.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
  - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
  - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
  - 3. Use exothermic-welded connectors for outdoor locations.
- D. Grounding and Bonding for Piping:
  - 1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, street side ahead of any fittings, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
  - 2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
  - 3. Provide bonding connections to all water pipes, including domestic water and sprinkler mains. Include water meter, dielectric break device, or similar bypass connections.

- Surface of the pipe at point of connection shall be thoroughly cleaned and brightened immediately prior to actually making the connection. The contact surfaces shall be coated with oxide-inhibiting compound.
4. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
  5. Each equipment ground bus, ground pad, frame, and enclosure shall have surfaces at point of connection thoroughly cleaned and brightened just prior to actually making the connection. Touch up damaged painted surfaces.
  6. All grounding shall be in strict accordance with NEC Article 250.
- E. Where grounding conductors pass through floor slabs or walls and are not encased in metal conduit, provide PVC, Schedule 80, nonmetallic sleeve.
- F. Raceway Systems:
1. Metal supports, brackets, for the raceway system, panels, switches, boxes, starters, and controls, which are not rigidly secure to and in contact with the raceway system or which are subject to vibration and loosening, shall be bonded to the raceway system; the size of the bonding conductor shall be in accordance with NEC Table 250-122.
  2. Termination of rigid conduit at boxes, cabinets, and enclosures shall be made up tightly with a double-locknut arrangement and a bushing; bushings being of the insulated type where required by NEC.
  3. Where conduit enters or leaves any electrical enclosure with removable cover plates, provide conduit grounding bushings and bonding jumpers sized in accordance with NEC Table 250-122 between the grounding bushings and the enclosure rigid frame or ground bus.
  4. Conduit that runs to or from boxes, cabinets, or enclosures having concentric or eccentric knockouts, which partially perforate the metal around the conduit and hence impair the continuity of system ground circuits, shall be provided with bonding jumpers, sized in accordance with NEC Table 250-122, connected between a grounding type bushing/locknut on the conduit and a ground bus or stud inside the box, cabinet, or enclosure, and attached thereto.
  5. Where flexible metallic conduit and/or liquid-tight conduit is used, a bonding jumper shall be provided, sized in accordance with NEC Table 250-122.
  6. All runs of conduit and/or raceway shall be provided with a system ground conductor sized according to Table 250-122.
- G. Attachment to Structural Steel:
1. Location of attachment bonds of ground conductors shall be at points not subject to mechanical or structural damage, but accessible for inspection. Coordinate exact location. Provide in accordance with NEC.
  2. Attach preferably by molded-fusion-welding process.
  3. Where welding is prohibited, attach by bolting, 7/16" hole in steel, 3/8" silicon bronze bolt, bolt end peened, steel surface bright and flat prior to bolting, just prior to bolting contact surfaces lightly coated with oxide-inhibiting compound.
  4. Bond building addition to existing building in accordance with NEC.



H. Secondary Electrical System:

1. The neutral conductor of low-voltage, single and/or polyphase system or distribution system, except special isolated double-insulated systems, shall be solidly connected at the transformer neutral bushing or at the main secondary service equipment; to system ground and shall be sized for current-carrying capacity, not to be less than the following, which are listed in preferential order:
  - a. As indicated on Contract Drawings.
  - b. As required by NEC Table 250-66 for grounding electrode conductor and Table 250-122 for equipment grounding conductor.
2. For transformers rated 600 volts or less:
  - a. Provide equipment grounding conductor (green-colored insulation) in same conduit with primary conductors. Connect grounding conductor to ground bus located inside transformer enclosure.
  - b. Provide ground conductor from neutral of secondary winding to ground bus.
  - c. Provide ground conductor from ground bus to nearest metallic pipe, building steel, or ground rod.
  - d. Provide ground conductor from ground bus to panelboard served by transformers.
3. Provide equipment grounding conductor (green-colored insulation) with phase conductors in each circuit. Insulation shall be same as phase conductors.
4. Equipment grounding conductors shall extend from the point of termination back to the ground bus of the serving panelboard, switchboard, transformer, or switchgear.

END OF SECTION 260526

## SECTION 260529

### HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Hangers and supports for electrical equipment and systems.
  - 2. Construction requirements for concrete bases.

##### 1.2 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

##### 1.3 SUBMITTALS

- A. Product Data: For the following:
  - 1. Steel slotted support systems.
  - 2. J-hooks for communication cables.

##### 1.4 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements as indicated.
- B. Coordinate installation of equipment supports and roof penetrations.

#### PART 2 - PRODUCTS

##### 2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Manufacturers:
  - a. Allied Tube & Conduit.
  - b. Cooper B-Line, Inc.; a division of Cooper Industries.
  - c. ERICO International Corporation.
  - d. Thomas & Betts Corporation.
  - e. Unistrut; Tyco International, Ltd.
2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
  1. J-Hook-Type Supports:
    - a. Provide J-hook-type supports for communication cables above accessible corridor ceilings.
    - b. Galvanized, stamped steel cable support.
    - c. Comply with ENSO 174-2 and meet ISO/IEC 14763-2. TOA 568-C, and TIA 569-C.
    - d. Provide 4-inch-diameter unit rated for 60-lb static load and 220-V, Cat. 6 conductors (70 percent fill).
    - e. Product: Erico "CAT HP" series J-hook with mounting hardware.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
  1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    - a. Manufacturers:

- 1) Hilti Inc.
  - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
  - 3) MKT Fastening, LLC.
2. Mechanical-Expansion Anchors: Insert-wedge type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
- a. Manufacturers:
- 1) Hilti Inc.
  - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
  - 3) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION**

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
  1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.

### **3.2 SUPPORT INSTALLATION**

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

- B. Strength of Support Assemblies: Select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
1. To Wood: Fasten with lag screws or through bolts.
  2. To New Concrete: Bolt to concrete inserts.
  3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  4. To Existing Concrete: Expansion anchor fasteners.
  5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
  6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
  7. To Light Steel: Sheet metal screws.
  8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

### 3.3 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 3.
- C. Anchor equipment to concrete base.
1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

END OF SECTION 260529

## SECTION 260533

### RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. Related Section:
  - 1. Division 26 Section "Underground Ducts and Raceways for Electrical Systems" for handholes and pull boxes for exterior underground wiring.

##### 1.2 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. EPDM: Ethylene-propylene-diene terpolymer rubber.
- C. FMC: Flexible metal conduit.
- D. IMC: Intermediate metal conduit.
- E. LFMC: Liquid-tight flexible metal conduit.
- F. RNC: Rigid nonmetallic conduit.

##### 1.3 SUBMITTALS

- A. Product Data: For raceways, surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details.
  - 1. Submit floor plans to scale for proposed conduits in or under floor slab construction.

#### **1.4 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.
- B. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 METAL CONDUIT AND TUBING**

- A. Manufacturers:
  - 1. Allied Tube & Conduit.
  - 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
  - 3. Maverick Tube Corporation.
  - 4. O-Z Gedney.
  - 5. Wheatland Tube Company.
- B. Rigid Steel Conduit:
  - 1. ANSI C80.1.
  - 2. Hot-dipped galvanized steel.
  - 3. Fittings: Galvanized steel, threaded couplings, locknut, and insulated throat bushings.
- C. IMC:
  - 1. ANSI C80.6.
  - 2. Hot-dipped galvanized steel.
  - 3. Fittings: Galvanized steel, threaded couplings, locknut, and insulated throat bushings.
- D. EMT:
  - 1. ANSI C80.3.
  - 2. Electrogalvanized steel.
  - 3. Couplings and Box Connectors:
    - a. General usage: Galvanized steel, setscrew type with insulated throat. Die cast is not allowed.
    - b. Wet and damp locations: Rain-tight and concrete-tight, compression type with steel compression nut with insulated throat.

E. FMC:

1. Galvanized steel.
2. Conduit Connectors: Galvanized steel, setscrew type with insulated throat. UL-approved as grounding type.

F. LFMC:

1. Flexible steel conduit with PVC jacket.
2. Galvanized steel with liquid-tight and dust-tight jacket.
3. Connectors:

a. Similar to FMC except provide with rated use with lighttight flexible conduit.

G. Fittings for Conduit (Including all Types and Flexible and Liquid-Tight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.

H. Conduit Fittings for Wire Pulling:

1. Cast metal, lacquer protective coating.
2. Covers: Galvanized sheet steel, blank, attached by two screws or dog devices.

## 2.2 NONMETALLIC CONDUIT AND TUBING

A. Manufacturers:

1. CANTEX Inc.
2. CertainTeed Corp.; Pipe & Plastics Group.
3. Lamson & Sessions; Carlon Electrical Products.
4. RACO; a Hubbell Company.

B. RNC: NEMA TC 2, Type EPC-80-PVC, unless otherwise indicated.

C. Fittings for RNC: NEMA TC 3; match to conduit or tubing type and material.

## 2.3 METAL WIREWAYS

A. Manufacturers:

1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.



- B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Hinged type.
- E. Finish: Manufacturer's standard enamel finish.

## 2.4 SURFACE RACEWAYS

- A. Basis-of-Design Product: Provide Wiremold #700 series for Type A and Wiremold #V4000 series for Type B, or approved equal by one of the following:
  - 1. Panduit.
  - 2. Hubbell.
- B. Surface Metal Raceways:
  - 1. Type A:
    - a. One piece consisting of base and cover, galvanized steel.
    - b. Size: 21/32-inch high, 3/4-inch wide, length as required.
    - c. Finish: Baked-enamel, ivory finish.
    - d. Fittings and boxes: Provide as required for complete installations to meet the intent of the Contract Drawings.
  - 2. Type B:
    - a. Two-section raceway of two pieces consisting of base and snap-on cover which snap on a common base. Galvanized steel with divider.
    - b. Size: 4-3/4 inches high, 1-3/4 inches deep, length as indicated on Contract Drawings.
    - c. Finish: Ivory.
    - d. Entrance End Fittings:
      - 1) Available Product: Wiremold #V4010A.
      - 2) Unless otherwise indicated, provide entrance end fitting at beginning of all lengths of two-section raceway. Provide power raceways and conductors as called for to power side of entrance end fitting. Provide one 1-1/4-inch and one 1-inch raceway for data/communications conductors to communications side of entrance end fitting. Extend data/communications raceway from entrance end fitting out to above accessible ceiling at corridor. Provide bushings on all conduits.

- e. Fittings: Provide as required for complete installations indicated on Contract Drawings.
- f. Provide fiberoptic "FO" sweep fittings or equal at all 90-degree transitions in surface raceways.
- g. Devices:
  - 1) Device Mounting Plates: Wiremold #V4047 series.
  - 2) Duplex-Receptacle Cover Plate: Wiremold #V4047 series.
  - 3) Data-Jack Cover Plate: Wiremold CM-2 Series bracket.

## 2.5 BOXES, ENCLOSURES, AND CABINETS

### A. Outlet Boxes:

#### 1. Manufacturers:

- a. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
- b. EGS/Appleton Electric.
- c. Hoffman.
- d. Hubbell Incorporated.
- e. O-Z/Gedney.
- f. RACO.
- g. Thomas & Betts Corporation.

#### 2. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

#### 3. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

#### 4. Interior Wall/Ceiling:

- a. Galvanized sheet steel for exposed and opened ceilings.
- b. Galvanized sheet steel for recessed wall, equipped with appropriate plaster rings.
- c. Covers:

##### 1) As required by device or equipment mounted on box.

##### 2) Blank covers for boxes with no device or equipment mounted on box.

#### 5. Multi-Service Wall Box:

- a. Basis-of-Design Product: Provide Wiremold "Wallsource Box" or approved equal from the manufacturers listed in paragraph A.1 above.
- b. The box and all system components shall be UL-listed in full compliance with the standard for 514A and 514C; steel shall be galvanized with a minimum wall thickness of .063 throughout. Back-feed brackets shall be .050 minimum steel with a gray or ivory, suitable for field painting. The device mounting bracket shall be molded from color-matching, UL-approved resins.
- c. The box shall include the box, dividers, and mounting brackets. The dimensions of each shall be a minimum of 32 cubic inches per gang and shall be manufactured

- of 16-gauge-minimum-thick steel. The box shall accommodate standard power and communication devices.
- d. The box shall have knockouts located on top and bottom, 2-1/4 inches from the face to accommodate combinations of 1/2-, 3/4-, and 1-inch trade-size conduits. Boxes of 4 or 6 gangs shall have knockouts to accommodate 1-1/2-inch trade-size conduit.
  - e. The box shall have a separate ground terminal provided for each gang.
  - f. The box shall adjust for a flush installation with the finished wall. There shall be positive stops for surface mounting to 1/2-, 5/8-, 1-, and 1-1/4-inch-thick wallboard. Adjusting screws are located outside the box for adjustment prior to installation.
  - g. The self-leveling device mounting bracket shall accommodate standard power devices, connectivity inserts, and Wiremold #5507 series faceplates. A mounting bracket designed to accept other manufacturer's devices shall be available. The bracket accommodates up to 6 power devices or 18 communications inserts. All Wiremold standard faceplates, mounting brackets, and trim rings shall be color-matched.
  - h. The depth of the box shall accommodate a 1-1/4-inch cable-bend radius, which meets or exceeds the specifications for fiberoptic and Category 6 cabling and TIA/EIA 569A requirements for communications pathways. A 1-inch controlled-radius storage loop shall be available.
  - i. Device cover plates in the following configurations must be available:
    - 1) Duplex device cover plates.
    - 2) Single 1.40- and 1.59-inch-diameter receptacle cover plates.
    - 3) Switch plates.
    - 4) GFCI cover plates.
    - 5) Surge-receptacle cover plates.
    - 6) Other rectangular-faced plates.
  - j. Single-gang cover plates shall be of modular design and shall be compatible with Wiremold wire and cable management systems.
  - k. The box manufacturer will provide a complete line of connectivity outlets and modular multi-media inserts for voice, data, video, audio, etc., with faceplates and bezels to facilitate mounting.
  - l. A complete line of preprinted station- and port-identification labels, snap-in icon buttons, and write-on station-identification labels shall be available.
  - m. A support bracket for mounting on 16-inch center studs must be provided for boxes consisting of more than 2 gangs.
  - n. Dividers must be removable without any tools.

B. Interior Floor Boxes:

- 1. General: Galvanized stamped steel.
  - a. Basis-of-Design Product: Provide Wiremold #880 series or approved equal by one of the following:

- 1) Appleton.
    - 2) Hubbell.
  - b. One-, two-, or three-gang configurations; deep versions.
  - c. 1-3/4 inches of pre-pour adjustment and 1/2 inch of post-pour adjustment.
  - d. Minimum three 1/2-inch and five 3/4-inch conduit knockout locations.
  - e. Cover-plate flanges: Brass, combination carpet-and-tile flange.
  - f. Cover plates: Brass device cover plates with flip lids. Cover plate to match device configuration indicated on Contract Drawings.
  - g. Provide all accessories and mounting brackets required to accept devices.
2. Type "A": Galvanized stamped steel, high-capacity multi-compartment box.
  - a. Basis-of-Design Product: Provide Wiremold #RFB9 series or approved equal by one of the following:
    - 1) FSR.
    - 2) Hubbell.
  - b. Size: 14-15/16 inches L x 12-1/8 inches W x 4-1/8 inches H.
  - c. Three independent wiring compartments to allow up to one 6-gang compartment and three 1-gang compartments.
  - d. Conduit Knockouts:
    - 1) 6-gang: Three 1 inch and 1-1/4 inches.
    - 2) 1 gang: 3/4 inch and 1 inch.
    - 3) Combination: Two 1 inch and 1-1/4 inches.
  - e. External pre-pour adjustment: Maximum 1-7/8 inches.
  - f. Internal mounting brackets accept standard-size device cover plates. Cover plate to match device configuration indicated on Contract Drawings.
  - g. Cover: Cast-aluminum trim ring for flush tile or carpet. Two 15/16- x 6-3/8-inch access doors fold in under lid for cable egress.
  - h. Provide all accessories and mounting brackets required to accept devices. Provide two duplex receptacles and three wired (Category 6), RJ45 data jacks at each floor box. Provide additional telephone/communications jacks (wired) as called for in the Contract Documents.
- C. Poke-through assembly—surface-mounted: The poke-through device shall be made up of an insert, junction-box assembly, activation service head, and face plates.
  1. Basis-of-Design Product: Subject to compliance with requirements, provide Wiremold #RC91/RC92 series or approved equal by one of the following:
    - a. Hubbell.
    - b. Thomas & Betts.

2. Insert:

- a. The insert body shall have the necessary channels to provide complete separation of power and communication services. There shall be a 1-inch trade-size conduit channel with an integral divider for running both power and communication cabling. The body will also consist of an intumescent firestop material to maintain the fire rating of the floor slab. The intumescent material will be held securely in place in the insert body and shall not have to be adjusted to maintain the fire rating of the unit and the floor slab. Junction box (when used for power only) offers 30-cubic-inch volume capacity. When used for power and communication, the junction box offers 25-cubic-inch capacity in the power compartment. Insert shall have a spring steel-retaining ring that will hold the poke-through device in the floor slab without additional fasteners. Insert shall also accept conduit connectors to accommodate extensions for deeper concrete slab depths.
- b. Activation service head: The activation service head shall be 0.125-inch clear anodized aluminum. Service heads shall come in double-width configurations. Service heads shall attach directly to the insert body. A gasket is attached to the underside of the service heads to maintain scrub-water tightness. Service heads shall also provide a barrier to complete isolation of power and communication cables throughout the poke-through assembly. Face plates shall be .086-inch clear anodized aluminum.
- c. Double-width service head shall be 9-1/4 inches W x 4-5/8 inches L x 2-5/8 inches H. Double-width service volume capacity shall be 81 cubic inches without the divider in place and 27 cubic inches for the power compartment only. Face-plate dimensions shall be 9 inches L x 2-1/2 inches H. Provide two 20-Amp duplex receptacles and four wired, RJ45 (Category 6) jacks at each outlet.

D. Pull and Junction Boxes: NEMA OS 1.

1. Manufacturers:

- a. Appleton.
- b. Steel City.
- c. RACO.

2. Galvanized or baked-enamel sheet steel.

3. Covers: Flat.

- a. Attach with a minimum of four screws.
- b. Galvanized or baked-enamel steel to match box.

E. Exterior Boxes:

1. Manufacturers:

- a. Crouse-Hinds.
  - b. Appleton.
  - c. Hubbell.
2. Cast metal, watertight, NEMA 4.
3. Cover: As required by device, watertight.
- F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
  1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- G. Cabinets:
  1. NEMA 250, Type 1, galvanized-steel box.
  2. Hinged door in front cover with flush latch and concealed hinge.

## **2.6 SLEEVES FOR RACEWAYS**

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Exterior wall below grade: Cast-iron pipe sleeves, cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.
- D. Fire-Rated Wireways:
  1. Basis-of-Design Product: Specified Technologies Inc. "EZ-PATH Fire Rated Pathway" or approved equal.
  2. Cables passing through fire-rated floors or walls shall pass through a fire-rated wiring pathway that contains an intumescent insert material that adjusts automatically to cable additions or subtractions.
  3. Pathway shall have an F rating equal to the rating of the barrier in which the pathway is installed.
  4. Pathway shall be capable of allowing a 0% to 100% visual fill of cables.
  5. Pathway shall be of a sufficient size to accommodate the quantity and size of electrical wires and data cables required.
  6. Pathway to be provided with steel wall plates, allowing for single or multiple devices to be ganged together.

## 2.7 SLEEVE SEALS

### A. Manufacturers:

1. Advance Products & Systems, Inc.
2. Metraflex Co.
3. Pipeline Seal and Insulator, Inc.

### B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Plastic. Include two for each sealing element.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

## PART 3 - EXECUTION

### 3.1 RACEWAY APPLICATION

#### A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit.
2. Concealed Conduit, Aboveground: EMT.
3. Underground Conduit: RNC, Type EPC-80-PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 4.

#### B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed at all locations: Rigid steel conduit or intermediate metallic conduit. Includes raceways in the following locations:
2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
4. Damp or Wet Locations: Rigid steel conduit.
5. Electric Rooms, Mechanical and Boiler Rooms, and Gymnasiums: Rigid steel conduit or IMC.
6. Pool, Pool Filter Room, and Pool Storage Room: Schedule 80 PVC with stainless-steel boxes and mounting hardware.
7. School Technology and Shop Areas: Rigid steel conduit or IMC.



8. Conduits Installed Below Ground Floor Slab:

- a. Rigid steel installed in trenches.
- b. RNC, Type EPC-80-PVC, installed in trenches.
- c. Underground ductbank construction for two or more conduits. Provide RNC, Type EPC-40-PVC conduit encased in concrete.
- d. In each installation, provide matching backfill from conduit installation to underside of slab and compact to surrounding final conditions.

9. Conduit Installed Within Floor Slabs:

- a. Maximum size shall be 1 inch.
- b. Rigid steel conduit.
- c. RNC, Type EPC-80-PVC.
- d. Provide rigid steel, threaded conduit stub-up elbows.
- e. Submit proposed conduit layout within slab to Architect for review. Do not install any conduits in or under slab without written approval from the Architect and Structural Engineer.

10. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, nonmetallic in damp or wet locations.

C. Minimum Raceway Size: 1/2-inch is intended unless specifically noted otherwise.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings.

### 3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Conceal conduit and EMT within finished walls, ceilings, unless otherwise indicated.

F. Raceways Embedded in Slabs:

1. Run conduit, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.



2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
  3. Change from RNC, Type EPC-80-PVC, to rigid steel conduit before rising above the floor.
- G. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Provide bushings at all ends of conduit.
- J. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed and semi-recessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
  2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- K. Wall Outlet Boxes:
1. Where required for outlet facility.
  2. Flush, recessed wherever possible, except where specifically noted, surface-mounted.
  3. Support securely from building construction, not from raceway.
  4. Seal all unused openings.
- L. Pull and Junction Boxes:
1. Where indicated on Contract Drawings or as required (by Code) except none permitted in finished rooms.
  2. Must remain accessible. None allowed above ceilings unless ceiling is lay-in type.
  3. Support from building construction, not from raceway.
  4. Seal all unused openings.

### 3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Site Earthwork" and Division 26 Section "Earth Moving for Electrical" for pipe less than 6 inches in nominal diameter.
  2. Install backfill as specified in Division 31 Section "Site Earthwork" and Division 26 Section "Earth Moving for Electrical."

3. After installing conduit, backfill and compact.
4. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
5. Provide service-entrance-type innerduct at all underground communications conduits and additional conduits as called for.

### **3.4 INSTALLATION OF SURFACE RACEWAY**

- A. Install securely to wall or ceiling parallel with ceiling, wall, or floor lines.
- B. Use concealed fastening devices secured at maximum 2-foot intervals.
- C. Provide raceways, conductors, outlets, fittings, and faceplates as called for and required to install a complete system.

### **3.5 INSTALLATION OF FLOOR BOXES/OUTLETS**

- A. Coordinate installation of floor boxes/outlets with existing/new structure, and install in accordance with manufacturer's instructions.
- B. All floor installations shall be fully inspected and accepted by Owner's Representative prior to any pouring of concrete.

### **3.6 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS**

- A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- B. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- C. Rectangular Sleeve Minimum Metal Thickness:
  1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.
  2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.

- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint.
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials. Comply with Division 7 Section "Penetration Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.

### **3.7 SLEEVE-SEAL INSTALLATION**

- A. Install to seal underground, exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

### **3.8 FIRESTOPPING**

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 26 Section "General Requirements for Electrical."

### **3.9 PROTECTION**

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

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## SECTION 260543

### UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. This Section includes the following:

1. Conduit, ducts, and duct accessories for direct-buried and concrete-encased duct banks.
2. In-ground handholes and pull boxes.

##### 1.2 DEFINITION

- A. RNC: Rigid nonmetallic conduit.
- B. PVC: Polyvinyl chloride.

##### 1.3 SUBMITTALS

A. Product Data: For the following:

1. Duct-bank materials, including separators and miscellaneous components.
2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
3. Accessories for manholes, handholes, pull boxes, and other utility structures.
4. Warning tape.

B. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:

1. Duct entry provisions, including locations and duct sizes.
2. Frame and cover design and manhole frame support rings.
3. Grounding details.

C. Shop Drawings for Factory-Fabricated Handholes and Pull Boxes Other Than Precast Concrete: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:

1. Duct entry provisions, including locations and duct sizes.
  2. Cover design.
  3. Grounding details.
- D. Product Certificates: For concrete and steel used in precast concrete, as required by ASTM C 858.
- E. Field quality-control reports.

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.
- B. Store precast concrete and other factory-fabricated underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.
- C. Lift and support precast concrete units only at designated lifting or supporting points.

#### **1.5 PROJECT CONDITIONS**

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
1. Notify Architect or Owner's Representative no fewer than seven days in advance of proposed interruption of electrical service.
  2. Do not proceed with interruption of electrical service without Architect's written permission.

#### **1.6 COORDINATION**

- A. Coordinate layout and installation of ducts, manholes, handholes, and pull boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into manholes, handholes, and pull boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by Architect.

## **PART 2 - PRODUCTS**

### **2.1 CONDUIT**

- A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.
- B. PVC: NEMA TC 2, Type EPC-40-PVC and Type EPC-80-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

### **2.2 NONMETALLIC DUCTS AND DUCT ACCESSORIES**

- A. Manufacturers:
  - 1. Cantex, Inc.
  - 2. Condux International, Inc.
  - 3. Lamson & Sessions; Carlon Electrical Products.
- B. Underground Plastic Utilities Duct: NEMA TC 6 & 8, Type DB-80-PVC (direct buried) and Type DB-40-PVC (concrete encased), ASTM F 512, with matching fittings by the same manufacturer as the duct, complying with NEMA TC 9.
- C. Duct Accessories:
  - 1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and selected to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.
  - 2. Warning Tape: Underground-line warning tape specified in Division 26 Section "Identification for Electrical Systems."

### **2.3 HANDHOLES AND PULL BOXES OTHER THAN PRECAST CONCRETE**

- A. Description: Comply with SCTE 77.
  - 1. Color: Gray.
  - 2. Configuration: Units shall be designed for flush burial and have open bottom, unless otherwise indicated.
  - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating of UL Tier 15, non-deliberate loading by heavy vehicles.
  - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
  - 5. Cover Legend: Molded lettering, "ELECTRIC," "TELEPHONE," and as indicated for each service.
  - 6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installations in enclosure walls.
  - 7. Size: 48 inches wide by 48 inches long by 48 inches deep, clear inside dimensions.

- B. Polymer Concrete Handholes and Pull Boxes with Polymer Concrete Cover: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.
1. Manufacturers:
    - a. Armorcast Products Company.
    - b. CDR Systems Corporation.
    - c. Quazite by Strongwell.

## **PART 3 - EXECUTION**

### **3.1 UNDERGROUND DUCT APPLICATION**

- A. Ducts for Electrical Cables Over 600 V: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank, unless otherwise indicated.
- B. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank, unless otherwise indicated.
- C. Ducts for Electrical Branch Circuits: RNC, NEMA Type EPC-80-PVC, in direct-buried duct bank, unless otherwise indicated.
- D. Underground Ducts for Telephone, Communications, or Data Utility Service Cables: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank, unless otherwise indicated.

### **3.2 UNDERGROUND ENCLOSURE APPLICATION**

- A. Handholes and Pull boxes for 600 V and Less, Including Telephone, Communications, and Data Wiring:
  1. Provide polymer concrete, SCTE 77, Tier 15 structural load rating.
- B. Manholes: Precast concrete.
  1. Units Located in Roadways and Other Deliberate Traffic Paths by Heavy or Medium Vehicles: H-20 structural load rating according to AASHTO HB 17.
  2. Units Not Located in Deliberate Traffic Paths by Heavy or Medium Vehicles: H-10 load rating according to AASHTO HB 17.



### 3.3 EARTHWORK

- A. Excavation and Backfill: Comply with Division 31 Section "Site Earthwork" and Division 26 Section "Earth Moving for Electrical," but do not use heavy-duty, hydraulic-operated, compaction equipment.
- B. Restore surface features at areas disturbed by excavation and reestablish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.
- C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Sections "Seeded Lawns."
- D. Cut and patch existing pavement in the path of underground ducts and utility structures according to Division 1 Section "Cutting and Patching."

### 3.4 DUCT INSTALLATION

- A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.
- B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches, both horizontally and vertically, at other locations, unless otherwise indicated. Coordinate with NYSEG.
- C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
- D. Building Wall Penetrations: Make a transition from underground duct to rigid steel conduit at least 10 feet outside the building wall without reducing duct line slope away from the building, and without forming a trap in the line. Use fittings manufactured for duct-to-conduit transition. Install conduit penetrations of building walls as specified in Division 26 Section "Common Work Results for Electrical."
- E. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.
- F. Pulling Cord: Install 100-lbf-test nylon cord in ducts, including spares.
- G. Concrete-Encased Ducts: Support ducts on duct separators.
  - 1. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent floating during concreting. Stagger separators approximately 6 inches

- between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
2. Concreting Sequence: Pour each run of envelope between terminations in one continuous operation.
    - a. Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written recommendations or use other specific measures to prevent expansion-contraction damage.
    - b. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch reinforcing rod dowels extending 18 inches into concrete on both sides of joint near corners of envelope.
  3. Pouring Concrete: Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Use a plank to direct concrete down sides of bank assembly to trench bottom. Allow concrete to flow to center of bank and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.
  4. Reinforcement: Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
  5. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
  6. Minimum Space between Ducts: 3 inches between ducts and exterior envelope wall, 2 inches between ducts for like services, and 4 inches between power and signal ducts.
  7. Depth: Install top of duct bank at least 36 inches below finished grade.
  8. Stub-Ups: Use manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
    - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    - b. Stub-Ups to Equipment: For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.
  9. Warning Tape: Bury warning tape approximately 12 inches above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches of the centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional tapes 12 inches apart, horizontally.

### **3.5 INSTALLATION OF HANDHOLES AND PULL BOXES OTHER THAN PRECAST CONCRETE**

- A. Install handholes and pull boxes level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by the manufacturer.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: Set so cover surface will be flush with finished grade. Set covers of other handholes 1 inch above finished grade.

### **3.6 GROUNDING**

- A. Ground underground ducts and utility structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

### **3.7 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections and prepare test reports:
  - 1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
  - 2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
  - 3. Test manhole and handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Correct deficiencies and retest as specified above to demonstrate compliance.

END OF SECTION 260543

## SECTION 260553

### IDENTIFICATION FOR ELECTRICAL SYSTEMS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. This Section includes the following:

1. Identification for conductors and communication and control cable.
2. Underground-line warning tape.
3. Warning labels and signs.
4. Panelboard and equipment identification labels.

##### 1.2 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

##### 1.3 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

#### PART 2 - PRODUCTS

##### 2.1 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape.
- B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

## **2.2 UNDERGROUND-LINE WARNING TAPE**

- A. Description: Permanent, bright-colored, continuous-printed, polyethylene tape.
  - 1. Not less than 6 inches wide by 4 mils thick.
  - 2. Compounded for permanent direct-burial service.
  - 3. Embedded continuous metallic strip or core.
  - 4. Printed legend shall indicate type of underground line.

## **2.3 WARNING LABELS AND SIGNS**

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
- C. Warning label and sign shall include, but are not limited to, the following legends:
  - 1. Multiple Power Source Warning: "DANGER—ELECTRICAL SHOCK HAZARD—EQUIPMENT HAS MULTIPLE POWER SOURCES."
  - 2. Workspace Clearance Warning: "WARNING—OSHA REGULATION—AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

## **2.4 PANELBOARD AND EQUIPMENT IDENTIFICATION LABELS**

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 1/2inch.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION**

- A. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source and circuit number.
- B. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- C. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.

1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
    - a. Power transfer switches.
    - b. Controls with external control power connections.
  2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
- D. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual.
1. Labeling Instructions:
    - a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where 2 lines of text are required, use labels 2 inches high.
    - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
    - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
  2. Equipment to Be Labeled:
    - a. Panelboards, electrical cabinets, and enclosures.
    - b. Access doors and panels for concealed electrical items.
    - c. Electrical switchgear and switchboards.
    - d. Transformers.
    - e. Emergency system boxes and enclosures.
    - f. Disconnect switches.
    - g. Enclosed circuit breakers.
    - h. Motor starters.
    - i. Push-button stations.
    - j. Power transfer equipment.
    - k. Contactors.
    - l. Power-generating units.
    - m. Voice and data cable terminal equipment.
    - n. Master clock and program equipment.
    - o. Fire-alarm control panel and annunciators.
    - p. Security and intrusion-detection control stations, control panels, terminal cabinets, and racks.
    - q. Terminals, racks, and patch panels for voice and data communication and for signal and control functions.

### 3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
  - 1. Color shall be factory applied or, for sizes larger than No. 10 AWG if authorities having jurisdiction permit, field applied.
  - 2. Colors for 208/120-V Circuits:
    - a. Phase A: Black.
    - b. Phase B: Red.
    - c. Phase C: Blue.
  - 3. Colors for 480/277-V Circuits:
    - a. Phase A: Brown.
    - b. Phase B: Orange.
    - c. Phase C: Yellow.
- F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

END OF SECTION 260553

**SECTION 260923**  
**LIGHTING CONTROL DEVICES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Time switches.
2. Photoelectric switches.
3. Occupancy and vacancy sensors.
4. Wall-mounted occupancy sensors.
5. Wall-mounted vacancy sensors.
6. Lighting contactors.
7. Outdoor photoelectric switches.

B. Related Requirements:

1. Section 262726 "Wiring Devices" for wall-box dimmers and manual light switches.

**1.2 ACTION SUBMITTALS**

A. Product Data: For each type of product.

B. Shop Drawings:

1. Show installation details for the following:
  - a. Occupancy sensors.
  - b. Vacancy sensors.
2. Interconnection diagrams showing field-installed wiring.
3. Include diagrams for power, signal, and control wiring.

C. Manufacturer's warranty information.

**1.3 CLOSEOUT SUBMITTALS**

A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.



#### 1.4 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Faulty operation of lighting control software.
    - b. Faulty operation of lighting control devices.
  2. Warranty Period: Five years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 ELECTRONIC TIME SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. NSi/TORK.
  2. Intermatic, Inc.
  3. Paragon.
- B. Electronic Time Switches: Solid state, programmable, with alphanumeric display; complying with UL 917.
1. Listed and labeled as defined in NFPA 70 and marked for intended location and application.
  2. Contact Configuration: SPDT.
  3. Contact Rating: 20 amperes, 120/277-V ac.
  4. Programs: Two channels; each channel is individually programmable with two on-off set points on a 24-hour schedule with a skip-a-day weekly schedule.
  5. Circuitry: Allow connection of a photoelectric relay as substitute for on-off function of a program on selected channels.
  6. Astronomic Time: All channels.
  7. Automatic daylight savings time changeover.
  8. Battery Backup: Not less than seven days reserve, to maintain schedules and time clock.

#### 2.2 OUTDOOR PHOTOELECTRIC SWITCHES, SOLID STATE, FLEXIBLE MOUNTING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Intermatic, Inc.
2. Paragon Electric Co; Invensys Climate Controls.
3. TORK.

B. Description: Solid state, with SPST dry contacts rated for 1800 VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A, and compatible with ballasts and LED lamps.

1. Listed and labeled as defined in NFPA 70, by a agency NRTL, and marked for intended location and application.
2. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of the photocell to prevent fixed light sources from causing turn-off.
3. Time Delay: 30-second minimum, to prevent false operation.
4. Surge Protection: Metal-oxide varistor.
5. Mounting: Twist lock complies with ANSI C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.
6. Failure Mode: Luminaire stays ON.

## 2.3 OCCUPANCY AND VACANCY SENSORS

A. Ultrasonic Control Occupancy Sensor, Type u:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Steinel "US Quattro COM1-24" or comparable product by one of the following:
  - a. Philips Lighting Controls.
  - b. Wattstopper.
2. Mounting: 4-inch square box.
3. Voltage: 18- to 24-V dc/V ac, 50/60 Hz.
4. Load Rating:
  - a. Control Output: 1 A at 30-V ac/V dc.
5. Settings:
  - a. Time Delay Setting:
    - 1) Control Output: 30 seconds to 30 minutes.
    - 2) Pulse Mode: Approximately 2 seconds 'ON' and 8 seconds 'OFF.'
    - 3) IQ Mode: Automatic adjustment to the usage profile.
  - b. Light Level Setting: 1-100 fc, turns lights off when sufficient daylight is present.

- c. Dip Switch Settings:
- 1) Automatic mode (AUTO) and Manual ON mode (MAN).
  - 2) Momentary and maintained switch option.
  - 3) 'ON' only and 'ON' & 'OFF' manual switching.
6. COM-Link: Grouping for up to 10 sensors.
  7. Real-time Motion Indicator LED: Visible from the front of unit while in test mode.
  8. Connection: Power pack.
  9. Test Mode: Dip switch setting or programming remote.
  10. Operating Temperature: 32 deg F to 104 deg F.
  11. Coverage at 9 feet:
    - a. Presence: Maximum 20 feet by 20 feet or 400 sf.
    - b. Radially and Tangentially: Maximum 32 feet by 32 feet or 1,000 sf.
  12. Dimensions: 4.72 by 4.72 by 2.68 inches.
  13. Warranty Length: 5 years.
  14. Certifications: C-UL-US Listed, RoHS compliant, UL 2043 Plenum Rated.
  15. Color: White.
  16. Accessories:
    - a. RC 3 Service Remote.
    - b. RC 8 Programming Remote.
    - c. Smart Remote.
    - d. RC 4 User Remote.
    - e. WGC Wire Guard Cage.
- B. Dual-Technology Occupancy Sensor, Type dt:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Steinel "DT Quattro COM1-24" or comparable product by one of the following:
    - a. Philips Lighting Controls.
    - b. Wattstopper.
  2. Ceiling-mounted, low-voltage, passive infrared and ultrasonic occupancy detector. Provide dual-technology-type ceiling sensors at all ceiling locations unless noted otherwise.
  3. Mounting: 4-inch square box.
  4. Voltage: 18- to 24-V dc/V ac, 50/60 Hz.
  5. Load Rating:
    - a. Control Output: 1 A at 30-V ac/V dc.
  6. Sensing Technology: Passive infrared (PIR), single pyro, 11 detecting levels, 520 switching zones, ultrasonic 40 kHz.

## 2.4 WALL-MOUNTED OCCUPANCY SENSORS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Steinel "IR WLS 1" or comparable product by one of the following:
1. Philips Lighting Controls.
  2. Wattstopper.
- B. Line-Voltage, Single-Relay, Passive Infrared (PIR), Wall Switch Occupancy Sensor Intended to Control Lighting in Areas.
1. Voltage: 120/230/277-V ac, 50/60 Hz.
  2. Mounting: Single-gang, NEMA-style switch box (standard switch box) and decorator-style wall plate by others.
  3. Load Rating:
    - a. Tungsten, magnetic or electronic ballast: 0-800 watts at 120/230/277-V ac, 50/60 Hz.
    - b. LED electronic ballasts: 0-600 watts at 120/230/277 VAC, 50/60 Hz.
    - c. 1/6 hp at 120/230/277-V ac, 50/60 Hz.
  4. Settings:
    - a. Light Level Setting: 8-200 fc keeps lights OFF when sufficient daylight is present.
    - b. Dip Switch Settings:
      - 1) Manual ON or Automatic ON option.
      - 2) Walk Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
      - 3) Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
      - 4) Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected
    - c. Time Setting: IQ/Test, 5, 15, 30 minutes.
      - 1) IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
      - 2) Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
    - d. Service Mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
  5. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance

6. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
7. Real-time motion indicator LED: Visible from the front of unit while in test mode.
8. Operating Temperature: 32 deg F to 104 deg F.
9. PIR Coverage at 4-ft Mounting Height: 180-degree coverage pattern.
  - a. Minor Motion: Maximum 21 by 18 feet or 378 sf.
  - b. Radially: Maximum 24 feet or 904 sf.
  - c. Tangentially: Maximum 54 feet or 4,500 sf.
10. Dimensions: 4.13 by 1.74 by 1.78 inches.
11. Warranty: 5 years.
12. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

## **2.5 ULTRASONIC WALL-MOUNTED VACANCY SENSORS WITH 0- TO 10-V DIMMING**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Steinel "US VS DIM" or comparable product by one of the following:
  1. Philips Lighting Controls.
  2. Wattstopper.
- B. Line-Voltage, Single-Relay, Ultrasonic Wall Switch Vacancy (Manual "On" Only) Sensor:
  1. Voltage: 120/230/277 VAC, 50/60 Hz.
  2. Mounting: Single-gang, NEMA-style switch box (standard switch box); provide decorator-style wall plate.
  3. Load Rating:
    - a. LED Electronic Drivers: 0-600 watts at 120/230/277-V ac, 50/60 Hz.
    - b. 1/6 hp at 120/230/277-V ac, 50/60 Hz.
  4. 0- to 10-V dimming, 40-kHz, ultrasonic, wall switch, vacancy sensor.
  5. 180-degree coverage pattern.
  6. Reach Setting: Adjustable from 25 percent to 100 percent.
  7. Dip Switch Settings:
    - a. Walk-Through Mode: Switch the load OFF in 3 minutes if no additional detection occurs after the first 30 seconds.
    - b. Audible Alert: Provides an audible warning that the load will shut-OFF in 10 seconds unless additional motion is detected
    - c. Visible Alert: Provides a momentary OFF/ON blink, warning that the load will shut OFF in 10 seconds unless additional motion is detected

8. Time Setting: IQ/Test, 5, 15, 30 minutes.
  - a. IQ Mode: Dynamically adjusts the 'ON' time delay by learning individual room occupancy.
  - b. Test Mode: Time delay defaults to 5 seconds and all loads are switched on/off by motion detection. After 5 minutes the time delay reverts to the IQ Mode.
9. Service Mode: Deactivates the automated functions of the sensor and the load is only manually controlled using the ON/OFF button.
10. Switching: Performed at, or close to the zero-cross of the AC waveform in order to improve relay performance
11. Switch Link: Allows communication of sensors for 2-way, 3-way, and 4-way switching.
12. Real-Time Motion Indicator LED: Visible from the front of unit while in test mode.
13. Operating Temperature: 32 deg F to 104 deg F.
14. Ultrasonic Coverage at 4-ft Mounting Height: 180-degree coverage pattern.
  - a. Minor Motion: Maximum 18 by 12 feet or 216 sf.
  - b. Radially: Maximum 24 feet or 904 sf.
  - c. Tangentially: Maximum 24 feet or 904 sf.
15. Dimensions: 4.13 by 1.74 by 1.78 inches.
16. Warranty: 5 years.
17. Certifications: C-UL-US Listed, RoHS compliant, California Compliant.

## 2.6 LIGHTING CONTACTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Allen-Bradley/Rockwell Automation.
  2. ASCO: a brand of Vertiv.
  3. Eaton.
  4. Siemens Energy & Automation.
  5. Square D.
- B. Description: Electrically operated and mechanically held, combination-type lighting contactors with non-fused disconnect, complying with NEMA ICS 2 and UL 508.
  1. Current Rating for Switching: Listing or rating consistent with type of load served, including LED modules, LED driver (driver with 15 percent or less THD of normal load current).
  2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
  3. Enclosure: Comply with NEMA 250.
  4. Provide with control and pilot devices as scheduled, matching the NEMA type specified for the enclosure.

- C. Interface with DDC System for HVAC: Provide hardware interface to enable the DDC system for HVAC to monitor and control lighting contactors.
  - 1. Monitoring: Status of contactor coil.
  - 2. Control: Energize contactor to turn lights on and off.

## **2.7 CONDUCTORS AND CABLES**

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 SENSOR INSTALLATION**

- A. Comply with NECA 1.
- B. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
- C. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

### 3.3 CONTACTOR INSTALLATION

- A. Comply with NECA 1.
- B. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration unless contactors are installed in an enclosure with factory-installed vibration isolators.

### 3.4 WIRING INSTALLATION

- A. Comply with NECA 1.
- B. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch.
- C. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- D. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.
- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

### 3.5 IDENTIFICATION

- A. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."
  - 1. Identify controlled circuits in lighting contactors.
  - 2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
- B. Label time switches and contactors with a unique designation.

### 3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Lighting control devices will be considered defective if they do not pass tests and inspections.



C. Perform the following field tests and inspections:

1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
2. Operational Test: Verify operation of each lighting control device, and adjust time delays.

**3.7 ADJUSTING**

A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
2. For daylighting controls, adjust set points and deadband controls to suit Owner's operations.
3. Align high-bay occupancy sensors using manufacturer's laser aiming tool.

END OF SECTION 260923

## SECTION 262000

### LOW-VOLTAGE ELECTRICAL TRANSMISSIONS

#### PART 1 - GENERAL

##### 1.1 SUBMITTALS

- A. Product Data for the following:
1. Panelboards.
  2. Switching and protective equipment.
  3. Grounding.
- B. Shop Drawings: For distribution equipment and related components.
1. Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
    - a. Enclosure types and details for types other than NEMA 250, Type 1.
    - b. Bus configuration, current, and voltage ratings.
    - c. Short-circuit current rating of panelboards and overcurrent protective devices.
    - d. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
  2. Wiring Diagrams: Power, signal, and control wiring.
- C. Qualification Data: For testing agency.
- D. Field quality-control test reports including the following:
1. Test procedures used.
  2. Test results that comply with requirements.
  3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- E. Provide certification stating that equipment has been installed in accordance with manufacturer's requirements.
- F. Operating and Maintenance Data:
1. For distribution equipment and components to include in emergency, operation, and maintenance manuals.

- a. Routine maintenance requirements for switchboards and all installed components.
  - b. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
  - c. Time-current curves, including selectable ranges for each type of overcurrent protective device.
2. Panelboards.
  3. Transient voltage suppression devices.
  4. Motor starters.

## **1.2 MATERIAL MAINTENANCE SUBMITTALS**

- A. Spare Fuses: Furnish a minimum of one set of three for each size indicated on the Contract Drawings.

## **1.3 QUALITY ASSURANCE**

- A. Equipment shall be designed, manufactured, assembled, and tested in accordance with the latest revisions of applicable published ANSI, NEMA, and IEEE standards and with the requirements of UL and NEC.
- B. Provide field supervision and service by competent and qualified representative of the manufacturer, who is regularly engaged in working with this type of equipment.

## **PART 2 - PRODUCTS**

### **2.1 DISTRIBUTION PANELBOARDS**

- A. Basis-of-Design Product: Provide Square D "I-line" or approved equal by one of the following:
  1. Siemens.
  2. Cutler-Hammer.
- B. General Requirements:
  1. All components designed, tested, and assembled in accordance with the latest applicable UL, IEEE, NEMA, and NEC standards.
  2. Indoor type, dead front.
  3. Equipment shipped as determined by Contractor for this Division and as required for installation and access into building.
  4. Service Entrance rated where required.

C. Rating:

1. Voltage: 480/277 volts or 208/120 volts, 3-phase, 4-wire, 60 Hz.
2. Ampere: As indicated on Drawing.

D. Construction and Requirements:

1. Minimum 16-gauge, galvanized, code-grade sheet steel cabinet.
2. Gutters on four sides, adequate for wiring required; sized to latest NEC.
3. Standard gray, enamel finish.
4. Enclosure, NEMA Class 1 for mounting against wall.
5. Bus:
  - a. Copper: Provide adequate lugs for connecting incoming conductors.
  - b. Provide 3-phase bus, 1 isolated neutral bus, and 1 isolated ground bus.
  - c. Braced to withstand 25,000-Amp, RMS symmetrical fault or short-circuit current.

E. Distribution Section:

1. Bus: Provide full rated phase and neutral busses.
2. Branch Feeder Switches:
  - a. Current-limiting circuit breakers with rating as indicated on Drawings.
  - b. Rating: 480 volts, 25 kAIC, ampere as indicated.
  - c. Lugs sized for feeders shown on distribution diagram.

## 2.2 PANELBOARDS

A. Basis-of-Design Product: Provide Square D #NQOD/NF series or approved equal by one of the following:

1. Siemens.
2. Cutler-Hammer.

B. Rating:

1. Voltage: As shown on panelboard schedule.
2. Main circuit breaker: Three-pole, size and voltage as indicated on panelboard schedule.
3. Mains: Three-phase, four-wire, size as shown on panelboard schedule with lugs adequate for feeder size indicated. Cable terminations rated 75 deg C minimum.
4. Lugs: Sized for feeder indicated on power distribution diagram. Suitable for copper conductors. Rated 75 deg C minimum.
5. Service Entrance rated where required.

C. Branch-Circuit Breakers:

1. Construction: Molded-case Bakelite, "SW" label.
2. Switch Action: Toggle, quick-make-and-break switch.
3. Overload Action: Thermal magnetic, positive indication of tripped condition.
4. Trip Elements: Permanent; non-interchangeable; two-pole and three-pole breakers shall have internal common trip.
5. Ampere Rating: 15-200 Amp as scheduled on power distribution diagram; rating permanently engraved on handle.
6. Voltage Rating: 120- or 277-V ac for 1 pole, 120/240- or 277/480-V ac for 1 pole and 2 poles, 240- or 480-V ac for 3 poles.
7. Interrupting Capacity: As called for on Drawings; 22,000 AIC unless otherwise indicated.
8. Assembly: Bolt-on.
9. Conductor terminations rated 75 deg C minimum.
10. Common internal trip, no tie handles.
11. Provide lockable-off-type device at branch-circuit breakers as called for in the Contract Documents.

D. Construction:

1. Code-gauge galvanized steel cabinet, rigidly formed, code-size gutters, dead-front construction when trim is removed.
2. Depth of Cabinet: 6" maximum.
3. Mains, neutral bar, and branch circuits as shown on power distribution diagram; metal barrier, forming dead-front construction. Provide full copper bussing.
4. Panels scheduled for double main lugs and/or subfeed lugs shall be provided with suitable gutter space on sides and bottom.
5. Smooth steel door, rigidly formed, directory, minimum projection chrome-plated latch lock; all locks keyed alike, directory with protecting glass or plastic cover.
6. Hinged, smooth steel trim shall be attached to cabinet with screws, with hinged door-in-door construction. Flush- or surface-mounted as indicated on panelboard schedule. Door-in-door framing shall secure hinged door with screws. Lift-and-hinge-type opening is not acceptable.
7. All exposed surfaces shall be finished in gray, baked enamel.
8. Spaces: All spaces in all panels shall be equipped with necessary box and hardware for future insertion of breakers.
9. Load centers are not acceptable.

**2.3 SWITCHING AND PROTECTIVE EQUIPMENT**

A. Disconnect Switches:

1. Manufacturers:

- a. Square D
  - b. Cutler-Hammer
  - c. Siemens
2. Type:
  - a. Quick make, quick break, fusible or non-fusible as noted.
  - b. Heavy duty, horsepower-rated.
  - c. Defeatable cover interlock.
  - d. Positive pad-locking in "OFF" position.
  - e. Auxiliary contact for elevator power disconnect; interconnection to elevator battery-operated lowering device.
3. Rating:
  - a. 250 volts or 600 volts, as applicable.
  - b. Current-carrying capacity as indicated on Drawings or as required by motors.
4. Poles: As required by load.
5. Enclosure:
  - a. Indoors, dry areas: NEMA Type 1.
  - b. Indoors, wet areas: NEMA Type 4.
    - 1) Kitchen areas/equipment: NEMA 4, stainless steel.
  - c. Outdoors: NEMA Type 4.

B. Fuses:

1. Manufacturers:
  - a. Bussman.
  - b. Chase-Shawmut.
  - c. Littelfuse.
2. All fuses shall bear the UL label for the classes specified herein.
3. 600 Ampere or Less:
  - a. Rated 250/600 volts as required.
  - b. UL Class RK1 with time delay.
  - c. Fusible equipment shall have fuseholders equipped with Class R rejection clips.

4. Above 600 Ampere:
  - a. Rated 600 volts or less.
  - b. UL Class L, current limiting, time delay.
5. Ampere Ratings: As indicated on the Contract Drawings.

C. Motor Starters:

1. Manufacturers:
  - a. Square D.
  - b. Cutler-Hammer.
  - c. Siemens.
2. Manual:
  - a. Rating: 115/230 volts.
  - b. Size: As required by motor horsepower.
  - c. Poles: As required.
  - d. Operation: Single-throw on-off toggle handle.
  - e. Motor Protection: Thermal overload in each phase, interchangeable heater sized to motor current rating by Division 26 Contractor after motor has been installed.
  - f. Enclosure: Same as described for disconnect switches hereinbefore.
  - g. Accessories: Provide as indicated on Contract Drawings.
3. Magnetic:
  - a. Poles: Two or three as required.
  - b. Size: As required by motor horsepower.
  - c. Voltage: 250-V or 600-V ac contacts; 24- or 120-V ac coils through integral control transformer.
  - d. Motor protection: Thermal overload, interchangeable heaters sized to motor has been installed. Provide protection in each phase. Overload relay shall be of the manual-reset type.
  - e. Operation: Full-voltage starting, single speed, non-reversing.
  - f. Enclosure: Same as described for disconnect switches hereinbefore.
  - g. Accessories:
    - 1) Hand-off-auto switch in cover.
    - 2) Green pilot light in cover.
    - 3) Red pilot light in cover.
    - 4) Two normally open and two normally closed contacts.
4. Combination Magnetic: Switch-and-fuse type meeting all requirements specified for disconnect switches and magnetic motor starters hereinbefore.
5. Refer to Division 23 for variable-frequency drives.

D. Contactors:

1. Manufacturers:

- a. Square D.
- b. Cutler-Hammer.
- c. Siemens.

2. Electrically operated, mechanically or electrically held as called for. Provide on-off switch in cover when indicated on Contract Drawings.
3. Contacts rated 250 or 600 volts, and current-carrying capability as indicated on Contract Drawings.
4. Coil rating: 120 volts, 60 Hz.
5. Poles as indicated on Contract Drawings.
6. Enclosure: Same as described for disconnect switches hereinbefore.

E. Relays:

1. Manufacturers:

- a. Square D.
- b. Cutler-Hammer.

2. Electrically operated, electrically held.
3. 1 pole, 20 Amp, normally open.
4. Contacts rated 250 or 600 volts.
5. Coil as required by control system.
6. Enclosure: Same as described for disconnect switches hereinbefore.

## 2.4 GROUNDING

A. Manufacturers:

1. Burndy.
2. O-Z Gedney.
3. Thomas and Betts.

B. Insulated Conductors: Copper wire or cable insulated for 600 V.

C. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4-inch diameter.
4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.



5. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
  6. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- D. Grounding Bus: Rectangular bars of annealed copper, 1/4- x 2-inch cross-section, unless otherwise indicated; with insulators.
- E. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
1. Pipe Connectors: Clamp type, sized for pipe.
- F. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- G. Ground Rods: Copper-clad steel, sectional type; 3/4-inch diameter x 10-foot length.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION--GENERAL**

- A. Coordinate with installation of other equipment associated with the power distribution system.
- B. Miscellaneous bolts, washers, nuts, clips, lock washers, and small hardware made of silicon-bronze or equal rust-resistant material to make a complete installation.
- C. Complete installation shall be in accordance with equipment manufacturer's instructions, drawings, and recommendations.
- D. In the event of conflict, discrepancy, or difference between manufacturer's instructions and the Contract Documents, the more stringent requirements shall apply.
- E. Suitable equipment handling to unload, move, set in place, install, erect, and assemble the equipment.
- F. Comply with grounding requirements.
- G. Minimum working clearance, as described in NEC Article 110-16, for all electric equipment.
  1. Additional working or aisle clearance as required.

- H. Verify cable/lug sizes for terminations. When a feeder is sized larger than a lug, provide in-line splice to reduce conductor size to match equipment or breaker terminations.
- I. Unload, move, handle, set in place, install, erect, assemble, connect, test, and operate each item of electrical equipment.

### 3.2 DISTRIBUTION PANELBOARDS AND PANELBOARDS

- A. Verify each location at site before installing cabinet or conduit.
- B. Mount cabinet level and plumb, flush or surface as indicated on Contract Drawings.
- C. Install recessed cabinet flush with finished wall.
- D. Properly align panel in cabinet.
- E. Touch up scratches with matching paint.
- F. Provide five empty 3/4-inch conduit and one empty 1-1/2-inch conduit from panel to ceiling space for each flush-mounted panel. Arrange for future continuation.
- G. Provide channel support for surface-mounted panels. Provide channel support between wall and panel back box where installed against outside wall.
- H. Provide handle lock-on devices for breakers that supply circuits for the following items:
  - 1. Exit signs.
  - 2. Fire alarm system.
  - 3. Telephone system.
  - 4. Clock system.
  - 5. Temperature control panels.
  - 6. Paging system.
  - 7. Data network system.
- I. Connect branch-circuit wiring using the circuit numbers indicated on Contract Drawings.
- J. Provide engraved circuit-identification nameplates on panels with letters and numbers as indicated on Contract Drawings.
- K. Provide complete typewritten directory for each panel, with all room numbers and function positively identified for each individual branch circuit.
- L. Handwritten directory shall be provided until all circuits are connected and balanced. Then, install permanent typewritten directory. Do not mark circuit identification on the front or enclosure of panels or on other electric equipment.

- M. Provide engraved nameplate, white on red background, for those on emergency circuits.
- N. Provide engraved nameplate, white on black background, for those on normal circuits.

### 3.3 SWITCHING AND PROTECTIVE EQUIPMENT

- A. Disconnect switches: Install at locations indicated on Contract Drawings and as required by code.
- B. Motor Starter, Contactors, Relays: Surface-mounted at locations indicated on Contract Drawings.
- C. Fuses:
  - 1. Motor fuses shall be sized in accordance with NEC and equipment manufacturer's instructions based on full-load motor nameplate rating. Provide label in each switch stating size and type of fuse.
  - 2. Replace all blown fuses up to final acceptance of job.

END OF SECTION 262000

**SECTION 262726**  
**WIRING DEVICES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
1. Receptacles, receptacles with integral GFCI, and associated device plates.
  2. Receptacles with integral surge suppression units.
  3. Local switches.
  4. Electronic wall-box dimmers.
  5. Wall plates.
- B. Related Sections include the following:
1. Division 27 "Data Network Systems" for workstation outlets.

**1.2 DEFINITIONS**

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. TVSS: Transient voltage surge suppressor.

**1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated.

**1.4 QUALITY ASSURANCE**

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.
- C. Comply with NFPA 70.

## 1.5 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers' Names:
  - 1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
  - 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
  - 3. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).
  - 4. Lutron Electronics, Inc. (Lutron).
- B. Manufacturers' catalog numbers designate series and not wiring device color. For color of devices, refer to "Finishes" article in this Section.

### 2.2 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6, WC596 (Fed. Spec.) Configuration 5-20R, and UL 498; back and side wired. Extra-heavy-duty industrial grade.
  - 1. Duplex, 2-pole, 3-wire grounding.
  - 2. Parallel blade, double-wipe contacts, NEMA grounding slot.
  - 3. Provide with one-piece, heavy-duty brass strap with integral ground connection. Riveted connections are unacceptable.
  - 4. Products:
    - a. Cooper; 5362 (duplex); extra-heavy-duty industrial grade.
    - b. Hubbell; 5362 (duplex); extra-heavy-duty industrial grade.
    - c. Pass & Seymour; 5362A series (duplex); extra-heavy-duty industrial grade.

### 2.3 GFCI RECEPTACLES

- A. General Description: Straight blade, feed-through type, Hospital Grade. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Trip level 4 to 6 mA: .025-second nominal trip time.
- C. Duplex GFCI Convenience Receptacles; 125 V, 20 A; Hospital Grade:
  - 1. Basis-of-Design Product: Provide Pass & Seymour #20954G or approved equal by one of the following:
    - a. Cooper.
    - b. Hubbell.
- D. Provide GFCI receptacles at all locations required by NEC, all locations indicated in Documents, and at all "WP" outlets indicated in Documents.

### 2.4 TVSS RECEPTACLES

- A. General Description: Hospital Grade; comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 1449, with integral TVSS in line to ground, line to neutral, and neutral to ground.
  - 1. TVSS Components: Multiple metal-oxide varistors; with a nominal clamp-level rating of 500 volts and minimum single transient pulse energy dissipation of 240 J, according to IEEE C62.41.2 and IEEE C62.45; 125 V, 20 Amp.
  - 2. Active TVSS Indication: Visual and audible, with light visible in face of device to indicate device is "active" or "no longer in service."
  - 3. 7:1 average noise reduction.
  - 4. Red LED indicator to indicate the loss of protection in all three modes and amber LED indicator to indicate positive surge protection.
- B. Duplex TVSS Convenience Receptacles:
  - 1. Basis-of-Design Product: Provide Pass & Seymour #8300 series or approved equal by one of the following:
    - a. Cooper.
    - b. Hubbell.

### 2.5 USB RECEPTACLE

- A. General Description: Hospital Grade; comply with NEMA WD 1, NEMA WD 6, UL 498, UL 1310, and Fed. Spec. WC 596.

- B. Duplex, 5-20R, 120-V, 20-Amp grounding outlets with two 5-V dc USB ports that work with USB 2.0- and 3.0-compatible devices. Overall 3.1A USB charging capability.
- C. Back- and side-wired terminals.
- D. Duplex USB Receptacles:
  - 1. Basis-of-Design Product: Provide Pass & Seymour #8300 series or approved equal by one of the following:
    - a. Cooper.
    - b. Hubbell.

## 2.6 LOCAL SWITCHES

- A. Comply with NEMA WD 1 and UL 20.
- B. Switches, 120/277 V, 20 A; back and side wired:
  - 1. Basis-of-Design Products: Provide Pass & Seymour #PS20AC1 (single pole), #PS20AC2 (two-pole), #PS20AC3 (three-way), #PS20AC4 (four-way) or approved equal by one of the following:
    - a. Hubbell.
    - b. Cooper.
- C. AC Type: Slow make, slow break, quiet switch action, Industrial Extra-Heavy-Duty Specification Grade.
- D. Key-Operated Switches, 120/277 V, 20 A:
  - 1. Basis-of-Design Product: Provide Pass & Seymour #PS20AC1-L or approved equal by one of the following:
    - a. Hubbell.
    - b. Cooper.
  - 2. Description: Single pole, with factory-supplied key in lieu of switch handle, back and side wired.

## 2.7 ELECTRONIC WALL-BOX DIMMERS

- A. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.

1. Basis-of-Design Product: Provide Phillips "Sunrise" series or approved equal by one of the following:
  - a. Hunt.
  - b. Lutron.
- B. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.
- C. LED Dimming Switches: Provides 0- to 10-V sinking control, compatible with all LED drivers, compliant to IEC 60929 Annex E.2.
  1. Rated 1200 watts at 120 or 277 volts.
  2. Large paddle switch with a captive linear dimmer for a standard designer wall plate.
  3. Provide a color to match device wall plates.
  4. Provide a physical barrier/partition when ganged with line-voltage switches.
  5. No derating required when ganged with similar dimmers.

## 2.8 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
  1. Plate-Securing Screws: Metal with head color to match plate finish.
  2. Material for Finished Spaces: 0.035-inch-thick, satin-finished stainless steel.
  3. Material for Unfinished Spaces: Galvanized steel.
  4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in "wet locations."
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant thermoplastic with lockable cover. Provide at all locations labeled, "WP."
- C. Manufacturer: Same as devices.

## 2.9 FINISHES

- A. Color: Wiring device catalog numbers in Section text do not designate device color.
  1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing. Provide receptacle in blue-color finish at computer-workstation outlets and at two-section raceway.
  2. Wiring Devices Connected to Emergency Power System or Generator-Served Power System: Red.
  3. TVSS Devices and Devices Circuited to TVSS Panelboards: Blue.



## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
1. Duplex Receptacles: 18 inches above finished floor to centerline.
  2. Wall Switch: 48 inches above finished floor to centerline.
- B. Coordination with Other Trades:
1. Take steps to ensure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
  2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
  3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
  4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
  2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
  3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
- D. Device Installation:
1. Replace all devices that have been in temporary use during construction.
  2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
  3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
  4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
  5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
  6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
  7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
  8. Tighten unused terminal screws on the device.

- 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
- E. Receptacle Orientation: Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the left.
- F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- G. Dimmers:
  - 1. Install dimmers within terms of their listing.
  - 2. Verify that dimmers used for fan speed control are listed for that application.
  - 3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.
- H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.

END OF SECTION 262726

**SECTION 265100**  
**INTERIOR LIGHTING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. This Section includes the following:

1. Interior lighting fixtures and components.
2. LED drivers.
3. Emergency lighting units.
4. Exit signs.
5. Lighting fixture supports.

B. Related Sections include the following:

1. Division 26 Section "Wiring Devices" for electronic wall-box dimmers, occupancy sensors, and associated devices for LED fixtures.
2. Division 26 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multi-pole lighting relays and contactors, and lighting control panels.

**1.2 DEFINITIONS**

- A. CRI: Color-rendering index.
- B. DLC: DesignLights Consortium.
- C. LED: Light-emitting diode.
- D. Luminaire: Complete lighting fixture, including driver housing.

**1.3 SUBMITTALS**

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:

1. Physical description of lighting fixture including dimensions.
2. Emergency lighting units including battery and charger.
3. LED drivers and LED modules/sources.
4. Energy-efficiency data.

5. Life, output, and energy-efficiency data for LEDs with drivers.
  6. Photometric data, in IESNA format, based on laboratory tests of each lighting fixture type, outfitted with LEDs, drivers, and accessories identical to those indicated for the lighting fixture as applied in this Project.
- B. Samples for Verification: Interior lighting fixtures designated for sample submission in Interior Lighting Fixture Schedule. Each sample shall include the following:
1. LEDs: Specified units installed.
  2. Accessories: Cords and plugs.
- C. Operation and Maintenance Data: For lighting equipment and fixtures to include in operation and maintenance manuals.
- D. Warranties: Special warranties specified in this Section.
- E. Field quality-control reports.

#### **1.4 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.
- B. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS**

- A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
- B. LED Fixtures: Comply with UL 1598 and UL 8750.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

F. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.
4. Laminated Silver Metallized Film: 90 percent.

G. Plastic Diffusers, Covers, and Globes:

1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
  - a. Lens Thickness: At least 0.156" minimum unless different thickness is indicated.
  - b. UV stabilized.

## 2.2 LED DRIVERS

A. Products:

1. Advance "Xitanium" series.
2. Universal "Evenline" series.
3. Sylvania "Optronic" series.

B. Description: Comply with ANSI C 82.11, designed for type and quantity of LEDs indicated. Drivers shall be designed for full light output unless dimmer or bi-level control is indicated:

1. End-of-life detection, signaling, and shutdown circuit.
2. Sound Rating: A.
3. Total Harmonic Distortion Rating: Less than 20 percent.
4. Transient Voltage Protection: IEEE C62.41, Category A or better.
5. Module temperature-control protection.
6. Power Factor: 0.95 or higher.
7. Full five-year warranty, minimum.

## 2.3 COMBINATION EXIT SIGNS-EMERGENCY LIGHTS

A. Basis-of-Design Product: Provide Exitronics "Equity" series or approved equal by one of the following:

1. Cooper.
2. Lithonia.

B. Description: Comply with UL 924; 6"-high, 3/4"-wide "RED" letters, downlight; universal mounting; universal arrows; single or double face is field-selectable.

- C. Inject-molded, UL94, thermoplastic housing and two long-life, fully adjustable, LED lighting heads.
- D. Provide mounting and support at 4 points for each exit light/base plate.
- E. Provide with two 1.1-watt, LED, fully adjustable lighting heads.
- F. Internally Lighted Signs:
  - 1. Lamps for AC Operation: LEDs, 70,000 hours minimum rated lamp life.
  - 2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
    - a. Battery: Sealed, maintenance-free, nickel-cadmium type. Battery size as required to maintain full light/LED output for 90 minutes.
    - b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    - c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    - d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    - e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
    - f. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED.
  - 3. Types/Schedule:
    - a. Type X: Wall back-mounted, single-faced unit.
    - b. Type X1: Ceiling-mounted, single-faced unit.
    - c. Type X2: Ceiling-mounted, double-faced unit.
- G. Rated for 120/277 volts.
- H. Circuit exit signs to normal lighting branch circuiting serving similar areas. Circuit ahead (line side) of all lighting controls.

## **2.4 EMERGENCY LIGHTING UNITS**

- A. Basis-of-Design Product: Provide Exitronix "SCL" series for wall-mounted units or approved equal by one of the following:
  - 1. Sure-Lites.
  - 2. Dual-Lite.

B. Description: Self-contained units complying with UL 924.

1. Battery: Sealed, maintenance-free, lead-acid type; 12-V, 8-watt output at 90 minutes to end voltage 87-1/2 percent; 10-year life; rated for 120/277 volts.
2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically Type AL
4. disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
5. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
6. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.
8. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and flashing red LED.

C. Types:

1. Wall-mounted units: Provide wall-mounted emergency battery lighting units at locations indicated with the subscript "W," meeting all of the general requirements above and the following:
  - a. Heavy-gauge steel housing construction; white powder-coat finish.
  - b. Provide with two 3.6-watt LED lamps, which provide 120 lumens each.
  - c. Provide heavy-gauge steel shelf to mount unit. Provide shelf and mount to support four times the equipment weight.

D. Circuit emergency battery lights to normal lighting branch circuiting serving similar area. Circuit ahead (line side) of all lighting controls.

## 2.5 LIGHTING FIXTURE SUPPORT COMPONENTS

- A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2" steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.
- C. Twin-Stem Hangers: Two, 1/2" steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.
- D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gauge.

- E. Rod Hangers: 3/16"-minimum-diameter, cadmium-plated, threaded steel rod.
- F. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

## 2.6 REQUIREMENTS FOR INDIVIDUAL LIGHTING FIXTURES

### A. Fixture Types/Schedule:

#### 1. Type A:

- a. Description: LED, surface-mounted, 2' x 2' x 3"-deep unit with fixture housing for mounting in hard ceiling. Unit housing shall be rigid, heavily embossed, 22-gauge, die-formed steel with all parts being treated after fabrication with a protective phosphate bonderizing coating, white baked-enamel finish. Optical system components include dual-chamber configuration, each with opal, virgin-acrylic diffusers with large luminous areas. Provide unit with LED source to produce 3722 delivered lumens, 4000 K at 30 watts. Provide with high-performance, 0- to 10-V dimming driver. Driver shall be constant current-reduction type, rated 70,000 hours (L70). Fixture to be DLC-listed and include a full 5-year warranty.
- b. Basis-of-Design Product: Provide Current "TCAT22" series or approved equal by one of the following:
  - 1) Eaton/Metalux "Accord" series.
  - 2) Philips/DayBrite "DuaLED" series.

#### 2. Type B:

- a. Description: LED, surface/pendant-mounted, 3"-wide x 3-1/2"-high x 48" linear luminaire; heavy-gauge, cold-rolled steel housing steel end caps; rugged, radiused, with polycarbonate opal lens; all parts painted in high-reflectance white, baked enamel; surface- or pendant-mount, coordinate each location; pendant-mount fixtures with 1/4"-diameter galvanized threaded rods with washers, double nuts, and steel channel systems. Coordinate locations with HVAC and plumbing system layouts. Provide luminaire with 4000 K LED source to produce 5200 delivered lumens at 40 watts. Provide with high-efficiency LED driver. Rated 100,000 hours (L70). Coordinate exact mounting height with Architect prior to roughing. DLC Premium-listed.
- b. Basis-of-Design Product: Provide Barron/Trace-Lite "SLS" series or approved equal by one of the following:
  - 1) Metalux/Cooper.
  - 2) Hubbell/Columbia.



3. Type B2:
- a. Description: Similar to Type B except provide 2' in length with LED source of 2600 lumens at 20 watts and 4000 K.
4. Type C:
- a. Description: LED, vandal-resistant, ceiling pendant-mounted; 1' x 4' x maximum 4"-deep unit; Marine-grade aluminum housing; extruded body with die-cast rounded end caps; one-piece, UV-stabilized, pearlescent, polycarbonate lens with smooth exterior and linear prismatic interior; positive latches at all 4 corners shall hold lens securely in place. Provide with 4000 K, LED source to produce 10,548 delivered lumens at 98 watts with high-efficiency, 0- to 10-V dimming driver. UL-listed for wet locations and UL-certified IP 64. L70 rating of 175,000 hours. Ten-year warranty with lifetime warranty for failure by vandalism.
  - b. Basis-of-Design Product: Provide Kenall "Millenium Stretch" series or approved equal by one of the following:
    - 1) Fail-Safe with similar warranties.
    - 2) Paramount with similar warranties.
5. Type C2:
- a. Description: Similar to Type C except provide fixture with LED source of 5345 lumens at 49 watts and 4000 K.
6. Type D:
- a. Description: LED, ceiling recess-mounted downlight unit; 4"-diameter aperture; self-flanged aluminum reflector; 3" shallow fixture depth; rated 4000 K, producing medium-beam distribution of 1396 lumens at 14 watts; 90 CRI; steel bar hangers adjustable and lockable with 18 gauge steel butterfly brackets for full adjustment and mounting at all ceiling types; LED driver with 0- to 10-V dimming capability; Energy Star-rated, and rated 100,000 hours (L70) at 70 percent lumen maintenance. UL-listed fixture for wet locations; IP 65-rated fixture, LEDs, and driver covered under full 5-year warranty; dual-voltage-rated fixtures at 120/277 V with thermal protector.
  - b. Basis-of-Design Product: Provide Elite-Maxilume "SR4" series or approved equal by one of the following:
    - 1) Cooper
    - 2) Acuity.
7. Type E:
- a. Description: LED, architectural, pendant-mounted, acoustical, linear fixture to provide direct light. Acoustic housing material is 100 percent polyester with ASTM E84, Class A and CAN/ULC S102 fire rating. End caps are 0.75"-thick

white oak. Provide 22-gauge steel, white reflector with extruded-aluminum lens. Housing size of 2.25" wide at top, 6" wide at boom (lighting opening) by 11" high by 6' in length. Provide with LED source of 600 lumens per foot (3600 lumens total) at 200 watts and 4000 K with high-efficiency, 0- to 10-V dimming driver. Provide with field-adjustable aircraft-cable supports, canopies, and hardware. Architect to select oak finishes and colors at time of submittal.

- b. Basis-of-Design Product: Provide Focal Point "Eave" series or approved equal by Finelite "HP-2" series.

8. Type F:

- a. Description: LED, pendant-mounted indirect/direct fixture. Housing of extruded aluminum with internal joiner system and plug-together wiring. Nominal fixture size of 2-1/4" wide x 5" high x 96" long. Flush, spread optic lens at downlight component and widespread optic lens at indirect/up-light component to allow improved light distribution and uniformity across the ceiling. Provide overall light distribution of 55 percent indirect/45 percent direct and light output of 1359 lumens per foot (10,870 total) at 14.2 watts/ft (112 total) at 4000 K and 80 CRI. Provide with high-efficiency, 0- to 10-V dimming driver. Fixture finished in powder coat, white. Provide 3 aircraft cable supports (field adjustable) with canopies and hardware. Suspend fixture at 8'-2" from finished floor to bottom of fixture.
- b. Basis-of-Design Product: Finelite "HP-2" series or approved equal by Focal Point.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
- B. Location:
  - 1. Evenly proportioned in room except where otherwise shown or dimensioned.
  - 2. Edges of lighting fixtures parallel with walls.
- C. Mounting:
  - 1. Provide independent and isolated support from building structure for each fixture; supporting from a suspended ceiling system is unacceptable.
  - 2. Lighting fixtures must hang true to vertical, free from finger marks, flaws, scratches, dents, or other imperfections.
  - 3. Take care when hanging fixtures not to deface in any way the ceilings or walls.
  - 4. Install continuous rows of lighting fixtures in straight line; all fixtures at same level. Fixtures must not be rotated about longitudinal axis with respect to one another.
  - 5. Mount surface lighting fixtures tight to surface without distorting it. Minimum of two supports per fixture.

6. Provide special means for supporting fixtures as hereinafter specified, as indicated on Contract Drawings or as required.
7. Stem-mounted lighting fixtures shall be hung level from self-aligning hangers.
8. Securely support lighting fixtures, hangers, and outlet boxes.
9. Plastic inserts not permitted.
10. Outlet boxes shall not be supported by conduit.
11. Supports for each fixture shall be capable of supporting four times fixture weight.
12. Recessed lay-in troffers shall be securely fastened to building structure by means of wire supports independent of ceiling structure.
  - a. 2' x 4': 2 supports/fixture.
  - b. 1' x 4': 2 supports/fixture.
  - c. 2' x 2': 2 supports/fixture.
13. Secure each fixture housing to support grids at four locations using tabs or clips provided with fixtures.
14. Surface- and suspended-type fixtures: Up to 4' length, provide 2 supports; greater than 4', provide four supports.
15. Support means shall be one of the following:
  - a. Schedule 10, steel wire.
  - b. 1/4"-diameter, galvanized, threaded rod with washers and double nuts.
  - c. Specifically designed hangers and clamps (by luminaire manufacturer).
  - d. Rigid steel conduit with threaded fittings.
  - e. Steel channel systems.
  - f. Suspension stems supplied by luminaire manufacturer.
16. Fastening and anchoring means:
  - a. At steel structures, fasten to roof or floor structural members using acceptable clamps. Steel wires may be looped through joists and twisted.
  - b. At concrete structures, provide drilled in anchors or concrete inserts. Coordinate locations with reinforcing steel.
17. Provide special mounting as indicated on selected fixture details. Refer to Contract Drawings.
18. Recessed downlights shall be supported from main ceiling channels, not intermediate channels with supplement wire support from fixture to building structure independent of ceiling structure.
19. Provide 4 attachments/supports for each exit light.

D. Mechanical Coordination:

1. Coordinate location of hangers, in areas without ceilings, with ductwork, plumbing piping, etc.
2. Make necessary offsets and extensions so that stems and lighting fixtures avoid beams, pipes, ducts, etc.

3. Where fixtures are located below heating, ventilating units, and/or ductwork and piping, provide trapeze hangers around obstruction and suspend fixture from trapeze hanger.

E. Architectural Coordination:

1. Coordinate ceiling layouts with General Contractor.
2. Heights and lighting fixtures not scheduled will be furnished on application to Architect.
3. Verify ceiling construction and report in writing any discrepancies between the ceiling type and the lighting fixture type before releasing lighting fixture for manufacture.
4. Verify mounting heights for each wall and suspended luminaire and/or exit sign prior to roughing; bottom of housing shall not be less than 80" above floor in any area.

### 3.2 CARE OF FIXTURES

- A. Remove broken glassware, plastic, or fixtures damaged, and replace with new before final acceptance with no additional cost added to the Contract.
- B. No allowance made for breakage or theft before final acceptance.
- C. Immediately prior to occupancy, damp-clean all diffusers, glassware, fixture trims, and reflectors. Replace all burned-out lamps.

### 3.3 FIELD QUALITY CONTROL

- A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.
- B. Perform testing of lighting fixtures and associated branch circuitry for proper operation after installation has been completed.
- C. Prepare a written report of tests.

END OF SECTION 265100

**SECTION 265600**  
**EXTERIOR LIGHTING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes exterior luminaires with LEDs and drivers.

**1.2 DEFINITIONS**

- A. DLC: DesignLights Consortium.  
B. THD: Total harmonic distortion.  
C. HPF: High power factor.  
D. LED: Light-emitting diode.  
E. Luminaire: Complete lighting fixture, including driver housing.

**1.3 SUBMITTALS**

- A. Product Data: For each luminaire and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
  2. Details of attaching luminaires and accessories.
  3. Details of installation and construction.
  4. Luminaire materials.
  5. Photometric data based on laboratory tests of each luminaire type, complete with indicated LEDs, drivers, and accessories.
  6. Drivers, including energy-efficiency data.
  7. LEDs, including life, output, and energy-efficiency data.
  8. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
  9. Caulk color samples for building-mounted fixtures.
- B. Operation and Maintenance Data: For luminaires to include in operation and maintenance manuals.

#### 1.4 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.
- C. Comply with NFPA 70.

### PART 2 - PRODUCTS

#### 2.1 LUMINAIRES, GENERAL REQUIREMENTS

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Polycarbonate Shields: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
  - 1. White Surfaces: 85 percent.
  - 2. Specular Surfaces: 83 percent.
  - 3. Diffusing Specular Surfaces: 75 percent.

- J. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- K. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of support materials.

## 2.2 DRIVERS FOR OUTDOOR LED FIXTURES

- A. Comply with ANSI and UL and coordinated with LED source/modules to deliver maximum output and maximum life. Include the following features, unless otherwise indicated:
  - 1. Ballast Circuit: HPF type.
  - 2. Minimum Starting Temperature: Minus 40 deg C.
  - 3. Normal Ambient Operating Temperature: 104 deg F.
  - 4. Five-year full warranty.
  - 5. Step dimming and 0- to 10-V dimming type as called for.
  - 6. Maximum THD: 20 percent.
- B. Driver to be capable of providing end-of-life signal for easy maintenance.

## 2.3 SUPPORT COMPONENTS, GENERAL REQUIREMENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
  - 1. Materials: Shall not cause galvanic action at contact points.
  - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dipped galvanized after fabrication, unless stainless-steel items are indicated.
  - 3. Anchor-Bolt Template: Plywood or steel.

## 2.4 REQUIREMENTS FOR INDIVIDUAL LIGHTING FIXTURES

- A. Fixture Types/Schedule:
  - 1. Type EA:
    - a. Description: LED unit; wall-mounted, exterior area light; one-piece, heavy-duty, die-cast aluminum with stainless-steel hardware and die-cast aluminum heat sink. Provide with high-impact-resistant, injection-molded, opaque, polycarbonate lens and eyelid cover/frame. Nominal housing size 12 inches wide x 6 inches deep x 6

inches high. Fixture rated 4000 K, 29 watts, and 2783 delivered lumens and Type III distribution. High-efficiency driver rated 120/208 V. HPF with temperature range of -30 deg C to 40 deg C. Luminaire to be DLC-compliant. Rated 100,000 hours at 70 percent lumen maintenance. Color selected by Architect at time of Submittal. UL-listed for wet location. Provide integral emergency battery backup rated 8 watts and 600 lumens.

- b. Basis-of-Design Product: Provide Kenall "Herculux" series or approved equal by Fail-Safe.

### **PART 3 - EXECUTION**

#### **3.1 LUMINAIRE INSTALLATION**

- A. Fasten luminaire to specified structural supports.
- B. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.
- C. Exterior Lighting Fixtures:
  - 1. Location: As indicated on Contract Drawings. Division 26 Contractor shall be responsible for site layout. Exact horizontal and vertical position shall be verified prior to roughing.
  - 2. Mounting: In accordance with manufacturer's instructions. All fastening devices and hardware shall be stainless steel.
  - 3. Building-mounted luminaires shall be secured to building with drill in anchor bolts (four) in addition to outlet box support. Provide caulk around the complete fixture and seal to the building. Color of caulk is as selected by Architect. Submit color samples.
  - 4. Ground each luminaire to green equipment ground conductor.
  - 5. Verify the exact locations of exterior fixtures and building mounted with Architect prior to roughing.

#### **3.2 CORROSION PREVENTION**

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Division 26 Section "Raceways and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.



### **3.3 GROUNDING**

- A. Ground metal support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
  - 1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

### **3.4 FIELD QUALITY CONTROL**

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
  - 1. Verify operation of photoelectric controls.

END OF SECTION 265600

## SECTION 269533

### HEAT TRACING FOR ROOF GUTTER SYSTEM

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes gutter and roof heat tracing for freeze prevention and snow and ice melting in gutters and downspouts with the following electric heating cables:
  - 1. Self-regulating, parallel resistance.

##### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include rated capacities, operating characteristics, and furnished specialties and accessories.
  - 2. Schedule heating capacity, length of cable, spacing, and electrical power requirement for each electric heating cable required.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For electric heating cables to include in operation and maintenance manuals.

##### 1.4 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace electric heating cable that fails in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Three years from date of Substantial Completion.

#### PART 2 - PRODUCTS

##### 2.1 SELF-REGULATING, PARALLEL-RESISTANCE HEATING CABLES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Chromalox, Inc.; "CPR" series or a comparable product by one of the following:

1. Pyrtotenax.
  2. RAYCHEM; brand of nVent Electrical plc.
- B. Comply with IEEE 515.1.
- C. Heating Element: Pair of parallel No. 16 AWG, stranded copper bus wires embedded in crosslinked conductive polymer core, which varies heat output in response to temperature along its length. Terminate with waterproof, factory-assembled, non-heating leads with connectors at one end, and seal the opposite end watertight. Cable shall be capable of crossing over itself once without overheating.
- D. Electrical Insulating Jacket: Flame-retardant polyolefin.
- E. Cable Cover: Stainless-steel braid and polyolefin outer jacket with ultraviolet inhibitor.
- F. Maximum Operating Temperature (Power On): 150 deg F.
- G. Maximum Exposure Temperature (Power Off): 185 deg F.
- H. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- I. Capacities and Characteristics:
1. Maximum Heat Output: 5 W/ft.
  2. Number of Parallel Cables: One at horizontal gutters and two cable at downspouts. Provide additional lengths of cables to install in accordance with manufacturer's instructions.
  3. Electrical Characteristics for Single-Circuit Connection:
    - a. Volts: 208.
    - b. Phase: Single.
    - c. Hertz: 3.
    - d. Full-Load Amperes: 12.
    - e. Minimum Circuit Ampacity: 16.
    - f. Maximum Overcurrent Protection: 20.
- J. Provide the following linear feet of heat trace with all associated connectors, supports, controls, and fittings; install at horizontal gutters and vertical downspouts at each area of Administration Building—7 areas, 406 ft.:
1. Area A: 30 ft.
  2. Area B: 36 ft.
  3. Area C: 60 ft.
  4. Area D: 90 ft.
  5. Area E: 30 ft.

6. Area F: 70 ft.
7. Area G: 90 ft.

## 2.2 CONTROLS

### A. Precipitation and Temperature Sensor for Snow Melting in Gutters:

1. Automatic control with manual on, automatic, and standby/reset switch.
2. Precipitation and temperature sensors shall sense the surface conditions of gutters and shall be programmed to energize the cable as follows:
  - a. Temperature Span: 34 to 44 deg F.
  - b. Adjustable Delay-Off Span: 30 to 90 minutes.
  - c. Energize Cables: Following two-minute delay if ambient temperature is below set point and precipitation is detected.
  - d. De-Energize Cables: On detection of a dry surface plus time delay.
3. Corrosion-proof and waterproof enclosure suitable for outdoor mounting, for controls and precipitation and temperature sensors.
4. Minimum 30-A contactor to energize cable or close other contactors.
5. Provide relay with contacts to indicate operational status, on or off, for interface with central HVAC control-system workstation.

## 2.3 ACCESSORIES

- A. Cable Installation Accessories: Fiberglass tape, heat-conductive putty, cable ties, silicone end seals and splice kits, and installation clips all furnished by manufacturer, or as recommended in writing by manufacturer.
- B. Warning Tape: Continuously printed "Electrical Tracing"; vinyl, at least 3 mils thick, and with pressure-sensitive, permanent, waterproof, self-adhesive back.
  1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches: 3/4 inch minimum.
  2. Width for Markers on Pipes with OD, Including Insulation, 6 Inches or Larger: 1-1/2 inches minimum.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces and substrates to receive electric heating cables for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Ensure surfaces and pipes in contact with electric heating cables are free of burrs and sharp protrusions.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 APPLICATIONS

- A. Install the following types of electric heating cable for the applications described:
  1. Snow and Ice Melting in Gutters and Downspouts: Self-regulating, parallel-resistance heating cable.

### 3.3 INSTALLATION

- A. Install electric heating cable across expansion, construction, and control joints according to manufacturer's written instructions; use cable-protection conduit and slack cable to allow movement without damage to cable.
- B. Electric Heating-Cable Installation for Snow and Ice Melting and in Gutters and Downspouts: Install in gutters and downspouts with clips furnished by manufacturer that are compatible with roof, gutters, and downspouts.
- C. Set field-adjustable switches and circuit-breaker trip ranges.
- D. Install cables at gutter and downspouts in accordance with manufacturer's recommendations.

### 3.4 CONNECTIONS

- A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

### 3.5 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
  1. Perform tests after cable installation but before application of coverings such as insulation, wall or ceiling construction, or concrete.
  2. Test cables for electrical continuity and insulation integrity before energizing.
  3. Test cables to verify rating and power input. Energize and measure voltage and current simultaneously.

- B. Cables will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

### **3.6 PROTECTION**

- A. Protect installed heating cables, including non-heating leads, from damage during construction.
- B. Remove and replace damaged heat-tracing cables.

END OF SECTION 269533

## SECTION 271450

### DATA NETWORK SYSTEM

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Division 26 Section "General Requirements for Electrical" applies to the Work of this Section.

##### 1.2 SUMMARY

- A. Section includes criteria required for a complete computer data distribution system at each of the facilities indicated in the Contract Documents.
- B. Related Sections:
  - 1. Division 26 Section "Raceways and Boxes for Electrical Systems."
- C. Scope of Work:
  - 1. Upgrade and provide additions/revisions at each existing data network system serving each building. Remove existing data outlets and associate cabling as indicated on the Contract Documents.
  - 2. Provide all necessary computer data distribution system equipment, wiring and other associated devices, components, and accessories as required for the system specified herein and as indicated in the Contract Drawings.
  - 3. Utilize existing main distribution frame ("MDF") as indicated on the Contract Documents. Provide horizontal copper and data cable outlets throughout each building as called for. Provide horizontal copper connected and extended from an MDF/IDF to each data/workstation jack.
  - 4. Provide Category 6 data outlets and Category 6, unshielded, twisted-pair, copper cables to Category 6 data outlets (RJ45) as called for.
  - 5. Provide Category 6 data outlets for the wireless data system outlets and Category 6, twisted pair, copper cables to Category 6 wireless outlets as called for.

##### 1.3 REFERENCES

- A. Design, manufacture, test, and install data distribution systems per manufacturer's requirements and in accordance with NFPA 70 (National Electrical Code), state codes, local codes, requirements of authorities having jurisdiction, and particularly the following ANSI/TIA/EIA standards:
  - 1. ANSI/TIA/EIA-568.0-D and Addenda: Generic Telecommunications Cabling for Customer Premises

2. ANSI/TIA/EIA-568.1-D and Addenda: Commercial Building Telecommunications Cabling Standard
3. ANSI/TIA/EIA-568-C.2 and Addenda: Balanced Twisted-Pair Telecommunication Cabling and Components Standard
4. ANSI/TIA/EIA-569-D and Addenda: Commercial Building Standard for Telecommunications Pathways and Spaces.
5. ANSI/TIA/EIA-606-B and Addenda: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
6. ANSI/TIA/EIA-607-C and Addenda: Commercial Building Grounding and Bonding Requirements for Telecommunications.
7. TIA/EIA TSB-67: Transmission Performance Specifications for Field-testing of Unshielded Twisted-Pair Cabling Systems.
8. ANSI/TIA/EIA-942 and Addenda: Telecommunications Infrastructure Standards for Data Centers.

#### 1.4 SUBMITTALS

- A. Submit applicable manufacturer's literature, Shop Drawings, and data to confirm the conformance to the Contract Documents for the following:
  1. Data conductors, outlets, and cover plates.
  2. Main and intermediate distribution frames, and include layout for each location and details of jacks, termination devices, and accessories.
- B. Provide full and complete riser wiring diagram of all additions and revisions to the data network.
- C. Submittals shall also include but not be limited to the following:
  1. Complete materials list.
  2. List of similar installations completed in the last 3 years.
  3. A sample of test reports and certification procedures for Category 6 and fiberoptic conductors and connections.
  4. Manufacturer's catalog sheets, specifications, and local factory representative.
  5. Name, address, and telephone number of nearest service organization.
  6. Warranty and service information.
  7. Equipment sign-off forms (as required) stating the Owner has accepted delivery of specified equipment.
  8. System training sign-off sheets stating that Owner has received the specified training required.
  9. Operating and maintenance manuals, including:
    - a. Plan drawings indicating locations and identification of each outlet, closet, and backbone cable routing.
    - b. Approved Submittals.



- c. Warranty information and documentation.
- d. Network test report printouts and diskettes.

D. As-Built Drawings:

- 1. Three sets of as-built Contract Drawing shall be delivered to the Owner within 4 weeks of acceptance of Project by the Owner. A set of as-built drawings shall be provided to the Owner in magnetic media form (CD/DVD) and utilizing CAD software that is acceptable to the Owner. The magnetic media shall be delivered to the Owner within 6 weeks of acceptance of Project by Owner. Provide as-built drawings with locations and cable paths.

E. Project Record Drawings:

- 1. Submit at conclusion of the Project and include:
  - a. Approved Shop Drawings.
  - b. Plan Contract Drawings indicating locations and identification of work area outlets, nodes, closets (MDF and IDF), and backbone (riser) cable runs.
  - c. Cross-connect schedules including entrance point, main cross-connects, intermediate cross-connects, and horizontal cross-connects.
  - d. Labeling and administration documentation.
  - e. Warranty documents for equipment.
  - f. Copper certification test result printouts and diskettes.
  - g. Optical fiber power meter/light source test results.
  - h. Operation and maintenance manuals.

F. Test Reports--General:

- 1. Provide a complete system test report (bound) of the additions and revisions to the existing data network. After the report is acceptable, upon Engineer's review, the report shall be included in the Division 27 O&M manual. Also, the acceptable test report shall be submitted to the Construction Manager on compact disk in PDF format.
- 2. Refer to Article 3.8 of this Section for additional information.

- G. The Engineer's approval of Shop Drawings, product data, and samples shall not relieve the Division 27 Contractor of responsibility for errors or omissions in Shop Drawings, product data, and samples.

**1.5 MAINTENANCE-MATERIAL SUBMITTALS**

A. Furnish the following spare equipment and parts:

- 1. Ten Category 6 outlets as specified.
- 2. 1,000 feet of horizontal Category 6 cable as specified.
- 3. Twenty-five Category 6 patch cables as 3-foot lengths.

## 1.6 SYSTEM WARRANTY AND CERTIFICATION

- A. All products shall include a minimum of one-year parts replacement warranty. Warranty shall begin when system is formally accepted by Owner in writing.
- B. Equipment in need of repair shall be replaced by the certified manufacturer's representative by the next business day.
- C. Data cabling system shall be certified by the system component manufacturer and shall be provided with a 15-year end-user warranty from the manufacturer.
- D. Manufacturer/Contractor shall, prior to completion of Project, provide the Owner with a proposal to provide training for the Owner's personnel to enable the Owner's personnel to be properly certified to design, install, and test future data cable system modifications. Training of Owner's personnel will allow the Owner to perform future moves, additions, and changes to the data cable system and keep intact and valid the manufacturer's 15-year end-user warranty and certification.
- E. All data-system cable components, including fiberoptic cable, fiberoptic patch panels and enclosures, premises wiring-system equipment racks, Category 6 system components including equipment racks, patch panels, horizontal distribution cable, data outlets, patch cords, etc., must be warranted by a single manufacturer. The warranty must certify the components to be in compliance with TIA/EIA TSB-67 transmission performance specifications for field testing of unshielded twisted-pair cabling systems.

## 1.7 QUALITY ASSURANCE

- A. Installer Qualifications:
  - 1. The installer for this Project must be certified by the manufacturer of the products, adhere to the engineering, installation, and testing procedures, and utilize the authorized manufacturer components and distribution channels in provisioning this Project.
  - 2. Installers, who do not meet qualifications listed, will not be permitted to perform any installation work.
    - a. Installer shall have on staff for the previous 12 months prior to the bid date a Registered Communications Distribution Designer. Submit a copy of current Registration information and date of original certification for RCDD.
    - b. Installers shall have minimum 5 years' experience with computer network installations.
    - c. Installer shall provide to Architect/ Engineer, a reference list of 10 recently completed projects of similar size and scope. Reference list shall include detailed description of installers actual work responsibilities. Reference list shall also include contact persons and telephone number for each project.

- B. If Division 27 Contractor cannot meet "Installer Qualifications" described above, respective Division 27 Contractor must hire a subcontractor that meets stated installer's qualifications.
- C. Division 27 Contractor shall have worked satisfactorily for a minimum of five years on data network systems of this type and size.
- D. Upon request by the Engineer, furnish a list of references with specific information regarding type of project and involvement in providing of equipment and systems.
- E. Equipment and materials of the type, for which there are independent standard testing requirements, listings, and labels, shall be listed and labeled by the independent testing laboratory.
- F. All equipment and cabling shall be EIA/TIA-compliant for both copper and fiberoptic facilities.

## **1.8 PRODUCT HANDLING**

- A. Protection: Use all means necessary to protect materials of this Project before, during, and after installation and to protect installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

## **1.9 COORDINATION**

- A. Use all means necessary to coordinate with other trades and ensure that proper and adequate provision is made in the work of other Sections to accommodate installations of the work of this Section.

## **PART 2 - PRODUCTS**

### **2.1 FABRICATION**

- A. Fabricate custom-made equipment with careful consideration given to aesthetic, technical, and functional aspects of equipment and its installation.

### **2.2 CATEGORY 6 CABLES, CONNECTORS, AND TERMINAL EQUIPMENT**

- A. Unshielded Twisted Pair ("UTP"), Category 6:
  - 1. Basis-of-Design Product: Provide Superior Essex "DataGain 66" series or approved equal by one of the following:

- a. Berk-Tek "LANmark-1000" series.
  - b. CommScope "7504" series.
  - c. TE Connectivity "620P."
2. Horizontal cable shall be No. 23 AWG, 4-pair UTP, UL/NEC, CMP rated with a blue plenum-rated PVC jacket. This cable shall be used throughout the Project in all areas required and indicated.
  3. Cable is to be Category 6-rated with the following parameters.
  4. Transmission characteristics shall include:
    - a. DC resistance of any conductor shall not exceed 9.38 ohms per 100 m maximum at 20 deg C. Measured in accordance with ASTM D 4566.
    - b. Mutual capacitance of any pair at 1 kHz for 100-m cable shall not exceed 4.4 NF.
    - c. DC resistance unbalance between any two conductors of any pair shall not exceed 3 percent when measured at or corrected to 20 deg C in accordance with ASTM D 4566.
    - d. Capacitance unbalance to ground at 1 kHz of any pair shall not exceed 330 pF per 100 m.
    - e. Structural return loss (SRL) swept measurement for 100 m or longer shall meet or exceed the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	155	200	250	300	400
Max. SRL (dB)	26.0	26.0	26.0	26.0	26.0	25.0	23.5	22.5	21.6	21.0	20.5	19.8	19.0

- f. The maximum insertion loss (IL) of any pair shall be less than the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	200	250	400
Max. Attenuation (dB)	2.0	3.8	5.9	7.5	8.4	10.6	15.3	19.7	28.8	32.6	42.7

- g. The near-end crosstalk (NEXT) coupling loss between pairs in a cable shall be greater than or equal to the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	200	250	400
NEXT Loss Worst Pair (dB)	79.3	70.3	64.3	61.2	59.8	56.9	52.4	49.3	44.8	43.3	36.3

- h. The power-sum, near-end crosstalk (PSNEXT) loss at 20 deg C plus 3 degrees (68 deg F plus 5.5 degrees) between pairs in a cable for a length 100 m (328 feet) shall be greater than or equal to the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	200	250	400
PSNEXT Loss Worst Pair (dB)	77.3	68.3	62.3	59.2	57.8	54.9	50.4	47.3	42.8	41.3	34.3

- i. The equal-level, far-end crosstalk (ELFEXT) loss at 20 deg C plus 3 degrees (68 deg F plus 5.5 degrees) between pairs in a cable for a length of 100 m (328 feet) shall be greater than or equal to the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	200	250	400
ELFEXT Loss Worst Pair (dB)	72.7	60.7	52.7	48.6	46.7	42.8	36.8	32.7	26.7	24.7	17.8

- j. The power-sum, equal-level, far-end crosstalk (PS-ELFEXT) loss at 20 deg C plus 3 degrees (68 deg F plus 5.5 degrees) between pairs in a cable for a length of 100 m (328 feet) shall be greater than or equal to the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	200	250	400
PS-ELFEXT Loss Worst Pair (dB)	69.3	57.8	49.8	45.7	43.8	39.9	33.9	29.8	23.8	21.8	12.8

- k. The return loss (RL) at 20 deg C plus 3 degrees (68 deg F plus 5.5 degrees) between pairs in a cable for a length of 100 m (328 feet) shall be greater than or equal to the following:

FREQUENCY (MHz)	1.0	4.0	10.0	16.0	20.0	31.25	62.5	100	200	250	400
Min. RL (dB)	20.0	23.0	25.0	25.0	25.0	23.6	21.5	20.1	18.0	17.3	15.9

B. Outlet Faceplates:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Ortronics "Angled Series II" faceplates or approved equal by one of the following:
  - a. TE Connectivity "SL" series.
  - b. CommScope "Systimax" series.
  - c. Leviton "eXtreme 6+."
2. Work-area faceplates shall be compatible with modular jack inserts iconable and match electrical devices in color. Faceplates shall have a covered designation strips that allow identifying each jack. Provide full frame faceplates that accept multiple combinations of data outlets of both fiber and Category 6 type. Provide inserts that orient outlets to accept four jack inserts at 45-degree exit.
3. Refer to Contract Drawings for exact quantity, number of ports required and location of faceplates.
4. Blanks shall be installed to all unused openings.

C. Category 6 Jacks and Inserts:

1. Basis-of-Design Product: Provide Ortronics "KT2J" series or approved equal by one of the following:

- a. TE Connectivity "SL" series.
  - b. CommScope "Systimax" series.
  - c. Leviton "eXtreme 6+."
2. Voice/data jacks shall be 8-position, 8-conductor (8P8C) modular jacks and shall be Category 6 performance, as defined by the references in this Section, including ANSI/TIA-568-C.2. All pair combinations must be considered, with the worst-case measurement being the basis for compliance.
  3. Modular-jack performance shall be third-party-verified by a nationally recognized, independent testing laboratory.
  4. The modular jack shall use dual-reactance modular contact array.
  5. The modular jack shall have low-emission IDC contacts.
  6. The modular jack shall use standard termination practice using 110 impact tool; or if using the Ortronics "KT2J," the jack shall have a lacing cap.
  7. The modular jack shall be center-tuned to Category 6 test specifications.

D. Category 6 Modular Patch Panels:

1. Basis-of-Design Product: Provide Ortronics "SPKS" series or approved equal by one of the following:
  - a. TE Connectivity "SL."
  - b. CommScope "Systimax" series.
  - c. Leviton "eXtreme 6+."
2. All patch panels shall meet EIA/TIA 568C, Category 6 specifications.
3. Cables shall be neatly dressed to patch panels.
4. Cable management rings will be used as required for dressing cables.
5. TIA-568-B termination procedures shall be observed verify with the Owner.
6. All four-pair must be terminated.
7. A horizontal wire management panel shall be installed below each patch panel and/or below the last patch panel installed to rack.
8. Cable troughs shall be installed at the top and bottom of each equipment rack.
9. Vertical wire management rings shall be installed to both sides of racks, five per side.
10. Patch panels shall be compatible with a 19-inch equipment rack and wired to EIA/TIA 568C. Patch panels shall accept individual bezels. The front of each module shall be capable of accepting 9- to 12-mm labels. Each port shall be capable of accepting an icon to indicate its function. Patch panels shall terminate the building cabling on 110-style insulation displacement connectors. Patch panels shall provide power sum Category 6 Near-end Cross Talk (NEXT) performance equal to the cable specifications, in addition to all other standard Category 6-performance characteristics.
11. Provide 48-port patch panels at existing MDF as required to terminate added data cabling called for in the Documents.

## 2.3 EQUIPMENT RACKS/CABINETS

### A. MDFs and IDFs:

#### 1. Equipment Racks:

- a. Basis-of-Design Product: Provide Ortronics "OR-19-84-T4SDA2132" or approved equal by one of the following:
  - 1) Chadsworth.
  - 2) TE Connectivity.
  - 3) Great Lakes.
- b. Utilize existing equipment racks at MDF and IDF locations. Provide additional data racks as required.
- c. Distribution Frames: Freestanding, modular-steel units designed for telecommunications terminal support and coordinated with dimensions of units to be supported, 84 inches high with adjustable dual-equipment, 4-post racks.
- d. Dimensions: 84 inches high x 20.19 inches wide x 21 to 32 inches deep, 45RU.
- e. Module Dimensions: Width compatible with EIA 310 standard, 19-inch panel mounting.
- f. Finish: Manufacturer's standard, baked-polyester powder coat.
- g. Vertical and horizontal cable management channels, top and bottom cable troughs, grounding lug. Provide with a 19-inch rack. Mount 6-outlet rear power-strip surge suppressor, 15 Amp, with a 15-foot power cord.

#### 2. Interior Equipment Cabinets:

- a. Basis-of-Design Product: Provide Ortronics "OR-MMW192426P-B" or approved equal by one of the following:
  - 1) Hoffman.
  - 2) Great Lakes.
- b. Interior equipment cabinets shall be 36" wall-mounted, lockable cabinet with glass door to house rack for data equipment. Wall-mounted cabinet with tapped rails and hinged front door and hinged middle section from back enclosure with power strip and two 4"-diameter fan assemblies. Provide black color. Provide equipment cabinet as called for on the Contract Documents.
- c. Dimensions: 19U, 24 inches wide x 26 inches deep by 36 inches high.

#### 3. Cable Management for Equipment Frames/Cabinets:

- a. Metal, with integral wire retaining fingers.
- b. Baked-polyester powder coat finish.



- c. Vertical cable management panels shall have front and rear channels, with covers.
    - 1) Basis-of-Design Product: Provide Ortronics "DVMS706" or approved equal.
  - d. Provide horizontal crossover cable manager at the top of each relay rack, with a minimum height of two rack units each.
    - 1) Basis-of-Design Product: Provide Ortronics "60400057" or approved equal.
  - e. Provide Velcro-type cable wraps as required to secure/organize cables.
4. Consult the Owner and Construction Manager to coordinate exact location of equipment.
- B. Surface Metal Raceway, Conduit Stubs, Wall Outlets:
- 1. General: As described in Division 26 Section "Raceways and Boxes for Electrical Systems."
  - 2. Surface Metal Raceway:
    - a. At existing construction, provide surface metal raceway as indicated on the Contract Documents.
  - 3. Conduit Stubs:
    - a. General: Provide conduit from each data (copper and/or fiber) outlet and/or 2-section surface raceway and extend to accessible corridor ceiling space; size as indicated on Contract Drawings.
  - 4. Wall Outlets:
    - a. Wall box (at new construction): Flush, 4 inches x 4 inches x 2-1/8-inch-deep box with single-gang plaster ring.
- C. MDF and IDF Wiring Closets:
- 1. All horizontal and backbone cables shall enter the wiring closets via 3-inch-diameter conduit sleeves. All penetrations to the wiring closet shall be sleeved in conduit with appropriate fittings. Provide a minimum of one additional 3-inch sleeves shall be provided for horizontal cables at each closet.
  - 2. Communication cable shall enter at the top of each equipment rack.
- D. Wall and Floor Penetrations: Provide a minimum of one 3-inch sleeve at all walls above accessible corridor ceilings to allow routing of cables.



## 2.4 POWER STRIPS

- A. Power Strips: Comply with UL 1363.
1. Rack mounting.
  2. Six 15-A, 120-V ac, NEMA WD 6, Configuration 5-15R receptacles.
  3. LED indicator lights for power and protection status.
  4. LED indicator lights for reverse polarity and open outlet ground.
  5. Circuit Breaker and Thermal Fusing: Unit continues to supply power if protection is lost.
  6. Close-coupled, direct plug-in line cord.
  7. Rocker-type on-off switch, illuminated when in on position.
  8. Peak Single-Impulse Surge Current Rating: 13 kA per phase.
  9. Protection modes shall be line to neutral, line to ground, and neutral to ground. UL 1449 clamping voltage for all 3 modes shall be not more than 330 V.

## 2.5 GROUNDING

- A. Comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems" for grounding conductors and connectors.
- B. Telecommunications Main Bus Bar:
1. Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
  2. Ground Bus Bar: Copper, minimum 1/4-inch thick by 4 inches wide with 9/32-inch holes spaced 1-1/8 inches apart.
  3. Stand-Off Insulators: Comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V.
- C. Comply with ANSI-J-STD-607-C.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. ~~Exa~~mine conditions for compliance with requirements and other conditions affecting the performance of the data distribution system work. Do not proceed until unsatisfactory conditions have been corrected.

### 3.2 CONTINUITY OF SERVICES

- A. Take no action that will interfere with, or interrupt, existing building services unless previous arrangements have been made with the Construction Manager. Arrange the work to minimize shutdown time.

- B. Owner's personnel will perform shutdown of operating systems. Give three days' advance notice for systems shutdown.
- C. Should services be inadvertently interrupted, immediately furnish labor, including overtime, material, and equipment necessary for prompt restoration of interrupted service.

### **3.3 BUILDING INTERCONNECT INSTALLATION AND COORDINATION**

- A. Install, terminate, and test all fiberoptic cable.
- B. Install, terminate, and test all fiberoptic cable within the building beyond the point of termination.

### **3.4 CABLE ROUTING AND INSTALLATION REQUIREMENTS**

- A. Cable Pathway for Category 6 Cables:
  - 1. Extension of all data cables shall be within raceway, conduit, cable tray, back boxes, or other designated cable delivery system.
  - 2. Open wiring is permitted above accessible corridor ceilings with removable tiles and/or access panels. Provide raceways, boxes, etc., to house cabling from workstation outlets to cable tray above accessible corridor ceilings as detailed on the Drawings.
  - 3. Within cable tray above accessible corridor ceilings (suspended), bundle, in bundles of 50 or less, horizontal wiring with nylon-type cable wraps held with Velcro. Bound cables snug but not deforming the cable geometry. Cable bundles shall be supported via cable tray or "J" hooks attached independently to the building structure and framework at a maximum of 5-ft intervals. Plenum-rated cable ties will be used in all appropriate areas. Adhere to the manufacturers' requirements for bending radius and pulling tension of all data cables.
  - 4. Cables shall not be attached to lift out ceiling grid supports or laid directly on the ceiling grid. Support cables a minimum of 12 inches above the ceiling.
  - 5. Cables shall not be attached to or supported by conduit, HVAC/plumbing piping, HVAC ducts, systems, or any environmental sensor located in the ceiling air space.
- B. Cabling: All communications cabling used throughout this Project shall comply with the requirements as outlined in NEC Articles 725, 760, 770, and 800 and the appropriate local codes. All copper cabling shall bear CMP (plenum-rated) markings.

### **3.5 INSTALLATION**

- A. Install the work of this Contract in strict accordance with the recommendation of the manufacturers as approved by the Engineer, anchoring all components firmly into position for long life under hard use. All wall- and ceiling-mounted equipment shall be installed to provide a minimum safety factor of three times the weight of the equipment.

- B. System equipment locations shown on the Contract Drawings are approximate. Verify exact locations in the field and coordinate these with the Engineer.
- C. Labels must withstand the performance requirements of UL 969 as outlined in the TIA standard. Actual room numbers are to be used in labeling. These room numbers may not agree with those indicated on the Contract Drawings. Coordinate all labeling and numbering with the Engineer, Owner, or Construction Manager.
- D. Remove and reinstall existing ceiling tiles for the work of this Contract, and replace damaged tiles.
- E. Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and NEC and with manufacturer's printed instructions.
- F. Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.
- G. Each cable run between an outlet and the corresponding MDF/IDF shall be continuous without any splices or joints.
- H. The length of each horizontal Category 6 cable run between an outlet and the corresponding MDF/IDF shall not exceed 275 ft.
- I. All equipment racks shall be secured to the floor according to TIA/EIA standards. Ground data racks in accordance with ANSI/TIA/EIA-607.
- J. Equipment racks shall be sized to allow for sufficient rack space for Owner's network equipment that connects directly to the patch panels.
- K. Installation shall conform to the following basic guidelines:
  - 1. Use of approved wire, cable, and wiring devices.
  - 2. Neat and uncluttered wire termination.
- L. Attach cables to permanent structure with suitable attachments at intervals not to exceed 6 feet.
- M. Support cabling and corrugated raceway a minimum of 6 inches above ceiling system.
- N. Install adequate support structures for 10-foot cable service loops in the MDF and in each IDF.

### **3.6 GROUNDING**

- A. Install grounding according to BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.
- B. Comply with ANSI-J-STD-607-C.

- C. Locate grounding bus bar to minimize the length of bonding conductors. Fasten to wall allowing at least 2-inch clearance behind the grounding bus bar. Connect grounding bus bar with a minimum No. 4 AWG grounding electrode conductor from grounding bus bar to suitable electrical building ground.
- D. Bond metallic equipment to the grounding bus bar, using not smaller than No. 6 AWG equipment grounding conductor.

### 3.7 LABELING

- A. Labeling shall conform to ANSI/TIA/EIA-606 standards. In addition, provide the following:
  - 1. Label each outlet with permanent self-adhesive label with minimum 3/16-inch-high characters.
  - 2. Label each cable with permanent self-adhesive label with minimum, 1/8-inch-high characters, in the following locations:
    - a. Inside receptacle box at the work area.
    - b. Behind the communication closet patch panel or punch block.
  - 3. Use labels on face of data patch panels. Provide facility assignment records in a protective cover at each data closet location that is specific to the facilities terminated therein.
  - 4. Use color-coded labels for each termination field that conforms to ANSI/TIA/EIA-606 standard color codes for termination blocks.
  - 5. Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.
  - 6. Label cables, outlets, and patch panels with prefixes (F=Fulton Building, followed by D=Data) and room number in which outlet is located, followed by a single letter suffix to indicate particular outlet within room; e.g., FD107A, FD107B. Indicate riser cables by an R then pair or cable number.
  - 7. Mark up floor plans showing outlet locations, type, and cable marking of cables. Turn these Contract Drawings over to the Owner 2 weeks prior to move in to allow the Owner's personnel to connect and test Owner-provided equipment in a timely fashion.

### 3.8 FIELD QUALITY CONTROL

- A. Project Superintendent shall be present during the course of the installation to provide coordination of work of these Specifications and of other trades and to provide technical information when requested by other trades.
- B. Testing:
  - 1. Completely test the existing data network prior to starting the work, and provide test report. At completion of data network revisions/additions in accordance with the Contract Documents, fully test the entire data network and provide test report. Provide 2 complete data network test reports.

2. Provide test documentation certifying channel performance as stated in this Section. Provide hard copy of test records.
3. Present documentation in form previously stated in this Section.
4. Category 6 Cable Testing:
  - a. All Category 6 cables shall be tested in conformance with EIA/TIA 568A.
    - 1) All pairs in all cables shall be tested.
    - 2) A printed report documenting the following testing categories shall be provided:
      - a) Individual pair cable length.
      - b) Individual pair near-end crosstalk (NEXT).
      - c) Individual pair attenuation.
      - d) Individual pair attenuating to crosstalk ratio (ACR).
      - e) Wire map indicating:
        - (1) Proper pin termination at each end.
        - (2) Continuity to the remote end.
        - (3) Shorts between any two or more conductors.
        - (4) Crossed pairs.
        - (5) Reversed pairs.
        - (6) Split pairs.
        - (7) Any other mis-wires.
    - 3) Correct wiring errors as required and/or cables that fail the testing requirements and confirm correct wire Amp indication.
    - 4) Provide copies of the printed report as follows:
      - a) One copy shall be sent to the Engineer.
      - b) One copy shall be included with each of the Owner's operating and maintenance manuals.
      - c) Provide a compact disk with the full test report in PDF format.
  - b. System labeling: Brother "P-Touch" or Engineer-approved labeling system will be used to label all faceplates, patch panels, and cabinets.

### 3.9 TRAINING

- A. Prior to acceptance by the Owner, provide a total of 4 hours of training. Provide one full 4-hour training session for the Owner and staff. Each training session shall cover the following items:
  1. Review of all as-built documentation.
  2. Review of all copper and fiber test results.
  3. Review of all labeling.
  4. Maintenance procedures.
  5. Troubleshooting procedures.

6. Problem reporting procedures.
7. Warranty information.

END OF SECTION 271450

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**SECTION 281300**  
**ACCESS CONTROL SYSTEM**

**PART 1 - GENERAL**

**1.1 RELATED SECTIONS**

- A. Division 26 Section "General Requirements for Electrical" applies to work of this Section.

**1.2 SUMMARY**

- A. This Section includes complete access control system to control the entry doors and monitor exterior doors at the Administration Building as indicated on the Contract Documents. The access control system shall have the following:
1. Proximity card readers, door contacts, request-to-exit devices, power supplies, related equipment, and accessories.
  2. Access cards/fobs and/or key tags for use with specified card readers.
  3. Installation/interconnecting wiring, raceway, boxes, terminal cabinets to accommodate respective components.
  4. The following services:
    - a. System testing.
    - b. Software and programming.
    - c. Start-up and system commissioning.
    - d. Customer training.
  5. Software and equipment to allow an existing computer workstation to make up photo-ID access cards.
  6. Software upgrades shall be provided as part of the system and at no expense to the Owner for the life of the system or 15 years.
- B. Provide a complete access system at the Administration Building.
- C. Provide connectivity to the door contacts as indicated for all exterior doors at the building; connect to access system at each of these facilities. Provide component/input boards (MR16IN) at each access system's main panel at each building to accept door-contact inputs.
- D. Furnish all labor, materials, equipment, and service necessary to provide a complete access control and door-monitoring system (security management system/"SMS") as shown on the Drawings and as specified herein. The Contractor shall provide items that meet the specified requirements of the system. The SMS workstation shall utilize the access system and door-monitoring software. The SMS shall be designed to secure and monitor the designated

facilities. The work to be provided, in addition to designing, furnishing, and installing the SMS, shall include the following:

1. Provide access system/door monitoring including the following: Physical Access Gateway module, expansion modules, and Central Management Control workstation.
2. Verification that proposed equipment and devices furnished is adequate for the intended purpose.
3. Perform a layout check to ensure that adequate access is available for construction, installation and maintenance of equipment and devices furnished; however, the Contractor is not responsible for furniture.
4. Perform acceptance tests to show system is properly installed and that it meets the specifications and applicable codes.

### 1.3 DEFINITIONS

- A. DRI: Dual-reader interface module.
- B. ICM: Input control module.
- C. IP: Internet protocol.
- D. ISC: Intelligent system controllers.
- E. LED: Light-emitting diode.
- F. OCM: Output control module.

### 1.4 SCOPE OF ACCESS SYSTEM--GENERAL

- A. General:
  1. Contractor shall provide the ACS as shown on the drawing and specified herein including but not limited to the following:
    - a. Integrate ACS to the Owner's existing IP data network.
    - b. Workstation peripherals.
    - c. Access control and alarm monitoring controllers.
    - d. Primary network controllers.
    - e. Local field controllers.
    - f. Field hardware devices.
    - g. Software expansion modules required for specification operation.
- B. Workstation:
  1. The alarm-monitoring workstation monitors field hardware devices, such as card/fob readers, door contacts, and ISCs. Administrative tasks, such as defining access groups,



- setting time zones, generating reports, creating maps, etc., shall be provided from any workstation on the network which is licensed to do so.
2. The enrollment workstation serves as both the credential creation and input workstation for the cardholder management module of the system.
3. The integrated workstation allows for all functions of enrollment, administration, and alarm monitoring to be available from a single workstation.

C. System functions are categorized into modules that shall include:

1. Access control: The system shall make access-granted or access-denied decisions, define access levels, and set time zones and holidays.
2. Alarm monitoring: Alarms are prioritized. The alarm-monitoring screen provides information about the time and location of the alarm, along with its priority. The alarm-monitoring screen shall sort pending and/or insert new alarms based on any priority, date/time, panel, card reader, input control modules (ICMs), or cardholder attributes.
3. Cardholder management: The system includes an employee management system integrated with the access control system.
4. System administration: System administrative tasks, such as defining workstation and system-operator permissions setup, access groups, time zones, reports, maps, etc., shall be provided from any workstation on the network. Initial setup of the cardholder screen layout shall occur on the database server.
5. Creation of screens and forms: The system includes a forms' designing and editing module that gives system administrators the ability to modify any standard field, to customize the cardholder screens as desired.
6. Graphical map creation: The system provides graphical map creation and editing software that allows system administrators to import customized map backgrounds of their facility and attach custom icons to those maps.
7. Data import: The system includes an import utility to import cardholder information into the system database.
8. Data transmission: The system includes built-in ability to transmit data over copper and fiber-optic telecommunications cabling.

## 1.5 SUBMITTALS

A. Provide separate, complete submittals for the system.

1. General: Submit each item according to the Conditions of the Contract and Division 1 Specification Sections.
2. Product data for each type of system component including dimensioned plans and elevations showing minimum clearances and installed features and devices.
3. Wiring diagrams from manufacturer differentiating clearly between factory- and field-installed wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Make all diagrams specific to this Project, and distinguish between field and factory wiring. Provide identification labels in termination boxes.
4. Device address list: Coordinate with final system programming and room identification with the Owner.

5. System operation description covering this specific Project, including method of operation and supervision of each type of circuit and sequences of operation for all manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are unacceptable.
6. Separate, complete manuals for operation and for maintenance.
7. Record of field tests of each system.
8. Review copies of all materials and publications to be used for customer training sessions. These materials must be provided at least 30 days before the scheduled sessions.
9. A DVD-formatted video of training to the Owner at completion of training session.
10. Specified warranty.

## 1.6 QUALITY ASSURANCE

- A. Include name, business address and telephone number of nearest fully equipped service organization.
- B. Manufacturer's Qualifications: Firms regularly engaged in manufacture of surveillance-system equipment of types, sizes, and electrical characteristics required, and whose products have been in satisfactory use in similar service for not less than five years.
- C. Compliance with local requirements: Comply with applicable building code, local ordinances and regulations, and the requirements of the authorities having jurisdiction.
- D. Comply with current NFPA 70, National Electric Code.
- E. Installer Qualifications:
  1. Installer Selection:
    - a. The Installer for this Project must be certified by the manufacturer of the products, adhere to the Engineering, installation and testing procedures and utilize the authorized manufacturer components and distribution channels in provisioning this Project.
    - b. Installer shall certify to the Engineer's satisfaction, that they have the necessary knowledge and experience to successfully complete the specified work prior to starting any work.
    - c. Installer must hold New York State installer license with office within 75 miles of Project location.
    - d. Installers, who do not meet qualifications listed, will not be permitted to perform any installation work.
      - 1) Installers shall have minimum 5 years' experience with surveillance-systems installations.
      - 2) Installer shall provide to Architect/Engineer, a reference list of 5 recently completed projects of similar size and scope. Reference list shall include contact persons and telephone number for each project.

- 3) Submit certifications or similar documents indicating technician experience levels regarding surveillance-systems experience.

## **1.7 WARRANTY**

- A. The access control, monitoring, and intercom systems shall be covered by a three-year warranty after written acceptance by the School District. Any replacement of parts and/or equipment shall be provided and installed by the manufacturer at no cost.

## **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Handle system equipment carefully to prevent damage, breaking and scoring. Do not install damaged equipment or components; replace with new.
- B. Store equipment in clean, dry place. Protect from weather, dirt, fumes, water, construction debris and physical damage.

## **1.9 EXTRA-MATERIALS SUBMITTALS**

- A. Spare Parts:
  1. Provide the following quantities of each product listed:
    - a. Proximity Readers: 2.
    - b. Door Contacts: 4 sets.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Basis of Design Manufacturer: Avigilon "ACM" series or approved equal by one of the following:
  1. Lenel.
  2. RS 2 Technology.

### **2.2 ACCESS CONTROL MANAGER (ACM) SYSTEM DESCRIPTION**

- A. Description: Access Control Manager (ACM) software provides an expandable, role-based system that has the following features:
  1. Compatibility with existing IT systems.

2. Manages permissions centrally, from a single location.
3. Integrates with Active Directory, HR databases, and other IT and logical security systems.
4. Provides browser-based solutions allow full access from other devices, enabling security personnel to respond to an incident immediately.
5. Does not require installation on multiple workstations.
6. Supports open field hardware from other manufacturers.
7. Provides hot-standby or auto-failover through cloud-based server architecture, switching to backup system automatically in the event of a fatal failure.

B. Server Appliance: Linux-based server pre-loaded with Avigilon Access Manager Software and optimized to manage an IP-based access control system.

1. Form Factor: Rack mounted

### 2.3 APPLICATION SUPPORT

A. Supported Browsers: Provide PACS appliance with browser-based access to system applications, without mandated requirement of a dedicated client workstation that supports the following industry standard web browsers:

1. Mozilla Firefox.
2. Google Chrome.
3. Safari.
4. Internet Explorer.
5. Microsoft Edge.

B. Supported Third Party Databases: Provide ACM which supports the following third-party data bases:

1. Lightweight Directory Access Protocol (LDAP).
2. Microsoft Active Directory.
3. Structured Query Language (SQL) Server.
4. Oracle Relational Database Management System (RDBMS).
5. Comma Separated Value (CSV).
6. Extensible Markup Language (XML) Event Push).

C. Supported Updates: Provide ACM which automatically updates the following:

1. Software maintenance of operating system service packs.
2. Software Licensing.
3. Operating System Security Vulnerabilities.
4. Physical Access Control System (PACS) Appliance: Provide a PACS with the following capabilities:
5. Serves as central repository for entire system configuration and activities and is only accessible through a web browser.

- a. A database server and separate database server with a unique operating system are not allowed.
6. Compliant with Owner's IT Standard with fully featured physical access control system solution.
7. Utilizes industry standard TCP/IP network infrastructures to communicate including the following:
  - a. PACS appliances.
  - b. Intelligent field hardware controllers.
  - c. Browser-based workstation.
8. Secure Data: PACS data secured as follows:
  - a. Secure data communicated over the network to/from the PACS appliances and the web browser workstations via SSL 128-bit encryption.
  - b. Encrypt PACS appliance backups using AES Encryption.
  - c. Back up PACS appliance to the following:
    - 1) USB storage device.
    - 2) Windows shared directory and network shared folder.
    - 3) Secured SCP servers.
  - d. Encrypted passwords required to log in to PACS appliance within Open LDAP directory structure.

## 2.4 ACCESS CONTROL MANAGER (ACM)

- A. ACM to support 32 card readers, upgradable to 400 card readers.

1. Proximity Card/Fob Readers:

- a. Card/fob reader shall offer a low-profile, rugged, weatherized polycarbonate sealed enclosure with multicolor LEDs and a sounder for access-granted and -denied indications. Card reader shall be mountable indoor or outdoor. Card readers shall be capable of reading either cards or key tags.
- b. Card/fob reader shall be a 6- x 1.7- x 1-inch, low-profile, wall-mounted unit, having a read range of approximately 5 to 8 inches.
- c. Furnish four spare card readers.
- d. Product: H.I.D. "Mini-Prox" series.

B. Accessories:

1. Provide hardware sets, power supplies, key switches, wiring, and connections required for complete operating system, including the following:

- a. Power supplies: As required for each hardware set, with battery backup for a minimum of 8 hours.
  - b. Fobs: 100 programmed reader fobs.
- C. Description: Linux-based server pre-loaded with Access Control Manager software and optimized to manage an IP-based physical access control. Hardened Linux network appliance using LDAP compliant directory structure with a small desktop tower form factor. Factory licensed from the manufacturer.
- D. Server:
  - 1. Processor: Intel Pentium G3420 Processor, dual Core, 3M Cache, 3.20GHz.
  - 2. Memory: 4 GB, 1600MHz DDR3 Non-ECC.
  - 3. Hard Drive: 500GB 3.5-inch Serial ATA (7,200 Rpm) Hard Drive.
  - 4. Network Adapter Card: Broadcom NetXtreme® 10/100/1000 PCIe Gigabit Networking Card.
  - 5. Power supply: Single, non-redundant.
  - 6. Mechanical:
    - a. Form Factor: Desktop tower
    - b. Dimensions (L x W x H): 11.4" x 3.7" x 12.3".
  - 7. Capacities:
    - a. Controllers: 32.
    - b. Maximum Simultaneous Operators: 50.
    - c. Maximum Identities: 500,000.
    - d. Maximum Stored Events: 75,000,000.

## 2.5 DOOR CONTACTS

- A. General: Surface mount on steel or aluminum door, magnetic, normally closed contact, diameter as required by door construction.
- B. Ratings: 100-V ac/dc, .5 Amp, 7.5 watts.
- C. Product: Sentrol #1078 series.

## 2.6 DOOR HARDWARE SETS

- A. Coordinate with Owner and Architect.

## 2.7 WIRING

- A. Provide wiring required for complete operating system in accordance with system manufacturer's recommendations. All system wiring shall be plenum-rated type.
- B. Provide network cabling from security-system controller(s) to District network equipment. Coordinate with the School District's Representative.
- C. Wiring shall be color-coded with permanent wire markers.

## 2.8 CS SOFTWARE ALARM CONTROL FUNCTIONALITY

- A. Alarm and Event Attributes: Administrator configures and determines how each alarm and event is communicated in Alarm Monitors.
  - 1. Event Listing Window: Lists alarms and events with their associated event type and source object that is responsible for generating alarm or event.
  - 2. Upon logging in and accessing Alarm Monitor, queued alarms and events reported into Alarm Monitor for Operator action.
- B. Provide Administrators with the following options for each alarm and event in system:
  - 1. Rename the alarm or event from its factory default.
  - 2. Rename, where applicable, the Return to Normal state name for the alarm or event.
  - 3. Assign an event type that sets the default configuration for alarm or event.
  - 4. Display alarm or event in Alarm Monitor.
  - 5. Mask alarm or event from displaying in Alarm Monitor.
  - 6. Display text instructions that guides Operator in responding to alarm.
  - 7. Automatically send an email message to a recipient.
  - 8. Have alarm display in priority order based on priority of alarm.
    - a. Minimum Number of Priorities Supported: 99.
  - 9. Set priority of alarm or event, as well as its associated Return to Normal event priority.
  - 10. Store alarm or event information for later retrieval.
  - 11. Create distinct schedules that can be assigned to different alarm types.
  - 12. Create schedule to enable/disable global events, which include the following:
    - a. Shunt/un-shunt doors.
    - b. Mass denial of credentials (lock down).
- C. Alarm and Event Logging: As a default, log alarms and events in PACS to the PACS appliance internal data storage logging structure.
- D. Off-Line Alarm/Event Queue: Queue alarms and events that occur:

1. While Alarm Monitor is off-line with the rest of the system.
2. When an Operator is not logged in to the Alarm Monitor.

E. Alarm and Event Types: Supports creation of alarm and event types as follows:

1. Creates alarm and event templates as part of the installation.
2. Events contain configuration of parameters including the following:
  - a. Priority.
  - b. Text instructions.
  - c. Masking and masking schedule.
  - d. Logging.
  - e. Reporting.
  - f. Email notifications.
3. Each alarm and event type support multiple alarm and event assignments.

F. Alarm/Event Synchronization: Supports alarm synchronization for alarm and events that report into multiple Alarm Monitors.

1. Clears alarms and events from other Alarm Monitors when alarms or events are acknowledged or cleared by an Alarm Monitor Operator.

G. Alarm Reporting: Supports reporting of alarms to alarm monitors based on schedules.

1. Each alarm in the system to have its own associated schedule.

H. Alarm/Event Instructions: Each alarm and event in the system to have associated text instructions.

1. Maximum instruction character per event: 255.

## 2.9 PACS SOFTWARE, ACCESS CONTROL FUNCTIONALITY

A. Access Groups: An access group consists of card reader and schedule combinations.

1. Access groups consists of the total number of card readers in the system that are assigned to a single schedule.
2. Any card reader has the ability to belong to any access group.
3. Individual card readers be able to belong to multiple access groups.
4. Credential holder are allowed access to secure areas based on:
  - a. Card reader.
  - b. Time.
  - c. Day.
5. Access Group Support: Provide support of the following minimums:



- a. 255 access groups per intelligent enterprise controller.
  - b. Access groups can be assigned to an individual credential holder per intelligent enterprise controller, and optionally be selectable up to a total of 16.
- 6. Access groups support conventional names up to 50 alphanumeric characters.
- B. Schedules: Provide support for creation of schedules as follows:
  - 1. Schedules serve as templates for application parameters including the following:
    - a. Access groups.
    - b. Masking devices.
    - c. Device modes.
  - 2. Number of Schedules: Minimum of 255 schedules per panel.
    - a. Each schedule set to one of following 3 operating modes:
      - 1) On: Schedule is active 24 hours per day / seven days per week.
      - 2) Off: Schedule is never active.
      - 3) Scan: Schedule is active during the assigned intervals.
  - 3. Schedule Intervals: Provide ability to assign individual schedules to a predetermined interval as follows:
    - a. Day(s) of the week.
    - b. Assigned to function a minimum of 8 holiday types.
    - c. Supports a minimum of 10 intervals.
  - 4. Download schedules to related intelligent enterprise controllers for local processing and decision making.
  - 5. Schedules support conventional names up to 50 alphanumeric characters.
- C. Holidays: Define specific dates and ranges to be defined as a holiday as follows:
  - 1. Number of Holidays: Minimum of 255.
  - 2. Assign a minimum of 8 holiday types.
  - 3. Ability to temporarily alter, adjust or suspend parameters, including the following:
    - a. Card reader modes.
    - b. An Identity's access rights.
    - c. Masking Schedules.
  - 4. Supports an embedded calendar to assist in configuration of holidays.
  - 5. Holidays support conventional names up to 50 alphanumeric characters.
- D. Card Reader Options: Defines options for card readers in the system as follows:

1. Specify the card reader is an active card reader.
  2. Specify the off-line mode operations should the card reader lose communications with the enterprise intelligent controller or Intelligent Field Controller.
  3. Specify Door Forced Filter: Reduces false alarms for doors that "bounced."
    - a. No report of Door Forced Open Alarm for door opening within 3 seconds of the door closing.
  4. Extended Cardholder Door Held Open Time: Allows a card reader's door held open time to be extended beyond the normal configured time.
    - a. Maximum Extended Door Held Open Time: Definable up to 32,767 seconds.
    - b. Defines application of this functionality by the following:
      - 1) Card reader.
      - 2) Credential holder.
- E. Pre-Alarm: Supports a Door Held Open pre-alarm capability as follows:
1. When a door has been held open for a pre-determined amount of time after a valid access grant, a local audible annunciation alerts credential holder to close door.
  2. Failure to close the door between the pre-alarm annunciation and the configured door held open time generates an alarm at the Alarm Monitor.
  3. Pre-Alarm parameters apply to the following:
    - a. Door Held Open time.
    - b. Pre-alarm time.
    - c. Configurable up to 65,534 seconds.
  4. Provide distinct pre-alarm setting for each door.
- F. Card Reader Scheduled Mode Overrides: Supports ability for card reader modes to be overridden from standard mode on a scheduled basis.
1. Based on the card reader type, custom modes include the following:
    - a. Card only.
    - b. Card and PIN.
    - c. Card or PIN.
    - d. PIN only.
    - e. Locked.
    - f. Unlocked.
    - g. Facility code.
    - h. At end of scheduled override, card reader returns to its default standard mode.
  2. Supports Macro/Trigger functionality when the Deny Count Exceeded transaction occurs.
    - a. Actions include, but not be limited to, the following:

- 1) Lock down the card reader.
    - 2) Annunciating a local siren.
    - 3) Configured to execute for a given card reader.
  - b. Multiple complementary modes can be assigned per reader.
- G. Door Summary and Status Page: Supports a Door Summary and Status Page that displays a list of doors defined in the system.
1. For each door in the system, the Door Summary and Status Page will display the following:
    - a. Door Name.
    - b. Current Door Mode.
    - c. Door Status including forced and held states, masking states, including communications and tamper states.
    - d. Results displayed are able to be filtered by Door Group or by other searchable criteria.
- H. Mask Alarm Filters: Displayed on the workstation GUI.
1. Filter operator views to remove Door Forced Open and Door Held Open alarms to the following:
    - a. Mask permanently.
    - b. Mask during a schedule.
  2. Distinct Schedules will be able to be assigned to different Alarm Types.
- I. Multiple Card Formats: The PACS, enterprise intelligent field controller, and card readers will support a minimum of 8 card formats; including the following:
1. Wiegand.
  2. Magnetic Stripe.
  3. The PACS will support any industry standard format that uses the following:
    - a. A card number.
    - b. A facility code.
    - c. An issue code combination.
  4. The PACS will support the following:
    - a. A maximum 19-digit card number.
    - b. Two-digit issue codes.
    - c. Non-Setting.
- J. Anti-Passback (APB):

1. Provide area control features including the following:
    - a. Hard Anti-Passback.
    - b. Soft Anti-Passback.
    - c. Timed Anti-Passback.
    - d. Two-Person Control.
    - e. Occupancy Count:
      - 1) Minimum Number of Areas Created: 127 areas per PACS appliance.
  2. Timed APB: Allows an Administrator to decide how long after a credential holder has swiped their Token before the same Token will be accepted again at the same card reader.
    - a. If a credential holder swipes their Token a second time after initial entry and after the delay time has expired, access will be granted and an APB alarm will be reported into the Alarm Monitor.
    - b. Administrators will be able to set the delay time up to a minimum of 65,535 seconds.
  3. Provide Two-Person Control to restrict access to certain areas unless there are 2 credential holders present.
    - a. When an area is configured for Two-Person Control, apply the following criteria:
      - 1) Card reader will grant access only if 2 valid credential holders (with authorized access privileges) swipe their badges one after the other.
      - 2) In the event that a second authorized badge is not presented within 10 seconds of the first authorized badge, the card reader will reset and the first card will need to be re-swiped.
      - 3) Once 2 people occupy an area, individual access will be granted to other credential holders.
      - 4) Individual exit will be allowed until an area is occupied by only 2 credential holders.
      - 5) For the last 2 credential holders to exit, both must present their cards at exit reader within 10 second of each other and exit together.
- K. Custom Device Mappings/Local Alarms: Administrators may assign a unique group of alarm attributes to specific device-alarm combinations to override global settings of generic attributes.
1. Non-Latched Entry: Administrators may set an input to non-latched entry.
    - a. When non-latched entry mode is selected and an entry delay is specified, the following procedure ensues:
      - 1) When an input activates, the alarm will not be reported until the entry delay expires.
      - 2) If the input is active when the entry delay expires, the alarm will be reported.

- 3) If the input is not active when the entry delay expires, then the alarm will not report.
2. Latched Entry: Administrators may set an input to latched entry.
  - a. When latched mode is selected and an entry delay is specified, the following procedure ensues:
    - 1) When an input activates, the alarm will not be reported until the entry delay expires.
    - 2) If the alarm has not been masked by the time the entry delay expires, the alarm will be reported.
    - 3) If the input has been masked when the entry delay expires, then the alarm will not report.
- L. Input Control Module Options: Allows the following options to be defined for inputs or outputs in the Input Control Module:
  1. Debounce Time: Allows Administrators to control time that an input state change must remain consistent in order for it to be considered a real change of state.
  2. End of Line Resistance: Administrators may define an Input as Normally Open or Normally Closed and define an input as Supervised or Unsupervised.
  3. Hold Time: Allows Administrators to set the amount of time in seconds to wait to report an input activation as restored when an input goes active and then is restored.
    - a. Hold Time Range: From 0 to 15 seconds.
  4. Alarm Masking: Allows input to be masked either all the time or during a defined schedule.
  5. Activate Output: Allows Administrators to configure an output to activate all the time or during a defined schedule.
  6. Installed: Defines whether the PACS will consider the input an active component of the on-line system.
  7. Logging: Allows Administrators to determine whether to log change of state events or only when the event is not masked.
- M. Relay Output Options: Allows the following options to be defined for outputs in the Output Control Module:
  1. Installed: Defines whether the PACS will consider the output an active component of the on-line system.
  2. Relay Output Mode: Sets default mode of relay output.
  3. Pulse Time: Defines how long output will pulse when command is given.
  4. Schedule: Defines time the relay output is active.
- N. Input/Output/Event Linkages: The PACS will support input/output/event linkage whereby an input/output/event in an enterprise Intelligent field controller can trigger an action within the same enterprise intelligent field controller.

1. Linkage decisions will be made local to the intelligent enterprise controller.
  2. Administrators will be able to create macros.
    - a. Each macro to consist of a sequence of actions to be performed.
      - 1) Example: Changing card reader modes and activating outputs.
    - b. Maximum Number of Actions: 30 actions per macro.
  3. Administrators will then be able to link events to macros so that a defined action will trigger a macro to execute.
- O. Global Linkages: Allows Operators to define linkages relating to the following:
1. Devices, including the following:
    - a. Doors.
    - b. Inputs.
    - c. Intrusion areas.
    - d. Intrusion outputs.
    - e. Intrusion panels.
    - f. Intrusion points.
    - g. Output.
    - h. Panel.
    - i. Sub-panel.
  2. Events.
  3. Tokens.
  4. Actions.
- P. Inputs include any enterprise intelligent field controller level event, including the following:
1. Enterprise Intelligent Field Controller Events:
    - a. Cabinet tamper.
    - b. Power failure.
  2. Input Control Module Events:
    - a. Communication loss.
    - b. Cabinet tamper.
    - c. Power failure.
    - d. Input points.
  3. Card Reader Events:
    - a. Cabinet tamper.
    - b. Communication loss.

- c. Door contact tamper.
  - d. Door forced open.
  - e. Door held open.
  - f. Power failure.
  - g. Card reader tamper.
- 4. Card Reader Events:
  - a. Communication Status.
  - b. Cabinet tamper, Power failure, Reader Tamper, Forced Open, Held Open, Door Contact tamper, Aux Input #1, Aux Input #2:
    - 1) Secure.
    - 2) Fault.
    - 3) Alarm.
  - c. Access Activity:
    - 1) Access granted.
    - 2) Access denied.
    - 3) Duress.
- 5. Input Control Module Events:
  - a. Communications Status.
  - b. Alarms: Cabinet Tamper, Power Failure, Alarm Inputs:
    - 1) Secure.
    - 2) Fault.
    - 3) Alarm.
- 6. Intrusion Events:
  - a. Points.
  - b. Areas.
  - c. Panels.
  - d. Outputs.
  - e. SDI devices.
- 7. An input/event may trigger multiple Macros and a Macro will be able to be triggered by multiple inputs/events.
- 8. Supports a minimum of 100 Macros per enterprise intelligent field controller.
  - a. Maximum Number of Actions: 30 actions per macro.

## 2.10 PACS SOFTWARE, IDENTITY MANAGEMENT FUNCTIONALITY

- A. Identity Management Integration: Offers an integrated Identity Management and Enrollment functionality as part of the core system functionality.
1. Data Import: Will import Identity records and their associated image in JPEG, BMP and PNG formats.
  2. Identity records will be able to be pre-loaded prior to implementation or added at any time after deployment.
- B. Provide a pre-configured one-time import utility, using standard Comma Separated Value (.csv) files that allows import of Identity information based on the factory shipped data fields.
- C. Identity Enrollment: Allows individual enrollment of identities.
1. Each Identity allows entry of required and optional fields.
  2. Required fields included the following:
    - a. User account.
    - b. Account password.
    - c. Non-activity timeout.
- D. Role-Based Permissions:
1. Assign roles during enrollment.
  2. An identity's role will determine their access groups.
    - a. Access groups define the following:
      - 1) Which card readers they have access to.
      - 2) Which times access to those card readers is allowed.
- E. PACS software allows an identity to have access to specific doors or access groups for a specified time range without requiring a role to be assigned.
- F. Create and assign Tokens during enrollment.
1. For each Token, credentials include, but not be limited to, the following:
    - a. A Badge ID.
      - 1) Support a minimum of a 19-digit Badge IDs.
    - b. Embossed number.
    - c. Assigned PIN codes
    - d. Activation and deactivation date.
    - e. Associated settings for Anti-Passback (APB).



2. Optional credential parameters include, but not be limited to, the following:
- a. Adding a Token to a group during enrollment to create predefined role and Policy Settings that will drive the configuration of the Identity information.
  - b. Expiration of the credential due to non-use within a certain timeframe.
    - 1) System wide for every credential.
    - 2) Variable parameters per individual or access level.
    - 3) Individual or access levels can be exempt from expiration.
    - 4) Scheduled time for expiration due to non-use will be at least one year from date of activation.
- G. During Enrollment, the Identity's image will be captured or loaded in JPEG format and a Badge template will be assigned.
- H. Credential Re-Issuance:
1. Operator will be able to deactivate existing credentials by marking them as lost or stolen.
  2. The PACS will be able to use existing Identity information and photos for new credentials.
    - a. The process will not require re-enrollment of credential holders.
  3. The re-issuance process will automatically perform the following actions:
    - a. Remove access rights from the deactivated Token.
    - b. Enable those same rights in the new Token.
    - c. Automatically send the appropriate changes to the intelligent enterprise controllers.
- I. Identity Database: Each Identity will have a unique record in the Open LDAP directory structure.
1. LDAP Directory Structure will include the use and definition of User Defined Fields and Forms.
- J. Deleting Identities: Highest level administrators will be given the ability to perform the following actions:
1. Delete individual Identities.
  2. Bulk Delete Identities: The ability to delete a group of identities based on user defined search criteria.
- K. Assign Access Groups: Allow Administrators to assign access groups to Roles.
1. A Role will then be assigned to an Identity during enrollment.
  2. Each Identity may have up to 8 access groups assigned to their record per intelligent enterprise controller through assignment of one or more roles to their record.

- L. Access group modifications or assignments will be automatically downloaded to the appropriate intelligent enterprise controllers:
1. Without Operator intervention.
  2. Completed as a push communication immediately after an Identity record is saved. Scheduled, batch updates are not allowed.
- M. Supports an Access Group View form that allows Operators to view the following:
1. Roles that have been assigned to an Identity.
  2. Which access groups are associated with the role.
  3. What doors an Identity has access to.
- N. Token Activation and Deactivation Dates: Supports activation and deactivation dates for Tokens created.
1. A Token will be able to be configured to activate at a future date from time of creation.
  2. When a Token reaches its deactivation date/time, the PACS will automatically deactivate the access rights associated with the Token.
  3. Access rights of a Token will be eliminated after deactivation date.
  4. Should Identity become authorized for access again, new access rights will be applicable to the same Token.
    - a. Re-issue will not be required.
  5. Expiration of Credential Due to Non-Use: Credentials can be set to expire if not used within a timeframe determined by Operator.
    - a. Parameters include the following:
      - 1) System wide for every credential.
      - 2) Variable parameters per individual or access level.
      - 3) Individual or access levels can be exempt from expiration.
      - 4) Scheduled time for expiration due to non-use will be at least one year from date of activation.
- O. PIN Codes: Support up to 8-digit PIN codes.
1. Each credential holder in the PACS will be able to choose a PIN to be associated with their record.
  2. A credential holder's PIN will be able to be changed should the original PIN code be compromised.
  3. An Identity will be able to be exempted from PIN requirements within the system.
- P. Credential Options: Support industry standard pre-encoded physical credential options including:

1. Composite Credentials.
  - a. Example: PVC cards, mobile credentials.
2. Proximity Credentials including dual PVC technology that includes both proximity and magnetic stripe technology.
3. Contact Smart Credentials.
4. MiFare Credentials.
5. DESFIRE Credentials.
6. HID iClass Credentials.

Q. Last Access Information: A credential holder's last entry point will be indicated as follows:

1. Displays on the main Identity form.
2. Include date/time stamp for when entry occurred.
3. If a credential holder has multiple Tokens, the Tokens' form will also show the last entry point with date/time stamp for each Token in a credential holder's possession.

R. Last Identity Record Modification: Display date and time of last modification to that Identity record from main Identity form.

S. Multiple Active Tokens: Allow Identities to have multiple active Tokens associated with their record.

1. Number of Active Tokens: Minimum of 25 active Tokens may be assigned to an Identity.

T. Dual-Sided Credential Printing: Allow for printing on both sides of a credential.

U. Revoke Credential Access: Allow Operators to revoke access privileges from a credential holder by updating that credential holder's Token status.

1. A Token with Revoked access will immediately stop functioning at card readers.

V. Search Capabilities: Support search for Identities according to the following parameters:

1. First Name.
2. Last Name.
3. Identity.
4. Token field in the system.

W. Transaction Activity: Provide a form listing the most recent transaction activity associated with an Identity, without having to run a report.

1. Information provided will include the following:
  - a. Transaction activity.
  - b. Time/date.
  - c. Related Token.

- X. User-defined Fields: Support the ability to add additional Identity-based forms to support user-defined fields.
1. Up to 10 user-defined forms will be able to be added.
  2. Each user-defined field will be given a field name/label and be defined as one of the following field types:
    - a. String.
    - b. Integer.
    - c. Boolean.
    - d. Date.
    - e. Text box.
  3. Up to 300 user-defined fields will be available.
- Y. Badge Layout Tool: Support a tool to allow for the custom creation of Identity/Token Badge Layouts.
- Z. Support Badge sizes required by Owner and supported by printer used for to create Badges.
- AA. Allow multiple objects to be configured for a badge layout including:
1. Alphanumeric text fields.
  2. Database fields.
  3. Photos.
  4. Identity photos.
  5. Graphics.
- BB. Each text and database field added to the layout will be able to employ the following properties:
1. Location of the object.
  2. Height and width.
  3. Background color.
  4. Rotation.
  5. Typeface of text.
  6. Size of text.
  7. Color of text.
  8. Horizontal and vertical alignment of text.
- CC. Each photo and graphic field added to the layout will be able to employ the following properties:
1. Location of object.
  2. Height and width.
  3. Maintain aspect ratio.
  4. The PACS Badge Layout tool will support a color palette that supports a minimum of 16.7 million colors that can be applied to applicable objects.

## 2.11 PACS SOFTWARE, ALARM AND EVENT MONITORING

- A. System Level Events: Events configured at the system level; for example: Door Forced Event, if configured at System Level will affect all doors in the system.
- B. Field Level Events: Events configured at the field controller level and only affect that particular controller. For example: Door Forced Event configured as local event (Field Event), will only affect the door it is configured on, all other doors will follow the System Level Event.
- C. Tabbed User Interface: Supports a tabbed view for Monitor User Interface of the following tabs:
  - 1. Event Monitor: Used to monitor system level events.
    - a. Example: Operator activity and field level events.
  - 2. Alarm Monitor: Used to monitor field level events.
    - a. Example: Identity access activity, input alarms, and door alarms as well as system level events configured as alarms.
  - 3. Swipe and Show Verification: Used to view Identity information in real-time as credential holders access specific doors.
  - 4. Search: Used to search for alarm and event transactions currently stored in the PACS.
  - 5. Hardware Status: Used to view the real-time status of field hardware devices configured in the system, as well as to manipulate/override those devices.
- D. Alarm Annunciation: Allows Administrators to configure how alarms and events annunciate into the Alarm Monitor.
  - 1. Support audible notification at workstation when alarms arrive in the system.
    - a. Allows Users to adjust the configuration and parameters.
    - b. Allows Administrators to choose a specific sound to pair with each type of alarm.
- E. Provide the following configuration options for alarms and events:
  - 1. Display in Alarm Monitor.
  - 2. Masking from displaying in Alarm Monitor.
  - 3. Allows higher alarms to be displayed on top of Alarm Monitor when an Operator sorts based on alarm priority.
  - 4. Display text instructions that guide Operator in alarm response.
  - 5. Automatically sends an email message to one or more recipients.
- F. Alarm Management and Handling: Provides a real-time count of alarms and events in Alarm Monitor awaiting Operator action.
- G. Supports the following options for handling/responding to alarms and events upon selection:

1. Acknowledge the alarm.
  2. Review text instructions on pre-defined alarm response.
  3. Enter unlimited notes on reason for alarm and action taken in alarm response.
  4. Review the history of the alarm.
  5. For alarms and events that include a credential holder, call up the Identity Record of that credential holder.
  6. Clear the Alarm: Provide 3 types of alarm clearing as follows:
    - a. Single Operator Enabled Clearing: Only one Operator is required to clear the alarm from the Monitor.
    - b. Two-Person Control Clearing: Requires the following sequence of actions:
      - 1) First: One Operator is required to acknowledge the alarm.
      - 2) Second: After alarm has been acknowledged, a different Operator is required to clear the alarm from the Monitor.
    - c. Role-Based Clearing: Allows System Administrators to assign a Role or Roles to the alarm.
      - 1) Only the Operator assigned one of the Roles assigned to an alarm is allowed to clear the alarm from the Monitor.
- H. Bulk Alarm Management and Handling: Supports the ability to manage and handle multiple alarms.
1. Operators may clear or acknowledge all selected alarms in a single action.
- I. Alarm Routing: Allows Identity-based alarm routing to specific Identities monitoring the application based on the following:
1. Schedule.
  2. Event type.
  3. Device.
- J. Alarm Masking: Allows masking of specific alarms or alarm types based on pre-defined schedules or via manual overrides.
1. Masked alarms will not report into the Alarm Monitors.
  2. Logging the transaction database for reporting and audit trail will not be affected by Masked status.
  3. An Operator will be able to mask or unmask any alarm point in the system based on permissions.
- K. Alarm Sorting: Allows alarms and events to be sorted in Alarm Monitor by currently configured viewable columns.

- L. Alarm Prioritization Color Bars: Provides capability to emphasize alarm priority through use of colored bars within alarm monitor screen.
1. Each alarm priority has its own unique user-defined color assigned to it.
  2. Color bars may be assigned to individual alarm priorities or to a range of alarm priorities.
- M. Email Capabilities: Supports integrated email capabilities.
1. Generates an email message to send to one or more recipients upon a generated alarm or event.
  2. Email function interfaces with email servers that uses SMTP protocol.
- N. Events Monitoring: Supports an Event Monitoring tab that monitors system level events.
1. An Operator may choose which field columns to display and may place those columns in their order of preference.
  2. The Operator may sort events by currently displayed columns in the Event Monitor.
  3. Administrators may configure the number of recent events to display in the Event Monitor upon accessing Events tab.
- O. Field Hardware Device Status Summary Counter: Supports a real-time Field Hardware Device Status Counter displaying a summary of the total number of doors, input points, intelligent enterprise controllers, and sub panels that are active, masked, and off-line.
- P. System status includes the following 3 counters:
1. Active Counter: Counts number of active points.
  2. Offline Counter: Counts number of offline devices.
  3. Masked Counter: Counts number of masked points.
- Q. Hardware Status tab displays hardware devices separately in their own row including the following information:
1. Device Name.
  2. Intelligent Enterprise Controller / Input Control Module / Output Control Module Name.
  3. Current Device Status.
- R. Allows Operators to change the access mode of card readers, open doors, mask/unmask alarm inputs, and activate/deactivate/pulse and output from the tab.
1. Allows Operators to change the access mode of multiple devices with a single action by selecting multiple devices and then performing the command.
- S. Supports integration with Life Safety Power's (LSP) N1 network module.
1. When configured, LSP power supply link appears in Field Hardware Device Status tab.
  2. When link is clicked, the N1 diagnostic and configuration window will appear.

- T. History Record Call-Up: Supports the ability to call up the history of an alarm.
1. History call up window displays associated alarm information including the following:
    - a. Time/date stamp.
    - b. Acknowledgment actions by Operators.
    - c. Entered notes.
  2. Operator will not be required to exit Alarm Monitor to access this information.
    - a. This functionality will not prevent additional alarm activity from reporting to Alarm Monitor.
- U. Identity Record Call-up: Supports ability to call up Identity form to display Identity Record associated with alarm.
1. Identity call up window displays Identity's information and photo.
  2. Operator will not be required to exit Alarm Monitor to access this information.
    - a. This functionality will not prevent additional alarm activity from reporting to Alarm Monitor.
- V. Operator Control of Field Hardware Devices: Allows Operators to manually control the state of field hardware devices and their input/output points from the Alarm Monitor.
1. Card Readers:
    - a. Manually control reader state or based on current schedule:
      - 1) Unlocked.
      - 2) Locked.
      - 3) Facility code.
      - 4) Card Only.
      - 5) PIN Only.
      - 6) Card and PIN.
      - 7) Card or PIN.
      - 8) Pulse the Door Open.
      - 9) Mask/Unmask.
      - 10) Door Forced Open/Door Held Open.
      - 11) Disable the Door.
      - 12) Restore the Door to its Correct State.
      - 13) Inputs: mask and unmask input.
  2. Outputs:
    - a. Manually control reader state or based on current schedule:
      - 1) Turn on.



- 2) Turn off.
- 3) Pulse outputs.

W. Operator will control field hardware devices from Hardware Status tab.

X. Administrator may place system icons for the following hardware devices to indicate their location in facility:

1. Card readers.
2. Input & output points.
3. Other access control field hardware.

Y. System Status Indicators: The Alarm Monitor will provide status indicators to display current status of multiple elements of The PACS including the following:

1. Total number of pending Unacknowledged Alarms and Events.
2. Status (including off-line, active, and masked) of the following field hardware devices:
  - a. Intelligent System Controllers.
  - b. Subpanels.
  - c. Card readers.
  - d. Inputs.
  - e. Outputs.
3. Hardware status tab will show devices that are in alarm, as well as on-line /off-line status, for field hardware devices.

Z. Intrusion Panels: Allows Operators to monitor intrusion panel statuses as well as monitoring and controlling related points, areas and outputs.

1. Intrusion Panel Statuses:

- a. Operators may sort and search/filter the listed statuses.
- b. For each panel indicate the status of the following:
  - 1) Battery.
  - 2) Power.
  - 3) Tamper.
  - 4) Phone Line.

2. Intrusion Areas:

- a. Areas will be able to be armed using the following options:
  - 1) Instant Arm.
  - 2) Delay Arm.
  - 3) Force Instant Arm.
  - 4) Force Delay Arm.

- 5) Perimeter Instant Arm.
- 6) Perimeter Delay Arm.
- 7) Perimeter Force Instant Arm.
- 8) Perimeter Force Delay Arm.
- b. Operators may easily disarm areas.
- c. Operators may silence alarms.
- d. Area details will display the following intrusion area statuses:
  - 1) Armed.
    - a) Ready to Arm.
    - b) Not Ready to Arm.
    - c) Partial Arm.
    - d) Trouble.
    - e) Alarm.
- e. Operators may sort and search/filter the listed statuses.
- 3. Intrusion Points:
  - a. Operators may bypass and unbypass points.
  - b. Point, area and panel details will display the following intrusion point statuses:
    - 1) Normal.
    - 2) Faulted.
    - 3) Bypassed.
    - 4) Trouble.
  - c. Operators may sort and search/filter the listed statuses.
- 4. Intrusion Outputs:
  - a. Operators will be able to activate and deactivate outputs.
  - b. Output and panel details will display with the following output statuses available:
    - 1) Inactive.
    - 2) Active.
    - 3) Trouble.
  - c. Operators will be able to sort and search/filter the listed statuses.

## **2.12 PACS SOFTWARE, SYSTEM CONFIGURATION AND ADMINISTRATION**

- A. Alarm and Event Logging: Track and keep a comprehensive log of alarm and event activity, including the following information:

1. Alarm Name.
  2. Time and Date Stamp.
  3. Where the alarm occurred.
  4. Acknowledgment information.
  5. Operator actions associated with alarms or events.
- B. Administrators may suppress certain alarms from logging during pre-defined scheduled times of the day.
- C. Alarm and Event information can be viewed through the PACS reporting engine that lists total number of alarms and events logged in PACS appliance.
1. The number of stored alarms and events will be limited only by the amount of disk space available in The PACS appliance.
- D. Delegations: Protect permission of Major PACS features and functions through use of delegations.
1. Each Operator Account will be assigned a Role, which includes a list of delegations assigned to that Role.
  2. Operator access to PACS screens will be controlled through delegations.
    - a. Access includes the Operator's ability to view, add, edit, or delete PACS objects.
- E. Software Based Licensing: Supports software-based License Enforcement model.
1. A hardware key or dongle for controlling licensed features and functionality is not allowed.
- F. Appliance Diagnostic Information: Supports the ability to analyze real-time diagnostic information for each PACS appliance by viewing the About Page for the appliance.
1. Diagnostic data includes the following:
    - a. Number of days online.
    - b. Current load.
    - c. Memory.
    - d. Disk space usage.
    - e. Network communications data.
- G. On-Line, Context-Sensitive Help: Supports on-line, context-sensitive help to assist system users in the operation of the system.
1. Once inside the help program, users may navigate the help files, moving to other areas of the documentation without having to go back into the application software.
  2. Help files will have links to the table of contents and will have search capability.
- H. Operator Accounts: Supports Operator Accounts.

1. Operator Accounts will require a unique username and password to access the system.
  2. Operator Accounts will be assigned a Role, which determines the permission level for that account.
  3. Modifications to an Operator Account will be reported to the Event Monitor and logged to the LDAP directory structure for audit and reporting processes.
  4. The PACS supports as many Operator Accounts as configured identities.
- I. Password Protection: Operator Accounts will require a unique username and password that would tie that identity to delegation rights to access the PACS.
1. This denotes Operator access to the following:
    - a. Screens the Operator can access.
    - b. Tasks the Operator can perform.
  2. An Operator will be able to change their PACS password at any time.
  3. Strong Password parameters will be supported.
    - a. Requiring system users to enter at least eight characters.
    - b. Include at least one upper case letter, one lower case letter and one numeral.
- J. Policies: Support Policies that will act as templates to be applied to field hardware devices in the system to ease in configuration of similar devices.
1. Each Policy will consist of a template for card readers, inputs, or outputs.
  2. The PACS will support an unlimited number of policies.
- K. Groups: Support Grouping of parameters for ease of configuration, including, but not be limited to, the following Grouping concepts:
1. Roles.
  2. Field Hardware Devices.
  3. Policies.
- L. System Partitioning: Provide the capability for advanced system partitioning.
1. Each partition will be allowed its own group of identities, field hardware, and parameters.
    - a. Example: Schedules and access groups.
  2. Identities will be allowed to belong to one or multiple partitions.
  3. Partitioning will provide a flexible “tenant/landlord” architecture whereby partition users can only view, add, modify, and delete identities, system parameters, and field hardware that belong to their respective partitions.
  4. PACS Operators may be assigned to more than one partition.
    - a. A partition may be assigned to more than one Operator.

M. Operator Activity Logging: Track and keep a comprehensive log of Operator Account activities.

1. Changes that occur in directory structure will be logged including the following:

- a. Operator Account Login / Logout Activity.
- b. Adding, Deleting, or Changing Identity Records.
- c. Change to system configurations including the following:
  - 1) Field hardware.
  - 2) Access Groups.
  - 3) Schedules.
- d. Activity performed inside the Alarm and Event Monitor including the following:
  - 1) Acknowledging alarms.
  - 2) Opening doors.
  - 3) Clearing events.

N. Logged activities include, but not be limited to, the following:

1. Operator Account.
2. Date and time of the activity.
3. Activity that was performed.
4. Original data prior to change, if applicable.
5. New data that was updated.

O. Operator Account activity information can be viewed through PACS reporting engine that lists total number of Operator events that are logged in the PACS appliance.

1. The number of stored Operator Account events will be limited only by the amount of disk space available in the PACS appliance.

P. System Scheduler Utility: Allow System Administrators to schedule actions the following:

1. On-demand or single-use.
2. Recurring basis.
3. Types of actions include the following:
  - a. Running reports.
  - b. Updating identity profiles.
  - c. Apply door modes.
  - d. Running global actions.
4. Scheduling Utility will satisfy a wide range of scheduling needs, including the following:
  - a. Hourly: For example, "Every day on the hour."
  - b. Specific Day, specific time: For example, "every Monday at 8 a.m."
  - c. Monthly: For example, "the first Sunday of every month."

- d. Specific Recurring Date: For example, "every February 14 at 12 noon."
- e. Specific Date in the future: For example, "December 7, 2017 at 5 p.m."
- f. Recurring activities can be set to the following:
  - 1) A master start and stop date.
  - 2) Run indefinitely.

Q. The Scheduling Utility will provide a job monitor allowing the System Administrator to observe the following:

- 1. Status of currently running tasks.
- 2. A chronological list of future scheduled tasks.
- 3. A history log of completed tasks.

R. Reports: Support a minimum of 28 standard reports as follows:

- 1. Administrators may create Reports in the following formats:
  - a. PDF document.
  - b. Spreadsheet document.
- 2. Once a Report is created, the Administrators may take the following actions with the report:
  - a. Save Report to a file.
  - b. Print Report to a local or networked printer.
- 3. Each report will be able to be customized / filtered on relevant data for that particular report.
- 4. Standard PACS reports will include the following:
  - a. Access Grant via Operator Report: The Access Grant via Operator Report will present information on access grant activity that was manually generated by an Operator and will include the door that was opened, time, and Operator executing the door grant.
  - b. Access Group Report: Presents information on defined PACS Access Groups, including the following:
    - 1) Roles that are assigned to group.
    - 2) Schedule assigned to group.
    - 3) Number of doors assigned to group.
    - 4) List of doors assigned to group.
  - c. Alarm Report: Presents information on alarms that occurred in the system including the following information:
    - 1) Panel Name.
    - 2) Operator action taken.
    - 3) Operator responding to alarm.

- 4) Operator Notes pertaining to alarm.
- d. Area Identity Report: Presents information on Areas. Each area entry will include the following information:
  - 1) Area name.
  - 2) Last and first names of the Identity.
  - 3) Last accessed door and time.
  - 4) Identity type.
  - 5) Token internal number.
- e. Delegation Report: Presents information on defined PACS delegation groups, including which identities have been assigned to the delegation and what permission have been configured for that delegation.
- f. Door Configuration Report: Presents information on the complete configuration / settings of each door configured in the PACS.
- g. Door/Identities with Access Report: Presents information on credential holder access to each door in the PACS, including the schedule that credential holder can access door.
- h. Event Report: Presents information on defined events in the system along with their attributes including the following:
  - 1) Event Name.
  - 2) Assigned Event Type.
  - 3) Priority.
  - 4) Masking Schedule.
  - 5) If the event is configured to always mask and log the event.
- i. Event Type Report: Presents information on each defined PACS Event Type, including the following:
  - 1) Suppression Schedule.
  - 2) Priority.
  - 3) Retransmission Time.
  - 4) Retransmission Procedure.
  - 5) Procedure.
  - 6) If the Event Type is set to be masked, logged, and sent to the Alarm Monitor.
- j. Holiday Report: Presents information on each defined holiday, including the following information:
  - 1) Date of the holiday.
  - 2) Number of days the holiday is in effect.
  - 3) Holiday type(s) assigned to the holiday.

- k. Identity Photo Gallery Report: Presents information on each defined Identity, including first and last names, role and photo.
- l. Identity Summary Report: Presents information on each defined Identity with respect to Identity Status and Type, Token(s) issue and expiration date, and which Roles and Access Groups have been assigned to the Identity.
- m. Identity/Doors with Access Report: Presents information on each defined Identity with respect to which doors they have access.
  - 1) Reports include the schedule in which access has been granted to each reader as well as the Access Group and Role assignments that allow access to each reader.
- n. Panel Report: Presents information on complete configuration/settings of each Intelligent Enterprise Controller configured in the PACS.
- o. Policy Report: Presents information on defined policies in the PACS, including the following information:
  - 1) Policy Name.
  - 2) Active Status.
  - 3) Which hardware components the policy encompasses.
- p. Role Report: Presents information on each defined Role, including the following information:
  - 1) Parent information.
  - 2) Activation/deactivation dates.
  - 3) Child Roles.
  - 4) Identities assigned to that Role.
  - 5) Access Groups assigned to that Role.
  - 6) Doors assigned to that Role.
- q. Schedule Report: Presents information on each defined Schedule, including its mode and each interval configured, and including the following information:
  - 1) Days of the week.
  - 2) Holiday types.
  - 3) Start and end times of the interval.
- r. Quick Reports: The PACS will support Quick Reports.
  - 1) Each of the standard reports defined in the "Reports" paragraph of this Section will be able to have relevant data filters applied to them, prior to running, in order to provide a report with more specific information than the generic report. Quick Report settings are designed to run once and will not be saved.
  - 2) Administrators may create Quick reports as delimited spreadsheet data or PDF.



- S. Software Updates: The PACS will support updates by download from software manufacturer's web site, or by receiving emailed update files.
1. No physical interaction with PACS appliance will be required to perform a successful update and upgrade to system software.
- T. System Backups: The PACS will be able to backup and restore the LDAP directory structure.
1. Backups will run concurrently with the rest of the system and will not require Operators to log out of the PACS.
  2. Backups will include transaction data and system configuration data.
  3. Appliance backups be encrypted using AES Encryption.
  4. Appliance backups to the following:
    - a. USB Storage Device.
    - b. Windows shared Directory or network shared folder.
    - c. Secured SCP servers.
  5. Backups will be performed as follows:
    - a. Automatically on a predefined daily schedule.
    - b. Manually via the user interface.
- U. Elegant Restart and Shutdown of Appliance: The PACS will support Elegant Restart and Shutdown capabilities of the Appliance.
1. The PACS User Interface will support both re-start and shutdown of the Appliance.
  2. Rights and access to re-start and shutdown of the Appliance will be denoted by login.
- V. Global Time Display: The PACS will support localized date and time display.
- W. System Data Logs: The PACS will support system data logs to assist with diagnostics and troubleshooting.
1. Standard logs will include the following:
    - a. Web server logs.
    - b. Field hardware communication logs.
    - c. System software logs.
    - d. System transaction logs.
  2. Logs will be viewable in a plain text format.

### PART 3 - EXECUTION

### 3.1 INSTALLATION—GENERAL

- A. Install as a complete system in accordance with manufacturer's directions.
- B. Provide the following as part of the system:
  - 1. System controller with access control/door monitoring according to door schedule.
  - 2. Equipment, power supplies, wiring, accessories, and programming required for proper system operation.
  - 3. Provide door intercom system at each controlled entry door as called for for communication and remote door release.

### 3.2 EQUIPMENT LOCATIONS

- A. As indicated on Contract Drawings. Coordinate exact locations with School District's Representative.

### 3.3 WIRING INSTALLATION

- A. Wiring: Install conductors parallel with or at right angles to the sides and back of the enclosure. Bundle, lace, and train the conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure to terminal blocks.
- B. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- C. Coordinate network cabling and terminations for the building with School District's Representative.
- D. Opening wiring is permitted above ceilings (where removable tiles provide access) only.
  - 1. Support cables above accessible ceilings to keep them from resting on ceiling tiles. Use spring metal J-hooks with plastic cable ties to support cables from structure or ceiling suspension system. Supports shall be spaced at a maximum of 4-foot intervals.
- E. Install the work of this Contract in strict accordance with EIA/TIA standards and the recommendation of the system manufacturer.

### 3.4 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminal connections. Verify acceptable identification with District Representative. Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.

- B. Mark up floor plans showing all equipment locations. Turn respective drawings over to School District.

### **3.5 GROUNDING**

- A. Ground cable shielding and equipment according to system manufacturer's instructions to eliminate shock hazard and minimize, to the greatest extent possible, ground loops, common mode returns, and noise pickup, cross-talk, and other impairments.
- B. Signal ground terminal: Locate at each main terminal equipment rack or cabinet.
- C. Comply with NEC.

### **3.6 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pre-testing and adjustment of the systems.
- B. Pretesting: After installation, align, adjust, and complete pretesting, determine through pretesting the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new ones, and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.
- C. Report of pretesting: After pretesting is complete, provide a letter certifying the installation is complete and fully operational, including the names and titles of witnesses.
- D. Final test notice: Provide a 10-day notice in writing when the District-wide integrated system is ready for a final acceptance test.
- E. Report of test and inspections: Provide a final letter of all tests and inspections, detailing test results in the form of a test log. Submit log upon the satisfactory completion of the tests.
- F. Tag all equipment, stations, and other components upon the satisfactory completion of the tests.

### **3.7 CLEANING AND ADJUSTING**

- A. Cleaning: Remove spots, dirt, and debris. Touch up scratches and marred finish to match original finish. Clean internally using methods and materials recommended by manufacturer.

### 3.8 DEMONSTRATION AND TRAINING

- A. Start-up services: Engage a factory-authorized service representative to provide start-up service and to demonstrate and train School District's systems administration and operating personnel as specified below.
1. Train personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, adjusting, and preventive maintenance. Provide a minimum of 16 hours' training for up to 8 designated School District personnel. Training to consist of 4-hour sessions. Three sessions concurrent with start-up and occupancy, and one refresher after a 60-day break in period.
  2. Training aid: Use the approved final version of the operation and maintenance manual as a training aid in addition to other material specifically developed for training on this system.
  3. Schedule training with School District with at least 14 days' advance notice.
  4. Video training records are to be turned over to School District on computer CD, capable of being used on standard CD ROM.
  5. Review of all as-built documentation.
  6. Review of all labeling.
  7. Problem reporting procedures.
  8. Warranty information.
- B. Conduct walking tour of the building. Briefly describe function, operation, and maintenance of each component.

### 3.9 ON-SITE ASSISTANCE

- A. System Start-Up, Commissioning, and Maintenance
- B. Include configuring the systems, as well as creating the graphical representations of the building for use in conjunction with the system's graphical map creation and editing module.
- C. Include initial programming, database creation and segmenting, card assignment for up to 1000 cards and 500 key tags.
- D. Include all required visits to debug and fine-tune each system for a period of 12 months after final acceptance, in addition to normal warranty maintenance.
- E. All identifying codes for locations are to be based on standardized numbers supplied by School District. There will be no exceptions.
- F. Coordinate this article with other specifications if your project includes installation of other systems, which will use these components.

END OF SECTION 281300

**SECTION 283110**  
**FIRE-ALARM SYSTEM**

**PART 1 - GENERAL**

**1.1 DEFINITIONS**

- A. LED: Light-emitting diode.

**1.2 SYSTEM DESCRIPTION**

- A. Provide complete, new, non-coded, fully addressable fire-alarm system for the Administration Building with automatic sensitivity control of certain smoke detectors and multiplexed signal transmission (i.e., those dedicated to fire-alarm service only) to serve the Building.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

**1.4 SUBMITTALS**

- A. General Submittal Requirements:
1. Shop Drawings shall be prepared by persons with the following qualifications:
    - a. Trained and certified by manufacturer in fire-alarm system design.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For each fire-alarm system. Include plans, elevations, sections, details, and corrections/attachments to other work.
1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
  2. Include voltage drop calculations for notification appliance circuits.
  3. Include battery-size calculations.

4. Include performance parameters and installation details for each detector.
  5. Include floor plans to indicate final outlet locations showing address of each addressable device.
- D. Qualification Data: For qualified Installer.
- E. Field quality-control reports.
- F. Operation and Maintenance Data: For each fire-alarm system and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1, include the following:
1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
  2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
  3. Record copy of site-specific software.
  4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
    - a. Frequency of testing of installed components.
    - b. Frequency of inspection of installed components.
    - c. Requirements and recommendations related to results of maintenance.
    - d. Manufacturer's user training manuals.
  5. Manufacturer's required maintenance related to system warranty requirements.
  6. Abbreviated operating instructions for mounting at fire-alarm control unit.
  7. Copy of NFPA 25.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL.
- D. System and equipment must meet the regulatory requirements and reference standards in Division 26 Section "General Requirements for Electrical."

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Honeywell/Silent Knight #6808 series or approved equal by one of the following:
1. Edwards (EST).
  2. NOTIFIER; a Honeywell company.

### 2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices:
1. Manual stations.
  2. Heat detectors.
  3. Smoke detectors.
  4. Duct smoke detectors.
  5. Verified automatic alarm operation of smoke detectors.
  6. Fire-suppression system at Kitchen hoods.
- B. Fire-alarm signal shall initiate the following actions:
1. Continuously operate alarm notification appliances.
  2. Identify alarm at fire-alarm control unit and remote annunciators.
  3. Close smoke dampers in air ducts of designated air distribution duct systems.
  4. Activate fan shutdown system.
  5. Activate the digital communicator.
  6. Activate signal to building energy management system.
  7. Activate emergency shutoffs for gas and fuel supplies.
  8. Record events in the system memory.
  9. Display activated device on control panel character display and each remote annunciator character display.
  10. Activation of in-duct smoke detector shall shut down fans.
- C. The fire alarm system shall also provide the following:
1. Automatic control of ventilation fan.
- D. System trouble signal initiation shall be by one or more of the following devices and actions:
1. Open circuits, shorts, and grounds in designated circuits.
  2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
  3. Loss of primary power at fire-alarm control unit.
  4. Ground or a single break in fire-alarm control unit internal circuits.

5. Abnormal ac voltage at fire-alarm control unit.
  6. Break in standby battery circuitry.
  7. Failure of battery charging.
  8. Abnormal position of any switch at fire-alarm control unit or annunciator.
  9. Activation/initiation of any carbon monoxide detector.
- E. Provide system wiring utilizing galvanized-steel interlocking steel fire-alarm control cable with red stripe.

## 2.3 FIRE-ALARM CONTROL UNITS

### A. General Requirements for Each Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
  - a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
  - b. Include a real-time clock for time annotation of events on the event recorder and printer.
2. Addressable initiation devices that communicate device identity and status.
3. Addressable control circuits for operation of mechanical equipment.

### B. Each Main Control Panel:

1. Type: 100-point, addressable, solid state, pluggable modules, supervised, audible alarm over audio/visual signal devices activated by closing contact at manual alarm station, automatic smoke detector, thermal detector, drill switch in control panel, and/or a miscellaneous activation device. Activation shall also shut down selected equipment, release magnetic door holders, activate digital communicator, and display appropriate device on each control panel and remote annunciation character display.
2. The main control panel shall provide power, annunciation, supervision, and control for the complete fire alarm system.
3. The system shall be field-programmable, software-driven, and capable of one-person walk test.
4. The system shall be capable of reading and displaying the sensitivity of all intelligent smoke detectors/sensors in the system. Each detectors/sensors sensitivity level shall be adjustable from the control panel.
5. Each sensor/detector, manual pull station, and miscellaneous device shall be assigned an individual address. Grouping of addresses will not be allowed.
6. Panel annunciator shall be an 80-character alphanumeric display.
7. Ground-fault detection shall be provided for each circuit.
8. Surge and noise suppression shall be provided for all input and output circuits.



9. Alarm control: Reset, alarm lock-in, alarm resound, acknowledge switch, supervisory, LEDs for each power circuit, run, trouble disconnect, low battery and fault.
10. Provide a single control unit enclosure with two 2-wire signaling line circuits (SLC) for addressable devices and intelligent/analog detectors. Each circuit (SLC) to monitor up to 60 addressable initiating devices and/or intelligent/analog detectors.
11. Provide data ports for connection to remote line printer.
12. Auxiliary relays.
13. Contacts 120-volt, 3-ampere resistive. Building management system, magnetic door holders, selective equipment indicated, and 2 spares.
14. Provide additional relays required to perform functions of the alarm system indicated on the Contract Documents.
15. Miscellaneous features: Provide all necessary relays, resistors, transformers, controls, terminals, etc., necessary to perform the described system.
16. Provide power supply to serve smoke hatches. Verify electrical requirements with General Construction and existing building construction.
17. Connection module to one remote annunciator panel.
18. Provide 24-V dc battery backup for station and alarm functions. Battery backup shall be capable of operating entire system on standby for 60 hours and alarm condition at full load for 15 minutes.
19. Cabinet: One required. Steel, surface-mounted with hinged glass door; standard finish.
20. Provide second control panel at second building with circuiting, connection, and modules to allow the two buildings to communicate.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 2 line(s) of 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

D. Circuits:

1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class B.
  - a. Initiating Device Circuits: Style D.
  - b. Notification Appliance Circuits: Style Z.
  - c. Signaling Line Circuits: Style 6.
  - d. Install no more than 50 addressable devices on each signaling line circuit.

E. Smoke-Alarm Verification:

1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.

2. Activate an NRTL-listed and -approved "alarm-verification" sequence at fire-alarm control unit and detector.
  3. Sound general alarm if the alarm is verified.
  4. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.
- F. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.
- G. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.
- H. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, and supervisory signals shall be powered by 24-V dc source.
1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.
- I. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
1. Batteries: Sealed lead calcium.

## 2.4 MANUAL FIRE-ALARM BOXES

- A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. Provide manufacturer's surface back box at locations where surface-mounted units are required.
1. Single-action mechanism, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
  2. Station Reset: Key- or wrench-operated switch.

## 2.5 SYSTEM SMOKE DETECTORS

- A. General Requirements for System Smoke Detectors:
1. Comply with UL 268; operating at 24-V dc, nominal.
  2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

3. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
5. Integral Visual-Indicating Light: LED type indicating detector has operated.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
  - a. Primary status.
  - b. Device type.
  - c. Present average value.
  - d. Present sensitivity selected.
  - e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
  - a. Primary status.
  - b. Device type.
  - c. Present average value.
  - d. Present sensitivity selected.
  - e. Sensor range (normal, dirty, etc.).
3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.

**2.6 HEAT DETECTORS**

- A. General Requirements for Heat Detectors: Comply with UL 521.
- B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or a rate of rise that exceeds 15 deg F per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
  2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
- C. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.
1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
  2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
  3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

## 2.7 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.
1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
  2. Provide wire guards at all locations marked "WG" on the Contract Documents.
- B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol. Sound level shall be field-adjustable for 3 different output levels.
- C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.
1. Rated Light Output:
    - a. 75 cd.
    - b. 15/30/75/110 cd, selectable in the field. Adjust and set cd levels to meet NFPA requirements for the area of location.
  2. Mounting: Wall mounted unless otherwise indicated.
  3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
  4. Flashing shall be in a temporal pattern, synchronized with other units.
  5. Strobe Leads: Factory connected to screw terminals.
  6. Mounting Faceplate: Factory finished, red.
  7. Provide weatherproof outdoor-rated units as called for (marked "WP").

## 2.8 AUTOMATIC CARBON MONOXIDE DETECTOR

- A. General Requirements for Carbon Monoxide Detectors: Meets the requirements of NFPA 720 and UL 2075 and meets CO sensitivity limits of UL 2034 standard.
- B. Operates from a reliable electro-chemical CO cell, transmitting CO concentration on an independent signal, separate from the fire-detection signals, to the fire-alarm control panel.
- C. Provides a supervision of the carbon monoxide level and is customizable for special applications. Configurable range is 30–600 ppm.
- D. Addressable Device: Provide with an intelligent audible base at each detector to annunciate upon initiation of signal by associated detector. In addition, carbon monoxide detectors located adjacent to the Boiler Room shall also annunciate sounder base if Boiler Room detector is initiated. Provide sounder base with six different field-selectable tone patterns. Sounder base to meet NFPA 72 and NFPA 720.

## 2.9 REMOTE ANNUNCIATOR

- A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.
  - 1. Mounting: Provide flush-mounted cabinet at new construction and surface-mounted cabinet at existing construction.
- B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.
- C. Provide within steel enclosure.
- D. Provide one remote annunciator; locate adjacent to the main entrance.

## 2.10 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

## 2.11 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.

- B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone lines and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
- C. Local functions and display at the digital alarm communicator transmitter shall include the following:
1. Verification that both telephone lines are available.
  2. Programming device.
  3. LED display.
  4. Manual test report function and manual transmission clear indication.
  5. Communications failure with the central station or fire-alarm control unit.
- D. Digital data transmission shall include the following:
1. Address of the alarm-initiating device.
  2. Address of the supervisory signal.
  3. Address of the trouble-initiating device.
- E. Secondary Power: Integral rechargeable battery and automatic charger.
- F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.
- G. Special features shall include:
1. Voltage surge protection.
  2. Two-number dialing per channel.
  3. Rotary to touch-tone dialing.
  4. Lightning protection.

## 2.12 DEVICE GUARDS

- A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.
1. Factory fabricated and furnished by manufacturer of device.
  2. Finish: Paint of color to match the protected device.

## 2.13 WIRE

- A. General: Provide galvanized interlocking strip steel with red stripe armor with solid conductors within.
  - 1. Assembly: Polyester assembly tape; twisted shield; laminated aluminum/Mylar shield with tinned copper drain wire.
  - 2. Fully plenum-rated, FPLP.
  - 3. Manufacturer: AFC Cable Systems fire alarm/control cable.
- B. Initiating Line Circuits:
  - 1. Number of conductors as recommended by fire alarm system manufacturer and in accordance with NEC Article 760. Conductor size shall not be less than #14 AWG.
  - 2. Visual devices shall be circuited separate from audible devices.
- C. Signal Line Circuits:
  - 1. Number of conductors and conductor size as recommended by fire alarm system manufacturer and in accordance with NEC Article 760.
  - 2. Solid-copper conductors, twisted, shielded, jacketed, as recommended by system manufacturer.
- D. Miscellaneous control circuits: #12 AWG, copper, 600 volts, THHN insulation.

## 2.14 CONNECTIONS

- A. All terminals and splices of cable shall be made with self-insulated compression-type fittings.
- B. Manufacturer: Thomas & Betts "sta-Kon"
  - 1. Termination: Forked tongue "RA" series.
  - 2. Splices: "RB," "RC," and "RP" series.

## 2.15 FAN SHUTDOWN COMPONENTS AND CIRCUITING

- A. Complete relay control package of modular construction mounted in fire alarm control panel.
- B. The fire alarm system shall supervise the coil of each relay. Any abnormal conditions shall indicate an individual trouble alarm for each relay.
- C. The contacts of each relay shall be supervised by the interface to the energy management system.
- D. Provide drill bypass feature; locate switch on fire alarm control panel and label "Drill-Fan Shutdown Bypass." Audible buzzer shall sound continuously while in bypass mode.



- E. Provide fan reset feature; locate switch on fire alarm control panel and label "Fan Reset."
- F. Provide all wiring required for carbon monoxide detectors. Provide addressable modules at each detector to allow unique identification of each detector. Initiation of any carbon monoxide detector shall transmit/indicate trouble alarm at system annunciator(s).

## **2.16 STANDBY BATTERY AND CHARGER**

- A. Standby battery shall be provided through 24-V dc battery and automatic charger.
- B. Maintenance-free lead-calcium batteries; ampere-hour capacity which will allow fire alarm system functions to operate as called for.
- C. Standby batteries shall be sized to maintain non-alarm supervisory power condition for 60 hours followed by 15 consecutive minutes in full load alarm on battery power only.
- D. Cell reversal protection for batteries. Life expectancy shall be 10 years maximum. Battery connections shall be fused.
- E. Batteries shall be supervised. Battery charge, when low, shall initiate an LED flashing signal and trouble circuit shall sound. The LED signal shall remain until the condition is corrected; audible signal shall annunciate until acknowledged.
- F. Battery removal, blown fuses, or faulty wiring shall also cause a low battery condition.
- G. Charger shall be self-regulating, solid-state type, automatic with capability to fully charge the completely drained battery within 5 hours.
- H. Locate charger and associated batteries within the fire alarm control panel or in NEMA 1 enclosure adjacent to the panel.
- I. Manufacturer: Same as control panel.

## **PART 3 - EXECUTION**

### **3.1 EQUIPMENT INSTALLATION**

- A. Comply with NFPA 72 for installation of fire-alarm equipment.
- B. Install wall-mounted equipment, with tops of cabinets not more than 72 inches above the finished floor.
- C. Manual Stations: 48 inches to center, above finished floor, on flush box.
- D. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening.



- E. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.
- F. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water flow switch and valve-tamper switch that is not readily visible from normal viewing position.
- G. Audible/Visual Alarm-Indicating Devices: Install not less than 80 inches above finished floor unless otherwise noted. Install horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- H. Visible Alarm-Indicating Devices: Same height as audible/visual device.
- I. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- J. Fire-Alarm Control Unit: Surface mounted, with tops of cabinets not more than 72 inches above the finished floor.
- K. Annunciator: Install with top of panel not more than 54 inches above the finished floor.

### 3.2 CONNECTIONS

- A. It is the intent that the system be wired Class B, all wiring in conduit/raceway in accordance with National Electric Code, Article 760. Metallic conduit systems shall be provided in all masonry walls, mechanical rooms, equipment/storage rooms, exposed ceiling structures. Conduit shall be concealed in all finished areas.
  - 1. Cables shall terminate in electrical boxes.
  - 2. Provide slack cable at each device in accordance with equipment contractor's instructions.
  - 3. Label all cables, both ends as directed by system equipment contractor's instructions.
- B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
  - 1. Smoke dampers in air ducts of designated air-conditioning duct systems.
  - 2. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
  - 3. Carbon monoxide detectors.
- C. Provide two 20-Amp, 120-V circuits to the main fire-alarm control panel.
- D. Provide one 20-Amp, 120-V circuit to each of the following:
  - 1. Annunciator.
  - 2. Transponder.

- E. Provide wiring to smoke duct detectors and the associated dampers for control and operation.
- F. Provide wiring required for fan shutdown for added equipment and existing rooftop unit.
- G. Provide wiring to energy management system. Provide required circuitry, connections, and terminations to provide communications and control between the main fire alarm system and energy management system.
- H. Coordinate the digital communication with the facility representative, and comply with the local fire department requirements and regulations. Provide wiring and connections from incoming telephone service to fire-alarm-panel digital communicator for sending signal via dedicated telephone lines to central receiving service.

### **3.3 IDENTIFICATION**

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- B. Install framed instructions in a location visible from fire-alarm control unit.

### **3.4 GROUNDING**

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

### **3.5 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
  - 1. Visual Inspection: Conduct visual inspection prior to testing.
    - a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
    - b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
  3. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
- C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- D. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

### **3.6 SYSTEM PROGRAMMING**

- A. Allow for 2 programming modifications to be provided as part of the construction phasing plan and the final coordination of the system installation. Provide programming modifications as directed by the Architect.

### **3.7 DEMONSTRATION**

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.
- B. Provide one 4-hour training session to Owner's personnel. Coordinate the training schedule with the Construction Manager.

END OF SECTION 283110

## SECTION 311000

### SITE CLEARING

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. Protecting existing vegetation to remain.
  - 2. Removing existing vegetation.
  - 3. Clearing and grubbing.
  - 4. Removing above- and below-grade site improvements.
  - 5. Disconnecting, capping or sealing, and removing site utilities.
  - 6. Temporary erosion and sedimentation control.

##### 1.03 DEFINITIONS

- A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.
- D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

##### 1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

### **1.05 MATERIAL OWNERSHIP**

- A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

### **1.06 INFORMATIONAL SUBMITTALS**

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
  - 1. Use sufficiently detailed photographs or video recordings.
  - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

### **1.07 FIELD CONDITIONS**

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.
- B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- C. Utility Locator Service: Notify Dig Safe System for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
  - 1. Obtain approved borrow soil material off-site.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

### **3.02 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

### **3.03 EXISTING UTILITIES**

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
- B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
  - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
- C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
- D. Removal of underground utilities is included in earthwork sections; in applicable fire suppression, plumbing, HVAC, electrical, communications, electronic safety and security, and utilities sections; and in Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition."

### 3.04 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
  - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
  - 2. Grind down stumps and remove roots larger than 3 inches (75 mm) in diameter, obstructions, and debris to a depth of 18 inches (450 mm) below exposed subgrade.
  - 3. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
  - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

### 3.05 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
  - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.

### 3.06 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 311000

**SECTION 312000**

**EARTH MOVING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes:**

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for walks pavements turf and grasses and plants.
3. Subbase course for concrete walks pavements.
4. Excavating and backfilling trenches for utilities and buried utility structures.

**B. Related Requirements:**

1. Section 329200 "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.

**1.02 DEFINITIONS**

**A. Backfill:** Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

**B. Base Course:** Aggregate layer placed between the subbase course and hot-mix asphalt paving.

**C. Bedding Course:** Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

**D. Borrow Soil:** Satisfactory soil imported from off-site for use as fill or backfill.

**E. Excavation:** Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, will be without additional compensation.

**F. Fill:** Soil materials used to raise existing grades.

**G. Rock:**



1. Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. (0.76 cu. m).
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other fabricated stationary features constructed above or below the ground surface.
- I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

### 1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct preexcavation conference at Project site.
  1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
    - a. Coordination of Work with utility locator service.
    - b. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
    - c. Field quality control.

### 1.04 SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
  1. Geotextiles.
  2. Controlled low-strength material.
  3. Warning tapes.
- B. Qualification Data: For qualified testing agency.
- C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
  1. Classification according to ASTM D2487.
  2. Laboratory compaction curve according to ASTM D1557.

## 1.05 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify "Dig Safe System" for area where Project is located before beginning earth-moving operations.
- C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified on plans are in place.
- D. Do not commence earth-moving operations until plant-protection measures are in place.
- E. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Erection of sheds or structures.
  - 4. Impoundment of water.
  - 5. Excavation or other digging unless otherwise indicated.
  - 6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- F. Do not direct vehicle or equipment exhaust towards protection zones.
- G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

## PART 2 - PRODUCTS

### 2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 10 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and zero to 5 percent passing a No. 8 (2.36-mm) sieve.
- I. Sand: ASTM C33/C33M; fine aggregate.
- J. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

## 2.02 GEOTEXTILES

- A. Drainage Geotextile: Mirafi 160N or approved equal.

Mechanical Properties	Test Method	Minimum Average
Grab Tensile Strength	ASTM D4632	160 lbs
Grab Tensile Elongation	ASTM D4632	50%
Trapezoid Tear Strength	ASTM D4533	60 lbs
CBR Puncture Strength	ASTM D6241	410 lbs
Apparent Opening Size	ASTM D4751	No. 70 sieve
Permittivity	ASTM D4491	1.5 sec <sup>-1</sup>
Flow Rate	ASTM D4491	110 gal/min/ft <sup>2</sup>
UV Resistance (at 500 hours)	ASTM D4355	70%

- B. Separation Geotextile: Mirafi 500X or approved equal.

Mechanical Properties	Test Method	Minimum Average
Grab Tensile Strength	ASTM D4632	200 lbs
Grab Tensile Elongation	ASTM D4632	15%
Trapezoid Tear Strength	ASTM D4533	75 lbs
CBR Puncture Strength	ASTM D6241	700 lbs
Apparent Opening Size	ASTM D4751	No. 40 sieve
Permittivity	ASTM D4491	0.05 sec <sup>-1</sup>
Flow Rate	ASTM D4491	4 gal/min/ft <sup>2</sup>
UV Resistance (at 500 hours)	ASTM D4355	70%

## 2.03 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of **6 inches (150 mm)** wide and **4 mils (0.1 mm)** thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to **30 inches (750 mm)** deep; colored as follows:
1. Red: Electric.
  2. Yellow: Gas, oil, steam, and dangerous materials.
  3. Orange: Telephone and other communications.
  4. Blue: Water systems.
  5. Green: Sewer systems.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

### 3.02 DEWATERING

- A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

### 3.03 EXPLOSIVES

- A. Explosives:
  - 1. Do not use explosives.

### 3.04 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
  - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
    - a. 24 inches (600 mm) outside of concrete forms other than at footings.
    - b. 12 inches (300 mm) outside of concrete forms at footings.
    - c. 6 inches (150 mm) outside of minimum required dimensions of concrete cast against grade.

- d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
- e. 6 inches (150 mm) beneath bottom of concrete slabs-on-grade.
- f. 6 inches (150 mm) beneath pipe in trenches and the greater of 24 inches (600 mm) wider than pipe or 42 inches (1065 mm) wide.

### 3.05 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
  - 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
  - 2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

### 3.06 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### 3.07 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
  - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Trench Bottoms:
  - 1. Excavate trenches 4 inches (100 mm) deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
    - a. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- C. Trenches in Tree- and Plant-Protection Zones:
  - 1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

### 3.08 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes) to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph (5 km/h).
  2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### 3.09 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Architect.
  1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

### 3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.

2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

- B. Place backfill on subgrades free of mud, frost, snow, or ice.

### 3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill voids with satisfactory soil while removing shoring and bracing.
- D. Initial Backfill:
1. Soil Backfill: Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the pipe or conduit.
    - a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
  2. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches (300 mm) over the pipe or conduit. Coordinate backfilling with utilities testing.
- E. Final Backfill:
1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
  2. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.
- F. Warning Tape: Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

### 3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.



B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

### 3.14 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D1557:

1. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent.
2. Under turf or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.
3. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

### 3.16 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
1. Turf or Unpaved Areas: Plus or minus 1 inch (25 mm).
  2. Walks: Plus or minus 1 inch (25 mm).
  3. Pavements: Plus or minus 1/2 inch (13 mm).
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

### 3.17 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course under pavements and walks as follows:
1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
  2. Place base course material over subbase course under hot-mix asphalt pavement.
  3. Place subbase course 6 inches (150 mm) or less in compacted thickness in a single layer.
  4. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D1557.
- C. Pavement Shoulders: Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase layer to not less than 95 percent of maximum dry unit weight according to ASTM D1557.

### 3.18 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
  2. Determine that fill material classification and maximum lift thickness comply with requirements.
  3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.

- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2937, and ASTM D6938, as applicable. Tests will be performed at the following locations and frequencies:
  - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab but in no case fewer than three tests.
  - 2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet (46 m) or less of trench length but no fewer than two tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

### 3.19 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### 3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

## SECTION 312010

### STORMWATER POLLUTION PREVENTION

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Requirements for preventing pollution of storm water discharges.
- B. Procedures for complying with the New York State Department of Environmental Conservation SPDES General Permit (GP) for Storm Water Discharges from Construction Activities.

##### 1.02 REFERENCES

- A. New York State Department of Environmental Conservation SPDES General Permit for Storm Water Discharges from Construction Activities, Permit No. GP-0-20-001, January 29, 2020.
- B. [Storm Water Pollution Prevention Plan: Dated \_\_\_\_\_.]
- C. New York Standards and Specifications for Erosion and Sediment Control published by the Empire State Chapter of the Soil and Water Conservation Committee, latest edition.

##### 1.03 SUBMITTALS

- A. Schedule of Operations: Describe in detail the sequence of operations, schedule and progress log of activities.
- B. Maintenance Practices: Describe in detail the inspection and maintenance practices to be employed for each SWPPP practice installed or practiced at the site.
- C. Notice of Non-Storm Water Discharges: Describe proposed non-storm water discharges to the storm water system or waters of the United States.
- D. Contractor and subcontractor certifications.
- E. [Name and credentials of a qualified professional (New York State Licensed design professional or Certified Professional in Erosion and Sediment Control) to be employed by Contractor to conduct weekly site inspections and issue reports.]
- F. Quality assurance inspection reports.

##### 1.04 REGULATORY REQUIREMENTS

- A. Adhere to the conditions of the NYS DEC SPDES General Permit (GP) for Storm Water Discharges from Construction Activities Permit No. GP-0-20-001, January 29, 2020.

- B. Install erosion and sediment control measures shown in the contract drawings and prevent pollutants from entering storm water. Take other measures and install other practices which are necessary to prevent the pollution of storm water and to assure compliance with the terms and conditions of the GP.
- C. Each Contractor and any subcontractors shall sign and submit to the Owner the following certification prior to initiation of any site operations.
1. "I hereby certify that I understand and agree to comply with the terms and conditions of the Storm Water Pollution Prevention Plan (SWPPP) and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards." Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."
  2. The certification(s) must be signed by as person authorized as defined in the GP and submitted to the Architect by each contractor; the certification must include:
    - a. Name and title of signatory.
    - b. Name, address and telephone of the contracting firm.
    - c. Name of the project and address (or other identifying description) of the site.
    - d. Date.
    - e. If a subcontractor, the name of the contractor the sub is working for.
    - f. A description of the work to be done.
- D. The Storm Water Pollution Prevention Plan (SWPPP) required by the GP is agreed to include the specific instructions and practices required by the contract documents; the conditions of the GP; and any additional instructions or directives or changes made to the contract documents by the [Architect/Engineer]; and reviewed submittals required to be prepared by the Contractor. Contractors are required to maintain a complete set of the documents comprising the SWPPP at the construction site.

#### 1.05 WORK INCLUDED

- A. Each Contractor shall include in the price bid for the work all of the costs necessary to comply with the requirements of the SWPPP including but not restricted to: specific practices shown on the drawings; practices not shown on the drawings but necessary for the prevention of storm water pollution and to assure compliance with the conditions of the GP; preparation of required submittals; site assessments maintaining the SWPPP practices installed and the removal of all non-permanent practices in accordance with the approved construction sequence and any related work apparently necessary to meet the intent of this section and required corrective actions identified in inspections and reports by the Qualified Professional.
- B. [Contractor/Owner shall employ a qualified professional per Part 3.3 Quality Assurance].

- C. Resolution of any dispute over the necessity of any practice for prevention of storm water pollution shall be made by the **[Architect/Engineer.]**

#### **1.06 QUALITY ASSURANCE**

- A. Erosion and sediment controls installed or practiced shall conform to and be implemented in a manner consistent with the technical standards set forth in the GP and in accordance with the designs, standards and specifications of the New York Standards and Specifications for Erosion and Sediment Control, published by the Empire State Chapter of the Soil and Water Conservation Committee, latest edition.

### **PART 2 - PRODUCTSSpecified in other Division 31 and 32 Sections.**

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Prior to the initiation of any construction activity which disturbs the site or has the potential of creating erosion or soil loss from the site, or in any way is related to the requirements of the SWPPP, prepare and submit for review by the **[Architect/Engineer]** a detailed sequence of operations. The sequence of operations shall list by area to be disturbed each of the construction activities, the sequence of installation of erosion and sediment control practices and the sequence of stabilizing the disturbed areas. Proposed dates shall be provided for all of the construction activities including temporary and permanent measures. The name of the Contractor or subcontractor performing each land disturbance activity and installation of the related erosion and sediment control practice shall be listed.
- B. Commence land disturbing construction activities only after evidence of the **[Architect/Engineer's]** review of the required submittals is available and filed on the site.

#### **3.02 POLLUTION PREVENTION REQUIREMENTS**

- A. Install pollution prevention practices prior to beginning land disturbance activities to prevent erosion and control sediment.
- B. Conduct operations with minimum interference to public or private accesses and facilities.
- C. Maintain egress and access at all times. Do not close or obstruct roadways and sidewalks without permits.
- D. Maintain the flow of all municipal sewers.
- E. Cease operations immediately and implement measures if adjacent property or water courses appear to be in danger of receiving sediments. Notify authority having jurisdiction and Architect.

- F. Stabilization of any disturbed areas shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased unless specifically allowed by the conditions of the GP.
- G. Maintain a log at the site and record the dates when major land disturbance activities occur, when they permanently or temporarily cease and when stabilization activities or practices are in place. Allow access to inspection. Provide copies of the log to the Owner or Architect upon request.

### 3.03 QUALITY ASSURANCE

- A. [Contractor] [Owner] shall employ a qualified professional to inspect the site in accordance with Part III.D.3 of the GP as follows:
  - 1. Conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by Part III.D of this permit have been adequately installed or implemented to insure overall preparedness of the site for the commencement of construction. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every 7 calendar days. During each inspection, the qualified professional shall record the following information:
    - a. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period.
    - b. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;
    - c. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;
    - d. Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume (for example, 10 percent, 20 percent, 50 percent);
    - e. Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and
    - f. All deficiencies that are identified with the implementation of the SWPPP.



2. A report of each inspection shall be written and submitted to the **[Architect/Engineer]** within 48 hours of the inspection. Each report shall contain, at a minimum, the following information.
  - a. Name, title and qualifications of person performing the inspection.
  - b. Date of inspection.
  - c. Major observations concerning the condition of erosion and sediment control practices and compliance with the SWPPP.
  - d. Corrective actions taken or to be taken.
  - e. The Contractor shall maintain a record of all inspection reports in a site log book. The site log book shall be maintained on site and be made available to the permitting authority upon request. Prior to the commencement of construction, the qualified professional shall certify in the site log book that the SWPPP, prepared in accordance with Part III.D. of this permit, meets all Federal, State and local erosion and sediment control requirements. The Contractor shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.
- B. Implement corrective actions to comply with the SWPPP within seven (7) days of any inspection.
- C. Stabilization: The Contractor shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:
  1. Where the initiation of the stabilization measures by the 14<sup>th</sup> day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable;
  2. Where construction activity on a portion of the site is temporarily ceased, and earth-disturbing activities will be resumed within fourteen (14) days, temporary stabilization measures need not be initiated on that portion of the site.
- D. Maintenance: Sediment shall be removed from sediment traps or sediment ponds whenever their capacity has been reduced by fifty (50) percent from the design capacity.

### 3.04 PROHIBITIONS

- A. No solid materials, including building materials, shall be discharged to waters of the United States, except as authorized by federal or state laws.
- B. Off-site tracking or transport of sediments and the generation of dust shall be minimized.
- C. Sources of non-storm water may not be combined with storm water or discharged to a storm sewer or to the waters of the United States unless specifically allowed by the GP and if allowed by the GP only after filing a notice of the proposed non-storm water discharge with the Architect for review.



1. The notice shall include the following information:
    - a. Nature and source of discharge.
    - b. Contents of the discharge.
    - c. Estimated quantity and duration of the discharge
    - d. Location of the discharge.
    - e. Controls to be employed to maintain water quality and prevent water pollution in accordance with the GP.
    - f. Inspection and maintenance practices for the controls to be employed.
  2. This notice, after having been reviewed by the **[Architect/Engineer]**, shall become a part of the SWPPP and shall be maintained on site with other SWPPP documents by the contractor.
- D. Discharges other than those permitted under the GP may only be made to the stormwater system pursuant to a separate SPDES permit to be obtained by the Contractor from New York State Department of Environmental Conservation, and upon submittal of the SPDES permit to the **[Architect/Engineer]** for his records.
- E. Discharges to the sanitary sewer or combined sewer system are not allowed, unless specifically identified in the SWPPP.

**END OF SECTION 312010**

**SECTION 321216**  
**ASPHALT PAVING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Hot-mix asphalt paving.
- B. Related Requirements:
  - 1. Section 312000 "Earth Moving" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.04 SUBMITTALS**

- A. Product Data: Include technical data and tested physical and performance properties.
  - 1. Herbicide.
  - 2. Paving geotextile.
  - 3. Joint sealant.
- B. Hot-Mix Asphalt Designs:
  - 1. Certification, by authorities having jurisdiction, of approval of each hot-mix asphalt design proposed for the Work.
  - 2. For each hot-mix asphalt design proposed for the Work.
- C. Qualification Data: For paving-mix manufacturer and testing agency.
- D. Material Certificates:

1. Aggregates.
  2. Asphalt binder.
  3. Emulsified asphalt prime coat.
  4. Tack coat.
- E. Field quality-control reports.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or the NYS DOT.
- B. Testing Agency Qualifications: Qualified in accordance with ASTM D3666 for testing indicated.
- C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of New York State DOT for asphalt paving work.
1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

#### **1.06 FIELD CONDITIONS**

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
1. Prime Coat: Minimum surface temperature of 60 deg F (15.6 deg C).
  2. Tack Coat: Minimum surface temperature of 60 deg F (15.6 deg C).
  3. Slurry Coat: Comply with weather limitations in ASTM D3910.
  4. Asphalt Base Course and Binder Course: Minimum surface temperature of 40 deg F (4.4 deg C) and rising at time of placement.
  5. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.6 deg C) at time of placement.

### **PART 2 - PRODUCTS**

#### **2.01 AGGREGATES**

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D692/D692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

- C. Fine Aggregate: ASTM D1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
  - 1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
- D. Mineral Filler: ASTM D242/D242M or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

## **2.02 ASPHALT MATERIALS**

- A. Asphalt Binder: ASTM D6373 or AASHTO M 320 binder designation PG 64-22.
- B. Tack Coat: ASTM D977 or AASHTO M 140 emulsified asphalt, or ASTM D2397/D2397M or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- C. Water: Potable.

## **2.03 AUXILIARY MATERIALS**

- A. Herbicide: Commercial chemical for weed control, registered by the EPA, and not classified as "restricted use" for locations and conditions of application. Provide in granular, liquid, or wettable powder form.
- B. Sand: ASTM D1073 or AASHTO M 29, Grade No. 2 or No. 3.
- C. Paving Geotextile: AASHTO M 288 paving fabric; nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.
- D. Joint Sealant: ASTM D6690, Type II or III, hot-applied, single-component, polymer-modified bituminous sealant.

## **2.04 MIXES**

- A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes ; designed in accordance with procedures in AI MS-2, "Asphalt Mix Design Methods"; and complying with the following requirements:
  - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
  - 2. Binder Course: .NYSDOT Type 3.
  - 3. Surface Course: NYS DOT Type 7.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.

### 3.02 SURFACE PREPARATION

- A. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.
- B. Herbicide Treatment: Apply herbicide in accordance with manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
  - 1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.
- C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).
  - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
  - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

### 3.03 INSTALLATION OF PAVING GEOTEXTILE

- A. Apply tack coat uniformly to existing pavement surfaces at a rate of 0.20 to 0.30 gal./sq. yd. (0.8 to 1.2 L/sq. m).
- B. Place paving geotextile promptly in accordance with manufacturer's written instructions. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches (100 mm) and transverse joints 6 inches (150 mm).
- C. Protect paving geotextile from traffic and other damage, and place hot-mix asphalt overlay the same day.

### 3.04 HOT-MIX ASPHALT PLACEMENT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
  2. Place hot-mix asphalt surface course in single lift.
  3. Spread mix at a minimum temperature of 250 deg F (121 deg C).
  4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.
1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches (25 to 38 mm) from strip to strip to ensure proper compaction of mix along longitudinal joints.
  2. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

### 3.05 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
1. Clean contact surfaces and apply tack coat to joints.
  2. Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).
  3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
  4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method in accordance with AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

### 3.06 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density, Rice Test Method: 92 percent of reference maximum theoretical density in accordance with ASTM D2041/D2041M, but not less than 90 percent or greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### 3.07 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:
  1. Base Course: Plus or minus **1/2 inch (13 mm)**.
  2. Surface Course: Plus **1/4 inch (6 mm)**, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a **10-foot (3-m)** straightedge applied transversely or longitudinally to paved areas:
  1. Binder Course: **1/4 inch (6 mm)**.
  2. Surface Course: **1/8 inch (3 mm)**.

### 3.08 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined in accordance with ASTM D3549/D3549M.
- C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with ASTM D979/D979M or AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared in accordance with ASTM D2041/D2041M, and compacted in accordance with job-mix specifications.
  2. In-place density of compacted pavement will be determined by testing core samples in accordance with ASTM D1188 or ASTM D2726/D2726M.
    - a. One core sample will be taken for every 1000 sq. yd. (836 sq. m) or less of installed pavement, with no fewer than three cores taken.
    - b. Field density of in-place compacted pavement may also be determined by nuclear method in accordance with ASTM D2950/D2950M and coordinated with ASTM D1188 or ASTM D2726/D2726M.
- E. Replace and compact hot-mix asphalt where core tests were taken.
- F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION 321216



**SECTION 321313**  
**CONCRETE PAVING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes concrete paving including the following:
  - 1. Walks.
- B. Related Requirements:
  - 1. Section 321726 "Tactile Warning Surfacing" for detectable warning tiles.

**1.02 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.04 SUBMITTALS**

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.
- D. Material Certificates: For the following, from manufacturer:
  - 1. Cementitious materials.
  - 2. Fiber reinforcement.
  - 3. Admixtures.
  - 4. Curing compounds.

5. Applied finish materials.
6. Joint fillers.

E. Material Test Reports: For each of the following:

1. Aggregates.

F. Field quality-control reports.

#### **1.05 QUALITY ASSURANCE**

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
  1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
  1. Personnel conducting field tests must be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

#### **1.06 PRECONSTRUCTION TESTING**

- A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

#### **1.07 FIELD CONDITIONS**

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
  1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
  2. Do not use frozen materials or materials containing ice or snow.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- C. Hot-Weather Concrete Placement: Comply with **ACI 301 (ACI 301M)** and as follows when hot-weather conditions exist:
  1. Cool ingredients before mixing to maintain concrete temperature below **90 deg F (32 deg C)** at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

## **PART 2 - PRODUCTS**

### **2.01 CONCRETE, GENERAL**

- A. ACI Publications: Comply with **ACI 301 (ACI 301M)** unless otherwise indicated.

### **2.02 FORMS**

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

### **2.03 CONCRETE MATERIALS**

- A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:
  1. Portland Cement: ASTM C150/C150M, gray portland cement Type I/II.
  2. Fly Ash: ASTM C618, Class C or Class F.
  3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C33/C33M, uniformly graded.
  1. Maximum Coarse-Aggregate Size: **1-1/2 inches (38 mm)** nominal.
- C. Air-Entraining Admixture: ASTM C260/C260M.

- D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
  2. Retarding Admixture: ASTM C494/C494M, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
  5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
- E. Water: Potable and complying with ASTM C94/C94M.

#### 2.04 FIBER REINFORCEMENT

- A. Synthetic Fiber, Fibrillated Fibers: Fibrillated polypropylene fibers engineered and designed for use in decorative concrete paving, complying with ASTM C1116/C1116M, Type III, 1/2 to 1-1/2 inches (13 to 38 mm) long.

#### 2.05 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry or cotton mats.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.
- F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 2, Class B, dissipating.

#### 2.06 RELATED MATERIALS

- A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D8139, semirigid, closed-cell polypropylene foam in preformed strips.
- B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less

than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

- C. Bonding Agent: ASTM C1059/C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Chemical Surface Retarder: Water-soluble, liquid, set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch (3 to 6 mm).

## 2.07 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301 (ACI 301M), for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
  - 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.
- B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  - 1. Fly Ash or Pozzolan: 25 percent.
  - 2. Slag Cement: 50 percent.
  - 3. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
  - 1. Air Content, 1-1/2-inch (38-mm) Nominal Maximum Aggregate Size: 5-1/2 percent plus or minus 1-1/2 percent.
- D. Limit water-soluble, chloride-ion content in hardened concrete to [0.15] [0.30] percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete as required for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

- F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd. (0.90 kg/cu. m).
- G. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.
- H. Concrete Mixtures: Normal-weight concrete.
  - 1. Compressive Strength (28 Days): 4000 psi (27.6 MPa).
  - 2. Maximum W/C Ratio at Point of Placement: 0.45.
  - 3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).

## 2.08 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M and ASTM C1116/C1116M. Furnish batch certificates for each batch discharged and used in the Work.
  - 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For concrete batches of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - 2. For concrete batches larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
  - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph (5 km/h).
  2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes).
  3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch (13 mm) according to requirements in Section 312000 "Earth Moving."
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

### 3.03 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.04 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
1. Locate expansion joints at intervals of 50 feet (15.25 m) unless otherwise indicated.
  2. Extend joint fillers full width and depth of joint.
  3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.
  4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.

5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch (6-mm) radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes.

### 3.05 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 (ACI 301M) by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
  1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating joint devices.



- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.
- K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.
  - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

### 3.06 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
  - 1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
  - 2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.
  - 3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface **1/16 to 1/8 inch (1.6 to 3 mm)** deep with a stiff-bristled broom, perpendicular to line of traffic.

### 3.07 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching **0.2 lb/sq. ft. x h (1 kg/sq. m x h)** before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing moisture-retaining-cover curing curing compound or a combination of these as follows:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
  3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

### 3.08 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 (ACI 117M) and as follows:
1. Elevation: 3/4 inch (19 mm).
  2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
  3. Surface: Gap below 10-feet- (3-m-) long; unlevel straightedge not to exceed 1/2 inch (13 mm).
  4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches (13 mm per 300 mm) of tie bar.
  5. Lateral Alignment and Spacing of Dowels: 1 inch (25 mm).
  6. Vertical Alignment of Dowels: 1/4 inch (6 mm).
  7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches (6 mm per 300 mm) of dowel.
  8. Joint Spacing: 3 inches (75 mm).
  9. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
  10. Joint Width: Plus 1/8 inch (3 mm), no minus.

### 3.09 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

- B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172/C172M will be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C231/C231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when it is 80 deg F (27 deg C) and above, and one test for each composite sample.
  5. Compression Test Specimens: ASTM C31/C31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C39/C39M; test one specimen at seven days and two specimens at 28 days.
    - a. A compressive-strength test to be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
- D. Test results to be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests to contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency will make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Concrete paving will be considered defective if it does not pass tests and inspections.

- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

**3.10 REPAIR AND PROTECTION**

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

**SECTION 321373**  
**CONCRETE PAVING JOINT SEALANTS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Section Includes:

1. Cold-applied joint sealants.
2. Joint-sealant backer materials.
3. Primers.

**1.02 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.03 SUBMITTALS**

A. Product Data:

1. Concrete pavement joint sealants.
2. Joint-sealant backer materials.

- B. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of joint sealant.

**1.04 QUALITY ASSURANCE**

A. Qualifications:

1. Installers: Entity that employs installers and supervisors who are trained and approved by manufacturer.

**1.05 PRECONSTRUCTION TESTING**

- A. Preconstruction Testing: Performed by a qualified testing agency.

## 1.06 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
  2. When joint substrates are wet.
  3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## PART 2 - PRODUCTS

### 2.01 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backer materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

### 2.02 COLD-APPLIED JOINT SEALANTS

- A. Single-Component, Nonsag, Silicone Joint Sealant: ASTM D5893/D5893M, Type NS.

### 2.03 COLD-APPLIED, FUEL-RESISTANT JOINT SEALANTS

- A. Fuel-Resistant, Single-Component, Pourable, Modified-Urethane, Elastomeric Joint Sealant: ASTM C920, Type S, Grade P, Class 25, for Use T.
1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
- B. Fuel-Resistant, Multicomponent, Pourable, Modified-Urethane, Elastomeric Joint Sealant: ASTM C920, Type M, Grade P, Class 12-1/2 or 25, for Use T.
1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)

### 2.04 HOT-APPLIED, FUEL-RESISTANT JOINT SEALANTS

- A. Hot-Applied, Fuel-Resistant, Single-Component Joint Sealants, Type I or Type II: ASTM D7116.
1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)

- B. Hot-Applied, Fuel-Resistant, Single-Component Joint Sealants, Type III: ASTM D7116.

1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)

## **2.05 JOINT-SEALANT BACKER MATERIALS**

- A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.
- B. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.

## **2.06 PRIMERS**

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.
1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

### 3.03 INSTALLATION OF JOINT SEALANTS

- A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions.
- C. Install joint-sealant backers to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of joint-sealant backer materials.
  - 2. Do not stretch, twist, puncture, or tear joint-sealant backer materials.
  - 3. Remove absorbent joint-sealant backer materials that have become wet before sealant application and replace them with dry materials.
- D. Install joint sealants immediately following backer material installation, using proven techniques that comply with the following:
  - 1. Place joint sealants so they fully contact joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants in accordance with the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
  - 1. Remove excess joint sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

### 3.04 CLEANING AND PROTECTION

- A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.
- B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint



sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

### **3.05 PAVING-JOINT-SEALANT SCHEDULE**

#### **A. Joints within concrete paving:**

1. Joint Location:
  - a. Expansion and isolation joints in concrete paving.
  - b. Contraction joints in concrete paving.
  - c. Other joints as indicated.
2. Joint Sealant: Single-component, nonsag, silicone joint sealant.
3. Joint-Sealant Color: Selected from Manufacturer's standard full range of available colors by Architect.

END OF SECTION 321373

**SECTION 321723**  
**PAVEMENT MARKINGS**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Painted markings applied to asphalt paving.

**1.03 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.04 SUBMITTALS**

- A. Product Data: Include technical data and tested physical and performance properties.
  - 1. Pavement-marking paint, latex.

**1.05 FIELD CONDITIONS**

- A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg F for alkyd materials, and not exceeding 95 deg F (35 deg C).

**PART 2 - PRODUCTS**

**2.01 PERFORMANCE REQUIREMENTS**

- A. Accessibility Standard: Comply with applicable provisions per NYS ADA Requirements.

## **2.02 PAVEMENT-MARKING PAINT**

- A. Pavement-Marking Paint, Latex: MPI #97, latex traffic-marking paint.
  - 1. Color: White, Yellow, Blue, as indicated on drawings.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that pavement-marking substrate is dry and in suitable condition to begin pavement marking in accordance with manufacturer's written instructions.
- B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

### **3.02 PAVEMENT MARKING**

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow asphalt paving or concrete surfaces to age for a minimum of 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).
  - 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to asphalt paving or concrete surface. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it cannot run beneath stencil.

### **3.03 PROTECTING AND CLEANING**

- A. Protect pavement markings from damage and wear during remainder of construction period.
- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 321723

**SECTION 321726**  
**TACTILE WARNING SURFACING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Cast-in-place detectable warning devices.

**1.02 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples for each type of exposed finish requiring color selection.

**PART 2 - PRODUCTS**

**2.01 TACTILE WARNING SURFACING, GENERAL**

- A. Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities for tactile warning surfaces.

**2.02 DETECTABLE WARNING DEVICES**

- A. Cast-in-Place Detectable Warning Devices: Accessible truncated-dome detectable warning configured for setting flush in new concrete walkway surfaces, with slip-resistant surface treatment on domes and field of tile.
  - 1. Armor-Tile or equal.
  - 2. Material: Cast-fiber-reinforced polymer panels.
  - 3. Color: Red brick.
  - 4. Shapes and Sizes:
    - a. Rectangular panel, 24 by 48 inches.
  - 5. Dome Spacing and Configuration: Manufacturer's standard compliant spacing, in manufacturer's standard pattern.
  - 6. Mounting:

- a. Permanently embedded detectable warning panel wet-set into freshly poured concrete.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION OF TACTILE WARNING SURFACING**

- A. General: Prepare substrate and install tactile warning surfacing according to manufacturer's written instructions unless otherwise indicated.
- B. Place tactile warning surfacing units in dimensions and orientation indicated. Comply with location requirements of AASHTO MP 12.
- C. Cast-in-Place Detectable Warning Tiles: Set each detectable warning tile accurately and firmly in place and completely seat tile back and embedments in wet concrete by tamping or vibrating. Set surface of tile flush with surrounding concrete and adjacent tiles. Remove concrete from tile surfaces and clean using methods recommended in writing by manufacturer.
- D. Remove and replace tactile warning surfacing that is broken or damaged or does not comply with requirements in this Section. Remove in complete sections from joint to joint unless otherwise approved by Architect. Replace using tactile warning surfacing installation methods acceptable to Architect.
- E. Protect tactile warning surfacing from damage and maintain free of stains, discoloration, dirt, and other foreign material.

END OF SECTION 321726

**SECTION 323200**  
**TRAFFIC CONTROL SIGNAGE**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General Conditions, Modifications to General Conditions, and Special Conditions, apply to this Section.

**1.02 SUMMARY**

- A. This Section includes the following:
  - 1. Nonilluminated single panel exterior signs.
- B. Related Sections: The following sections contain requirements that relate to this Section:
  - 1. Painted pavement marking for designated handicapped parking is included in Division 32 Section 321216, "Asphalt Paving."

**1.03 SUBMITTALS**

- A. General: Submit the following in accordance with Conditions of the Contract and Special Conditions.
- B. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required.

**1.04 QUALITY ASSURANCE**

- A. Single-Source Responsibility: Obtain exterior post and panel signs from one source from a single manufacturer.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:
  - 1. ASI Sign Systems, Inc.

2. Eastern Metal/USA-SIGN
3. The Supersine Company.
4. Vomar Products, Inc.

B. MATERIALS

1. Aluminum Sheet or Plate: Provide alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated and with not less than the strength and durability properties specified in ASTM B 209 for 5005-H15.
2. Steel Tubing: Provide cold-formed steel tubing conforming to ASTM A 500, Grade B, hot-dipped galvanized after fabrication with a minimum of 2.0-oz. zinc per sq. ft. of surface area conforming with ASTM A 123.
3. Concrete: Provide concrete for post holes consisting of Portland cement complying with ASTM C 150, aggregates complying with ASTM C 33, and clean water. Mix the materials to obtain concrete with a minimum 28-day compressive strength of 2500 psi. Use at least 4 sacks of cement per cubic yard, 1-inch maximum size aggregate, maximum 3-inch slump, and 2 to 4 percent entrained air.
4. Fasteners: Unless otherwise indicated, use tamperproof fasteners fabricated from metals that are noncorrosive to either the sign material or the mounting surface.
5. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors.
6. Posts: Provide 12-gage galvanized seamless square Telespar steel posts in length adequate for mounting method specified. Comply with the following requirements for post shape, finish, and mounting method indicated:
  - a. Size: 1-3/4 inch square.
  - b. Post Mounting Method: Provide prefabricated telespar posts of length required for installation in sleeve. Provide sleeve with inside dimension to receive post in configuration shown. Direct-bury sleeve in concrete footing with 2" projection for bolted anchor.
7. Panels: Provide smooth, even, level sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.
  - a. Unframed Single-Sheet Panels: Provide unframed single-sheet sign panels with edges mechanically and smoothly finished to conform with the following requirements and NYSDOT 730-01:
    - 1) Panel Material: minimum 0.090 (approx. 3/32) inch thick aluminum plate.
    - 2) Edge Condition: Square cut.
    - 3) Corner Condition: Corners rounded to industry standard radius.
    - 4) Finish: Baked enamel, colors as standard with New York State MUTCD. Provide reflective sheeting (Class B) NYSDOT 730-05.02.
8. Graphic Content and Style: Provide sign copy to comply with the requirements indicated for sizes, styles, spacing, content, positions, materials, finishes, and colors of letters, numbers, symbols, and other graphic devices.

## **2.02 FABRICATION**

- A. General: Provide the manufacturer's standard single-panel-type post, and panel signs. Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Posts: Fabricate posts to lengths required for mounting method indicated.
- C. Panels: Form panels to required size and shape. Comply with requirements indicated for design, dimensions, finish, color, and details of construction.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions. Coordinate timing of installation to coincide with landscaping and site improvements work as determined by the Construction Manager.
- B. Excavation: In firm undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for posts to diameters and spacing indicated.
- C. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

### **3.02 CLEANING**

- A. At completion of the installation, clean soiled surfaces of sign units in accordance with the manufacturer's instructions.

### **3.03 PROTECTION**

- A. Protect installed sign units from damage until acceptance by the Owner.

END OF SECTION 323200



**SECTION 329200**  
**TURF AND GRASSES**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
1. Seeding.
  2. Hydroseeding.
  3. Erosion-control materials.

**1.03 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

**1.04 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

### **1.05 SUBMITTALS**

- A. Qualification Data: For landscape Installer.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
  - 1. Certification of each seed mixture. Include identification of source and name and telephone number of supplier.
- C. Product Certificates: For fertilizers, from manufacturer.
- D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

### **1.06 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

### **1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
  - 1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
  - 2. Experience: Three years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
  - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 4. Pesticide Applicator: State licensed, commercial.

### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Bulk Materials:
  - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  - 3. Accompany each delivery of bulk materials with appropriate certificates.

## **1.09 FIELD CONDITIONS**

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
  - 1. Spring Planting: April 15th – June 15th.
  - 2. Fall Planting: September 15th – November 15th.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

## **PART 2 - PRODUCTS**

### **2.01 SEED**

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Grass-Seed Mix: Proprietary seed mix as follows:
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. Cool Season Mix – Showtime from Outside Pride Seed Source.

### **2.02 FERTILIZERS**

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Composition:
    - a. 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

### **2.03 MULCHES**

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  - 1. Organic Matter Content: 50 to 60 percent of dry weight.

- C. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- D. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

## **2.04 PESTICIDES**

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

## **2.05 EROSION-CONTROL MATERIALS**

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

# **PART 3 - EXECUTION**

## **3.01 EXAMINATION**

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
  - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
  - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

### **3.02 PREPARATION**

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
  - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
  - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### **3.03 TURF AREA PREPARATION**

- A. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.
- B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### **3.04 PREPARATION FOR EROSION-CONTROL MATERIALS**

- A. Prepare area as specified in "Turf Area Preparation" Article.
- B. Fill cells of erosion-control mat with planting soil and compact before planting.
- C. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- D. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

### **3.05 SEEDING**

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h).
  - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
  - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
  - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 3 to 4 lb/1000 sq. ft. (1.4 to 1.8 kg/92.9 sq. m).
- C. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.

- D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

### 3.06 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, slow-release fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
  - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
  - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre (15.6-kb/92.9 sq. m) dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

### 3.07 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
  - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches (100 mm).
  - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  - 2. Water turf with fine spray at a minimum rate of 1 inch (25 mm) per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.
- D. Turf Postfertilization: Apply slow-release fertilizer after initial mowing and when grass is dry.

1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) to turf area.

### 3.08 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
  1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

### 3.09 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

### 3.10 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

### 3.11 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
  1. Seeded Turf: 60 days from date of planting completion.

- a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

END OF SECTION 329200



## SECTION 334200

### STORMWATER CONVEYANCE

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.02 SUMMARY

- A. Section Includes:
  - 1. PE pipe and fittings.
  - 2. PVC pipe and fittings.
  - 3. Non-pressure transition couplings.
  - 4. Cleanouts.
  - 5. Stormwater inlets.
  - 6. Pipe outlets.

##### 1.03 SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
  - 1. Stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.
- C. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.
- D. Product Certificates: For each type of cast-iron soil pipe and fitting, from manufacturer.
- E. Field quality-control reports.

##### 1.04 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Do not store plastic manholes, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe fittings, and seals from dirt and damage.
- C. Handle stormwater inlets in accordance with manufacturer's written rigging instructions.

## **1.06 FIELD CONDITIONS**

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service in accordance with requirements indicated:
  - 1. Notify Architect, Owner no fewer than two days in advance of proposed interruption of service.
  - 2. Do not proceed with interruption of service without Architect's, Owner's written permission.

## **PART 2 - PRODUCTS**

### **2.01 CORRUGATED-PE PIPE AND FITTINGS**

- A. Source Limitations: Obtain corrugated-PE pipe and fittings from single manufacturer.
- B. Corrugated-PE Drainage Pipe and Fittings **NPS 3 to NPS 10 (DN 80 to DN 250)**: AASHTO M 252, Type S, with smooth waterway for coupling joints.
- C. Corrugated-PE Pipe and Fittings **NPS 12 to NPS 60 (DN 300 to DN 1500)**: AASHTO M 294, Type S, with smooth waterway for coupling joints.
- D. Corrugated-PE Silttight Couplings: PE sleeve with ASTM D1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings.
- E. Corrugated-PE Soiltight Couplings: AASHTO M 294, corrugated, matching pipe and fittings.

### **2.02 PVC PIPE AND FITTINGS**

- A. Source Limitations: Obtain PVC pipe and fittings from single manufacturer.
- B. NSF Marking: Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-drain" for plastic storm drain and "NSF-sewer" for plastic storm sewer piping.
- C. PVC Cellular-Core Piping:

1. PVC Cellular-Core Pipe and Fittings: ASTM F891, Sewer and Drain Series, PS 50 minimum stiffness, PVC cellular-core pipe with plain ends for solvent-cemented joints.
2. Fittings: ASTM D3034, SDR 35, PVC socket-type fittings.

D. PVC Gravity Sewer Piping:

1. Pipe and Fittings: ASTM F679, T-1 wall thickness, PVC gravity sewer pipe with bell-and-spigot ends and with integral ASTM F477, elastomeric seals for gasketed joints.

## 2.03 NONPRESSURE TRANSITION COUPLINGS

- A. Comply with ASTM C1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
1. For Concrete Pipes: **ASTM C443** (ASTM C443M), rubber.
  2. For Cast-Iron Soil Pipes: ASTM C564, rubber.
  3. For Fiberglass Pipes: ASTM F477, elastomeric seal or ASTM D5926, PVC.
  4. For Plastic Pipes: ASTM F477, elastomeric seal or ASTM D5926, PVC.
  5. For Dissimilar Pipes: ASTM D5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings:
1. Source Limitations: Obtain unshielded, flexible couplings from single manufacturer.
  2. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Shielded, Flexible Couplings:
1. Source Limitations: Obtain shielded, flexible couplings from single manufacturer.
  2. Description: ASTM C1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
- E. Ring-Type, Flexible Couplings:
1. Source Limitations: Obtain ring-type, flexible couplings from single manufacturer.
  2. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

## 2.04 CLEANOUTS

- A. Cast-Iron Cleanouts:

1. [<Double click here to find, evaluate, and insert list of manufacturers and products.>](#)
2. Source Limitations: Obtain cast-iron cleanouts from single manufacturer.
3. Description: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside caulk or spigot connection and countersunk, tapered-thread, brass closure plug.
4. Top-Loading Classification(s): Heavy Duty and Extra-Heavy Duty.
5. Sewer Pipe Fitting and Riser to Cleanout: ASTM A74, Service class, cast-iron soil pipe and fittings.

B. PVC Cleanouts:

1. Source Limitations: Obtain PVC cleanouts from single manufacturer.
2. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

**2.05 CONCRETE**

- A. General: Cast-in-place concrete in accordance with **ACI 318** (**ACI 318M**), **ACI 350** (**ACI 350M**), and the following:

1. Cement: ASTM C150/C150M, Type II.
2. Fine Aggregate: ASTM C33/C33M, sand.
3. Coarse Aggregate: ASTM C33/C33M, crushed gravel.
4. Water: Potable.

- B. Portland Cement Design Mix: **4000 psi** (**27.6 MPa**) minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A1064/A1064M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A615/A615M, Grade 60 (420 MPa) deformed steel.

**2.06 STORMWATER INLETS**

- A. Frames and Grates: Heavy duty, in accordance with utility standards.

**2.07 PIPE OUTLETS**

- A. Riprap Basins: Broken, irregularly sized and shaped, graded stone in accordance with NSSGA's "Quarried Stone for Erosion and Sediment Control."

1. Average Size: NSSGA No. R-6, screen opening **6 inches** (**151 mm**).

- B. Filter Stone: In accordance with NSSGA's "Quarried Stone for Erosion and Sediment Control," No. FS-2, No. 4 screen opening, average-size graded stone.

- C. Energy Dissipaters: In accordance with NSSGA's "Quarried Stone for Erosion and Sediment Control," No. A-1, 3-ton (2721-kg) average weight armor stone, unless otherwise indicated.

## **PART 3 - EXECUTION**

### **3.01 EARTHWORK**

- A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

### **3.02 PIPING INSTALLATION**

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- D. Install gravity-flow, nonpressure drainage piping in accordance with the following:
1. Install piping pitched down in direction of flow.
  2. Install piping with 18 inch minimum cover.
  3. Install hub-and-spigot, cast-iron soil piping in accordance with CISPI's "Cast Iron Soil Pipe and Fittings Handbook."
  4. Install PE corrugated sewer piping in accordance with ASTM D2321.
  5. Install PVC cellular-core piping in accordance with ASTM D2321 and ASTM F1668.
  6. Install PVC profile gravity sewer piping in accordance with ASTM D2321 and ASTM F1668.

### **3.03 PIPE JOINT CONSTRUCTION**

- A. Join gravity-flow, nonpressure drainage piping in accordance with the following:
1. Join hub-and-spigot, cast-iron soil piping with gasketed joints in accordance with CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
  2. Join corrugated-PE piping in accordance with ASTM D3212 for push-on joints.
  3. Join PVC cellular-core piping in accordance with ASTM D2321 and ASTM F891 for solvent-cemented joints.

4. Join PVC profile gravity sewer piping in accordance with ASTM D2321 for elastomeric-seal joints or ASTM F794 for gasketed joints.

### **3.04 CLEANOUT INSTALLATION**

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
  1. Use Heavy-Duty, top-loading classification cleanouts in all areas.
- B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches (450 by 450 by 300 mm) deep. Set with tops 1 inch (25 mm) above surrounding earth grade.
- C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

### **3.05 STORMWATER INLET AND OUTLET INSTALLATION**

- A. Construct riprap of broken stone, as indicated.
- B. Install outlets that spill onto grade, with flared end sections that match pipe, where indicated.

### **3.06 CONCRETE PLACEMENT**

- A. Place cast-in-place concrete in accordance with ACI 318 (ACI 318M).

### **3.07 IDENTIFICATION**

- A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
  1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

### **3.08 FIELD QUALITY CONTROL**

- A. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
  1. Do not enclose, cover, or put into service before inspection and approval.
  2. Test completed piping systems in accordance with requirements of authorities having jurisdiction.

3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
  4. Submit separate report for each test.
  5. Gravity-Flow Storm Drainage Piping: Test in accordance with requirements of authorities having jurisdiction and UNI-B-6.
- B. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

### **3.09 CLEANING**

- A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 334200

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# Limited Hazardous Materials Pre-Renovation Survey Report

New York State  
Olympic Regional Development Authority  
Bellayre Ski Center – Administration Office Building  
181 Galli Curci Road  
Highmount, New York 12441

Arctic Project Number: 2021.213

Prepared by:



ARCTIC ENTERPRISES, INC.  
222 Teall Ave, Suite 100A, Syracuse, New York 13210

October 25, 2021



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## Limited Hazardous Materials Pre-Renovation Survey Report

New York State  
Olympic Regional Development Authority  
Bellayre Ski Center – Administration Office Building  
181 Galli Curci Road  
Highmount, New York

**Prepared for:**

Mr. Bruce Melick  
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**Author:**

Name: Matthew Rodriguez

Signature:



Title: Industrial Hygienist

Project Number: 2021.213

Report Status: FINAL

Date: October 25, 2021

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**Reviewed by:**

Name: Janette Van Wie

Signature:



Title: President/Owner

## TABLE OF CONTENTS

	Page
1.0 INTRODUCTION .....	1
2.0 ASBESTOS BULK SAMPLING .....	1
3.0 PHOTOS .....	4
4.0 SITE OBSERVATIONS .....	6
5.0 OSHA AND NEW YORK STATE COMPLIANCE .....	7
6.0 LEAD-BASED PAINT BULK SAMPLING.....	7
7.0 PCB BULK SAMPLING .....	8
8.0 SUMMARY .....	9

### ATTACHMENTS

- Attachment A: Arctic's Company License and Personnel Certifications
- Attachment B: Asbestos Bulk Sample Laboratory Report
- Attachment C: Lead Bulk Sampling Laboratory Report
- Attachment D: PCB Bulk Sampling Laboratory Report
- Attachment E: Sample Location and Positive Material Location Drawings

## 1.0 INTRODUCTION

In accordance with your request, Arctic Enterprises, Inc. (Arctic) was retained by Mr. Melick of QPK Design to collect samples of any suspect asbestos-containing materials (ACMs), suspect polychlorinated biphenyl (PCBs) in caulks/sealants and representative lead-based paint (LBP) materials from the New York State Olympic Regional Development Authority (ORDA) Bellayre Ski Center, Administration Office Building, located at located at 181 Galli Curci Road, in Highmount, New York. Sampling was conducted in accordance with the proposed scope of work identified on progress drawings prepared by QPK Design.

## 2.0 ASBESTOS BULK SAMPLING

The asbestos bulk samples were collected by Ms. Bridget Ruane and Mr. Matthew Rodriguez, both New York State Department of Labor (NYSDOL) certified Asbestos Building Inspectors. A total of seventy (70) samples were collected. Post collection, the samples were submitted to AmeriSci New York, an approved environmental laboratory for analysis.

By regulatory definition, any building material containing greater than one percent (1%) asbestos must be considered an asbestos-containing material (ACM). Multiple materials sampled were found to be asbestos-containing, as determined by laboratory analysis. The laboratory analysis reports have been included in Attachment B. The table below (Table 2.1) summarizes the results:

Table 2.1 – ASBESTOS BULK SAMPLE LABORATORY RESULTS

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	ASBESTOS CONTENT
CP-001A,B	BASEMENT – NORTH EAST @ FURNACE	GRAY CEMENT BOARD CEILING	14.3% CHRYSOTILE
IWG-002A,B	BASEMENT – WEST/SOUTH	WHITE/GRAY INTERIOR WINDOW GLAZING	TRACE
RFG-003A,B	BASEMENT – B1	ROLLED FIBERGLASS INSULATION	NAD
SR-004A,B	MAIN FLOOR-MIDDLE OFFICE/SOUTH EXIT	SHEETROCK	NAD
JC-005A,B	MAIN FLOOR-KITCHEN/FRONT ENTRY	JOINT COMPOUND	NAD
CT-006A,B	BASEMENT – B2	2' X 4' DROP CEILING TILE	NAD
CPI-007A,B,C	BASEMENT – B1	WHITE CANVAS JACKETING @ FIBERGLASS INSULATION	NAD

**Table 2.1 – ASBESTOS BULK SAMPLE LABORATORY RESULTS**

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	ASBESTOS CONTENT
FB-008A,B	BASEMENT-CHIMNEY	FIRE BRICK	NAD
PP-009A,B	BASEMENT @ BLOCK WALL BY FURNACE	GRAY PENETRATION PATCH	NAD
VB-010A,B	BASEMENT-ADJ. CRAWL SPACE	BLACK VAPOR BARRIER @ UNDERSIDE OF CONCRETE RAMP IN JOISTS	NAD
LINO-011A,B	MAIN FLOOR – KITCHEN/BACK ENTRY	RED BRICK LINOLEUM	NAD
SR-012A,B	MAIN FLOOR – WEST	SHEETROCK WALLS/CEILINGS	NAD
JC-013A,B	MAIN FLOOR – WEST	JOINT COMPOUND	TRACE
FT-014A,B	MAIN FLOOR – BATHROOM	12" X 12" TAN FLOOR TILE	NAD
FTM-015A,B	MAIN FLOOR – BATHROOM	BLACK FLOOR TILE MASTIC/VAPOR BARRIER ON BACK OF TILE	NAD
CT-016A,B	MAIN FLOOR - NORTH OFFICE CLOSET	12" CEILING TILE (SPLINED)	NAD
CBM-017A,B	MAIN FLOOR – KITCHEN	DARK BROWN COVE BASE MASTIC	TRACE
CWTGRT-018A,B	MAIN FLOOR – BATHROOM	WHITE CERAMIC WALL TILE GROUT	NAD
TS-019A,B	MAIN FLOOR – BATHROOM	GRAY THINSET	NAD
WG-020A,B	MAIN FLOOR – EAST	WHITE WINDOW GLAZE	TRACE
VB-021A,B	MAIN FLOOR – EAST CLOSET	BLACK VAPOR BARRIER (UNDER 022)	NAD
VF-022A,B	MAIN FLOOR – EAST CLOSET	WOOD PATTERN VINYL FLOORING	NAD
SR-023A,B	MAIN FLOOR – EAST (GARAGE)	WALL/CEILING SHEETROCK	NAD

**Table 2.1 – ASBESTOS BULK SAMPLE LABORATORY RESULTS**

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	ASBESTOS CONTENT
JC-024A,B	MAIN FLOOR – EAST (GARAGE)	JOINT COMPOUND	NAD
CPMAS-025A,B	MAIN FLOOR – EAST (GARAGE)	YELLOW CARPET MASTIC ON CONCRETE	NAD
CAULK-026A,B	MAIN FLOOR – EAST (GARAGE)	BROWN CAULK/SEALANT @ FLOOR	TRACE
FGB-027A,B	ATTIC – EAST	ROLLED FIBERGLASS INSULATION	NAD
SCLK-028A,B	EXTERIOR – SOUTH	WHITE SILL/WINDOW TRIM CAULK	1.4% ANTHOPHYLLITE
DCLK-029A,B	EXTERIOR – SOUTH ENTRY	WHITE DOOR TRIM CAULK	NAD
SHINGLE-030A,B	EXTERIOR – MAIN ROOF	GRAY GRANULATED SHINGLE	NAD
TP-031A,B	EXTERIOR – MAIN ROOF	BLACK TAR BAPER @ WOOD DECK	NAD
TP-032A,B	ATTIC – WEST	BLACK TAR PAPER (RESIDUAL)	NAD
VB-033A,B	EXTERIOR – WEST (UNDER SIDING)	BLACK VAPOR BARRIER	NAD
VB-034A,B	EXTERIOR – UNDER FRONT DOOT	BLACK FOUNDATION VAPOR BARRIER	NAD

**Table Notes:**

NAD = No Asbestos Detected,   = Asbestos-Containing Material, TRACE = Less Than 1% Asbestos

The following asbestos-containing materials and presumed asbestos-containing materials (PACMs) were identified:

**Table 2.2 – Approximate Quantity of ACMs & PACMs**

BUILDING MATERIAL	MATERIAL LOCATION	ESTIMATED QUANTITY	MATERIAL CONDITION
TRANSITE CEILING	BASEMENT – ABOVE FURNACE	38 SF	NF, INTACT
SILL/WINDOW TRIM CAULK	EXTERIOR WINDOW/ SIDING	110 LF/3.5 SF	NF, INTACT

Table 2.2 – Approximate Quantity of ACMs & PACMs

BUILDING MATERIAL	MATERIAL LOCATION	ESTIMATED QUANTITY	MATERIAL CONDITION
WINDOW/DOOR TRIM CAULK	EXERIOR WINDOWS & DOORS	100 LF/3 SF	NF, INTACT

**Table Notes:**

= Asbestos-Containing Materials, SF = Square Feet, LF = Linear Feet, NF = Non-Friable

### 3.0 PHOTOS



ACM TRANSITE CEILING BOARD OVER FURNACE



TRACE BASEMENT INTERIOR WINDOW GLAZE



NON-ACM BATHROOM FLOOR TILE AND MASTIC



NON-ACM CERAMIC WALL TILE GROUT & THINSET IN BATHROOM





NON-ACM VAPOR BARRIER IDENTIFIED AT FLOOR  
CORE IN CLOSET



NON-ACM LINOLEUM FLOORING ON WOOD, IN  
KITCHEN



EAST ATTIC SPACE-NO SUSPECT MATERIAL



WEST ATTIC SPACE-NON-ACM RESIDUAL TAR PAPER



ROOF CORE – SHINGLE AND TAR PAPER ON  
WOODEN DECK ARE NON-ACM



ACM EXTERIOR CAULK AT SIDING (VERTICAL JOINT)  
AND BRICK, ALSO EXISTS AT WINDOWS AND DOORS

#### 4.0 SITE OBSERVATIONS

- Asbestos-containing Transite ceiling panels were identified above the furnace. No suspect materials were identified associated with the furnace or chimney packing, fireplace cleanouts.
- Basement interior window glaze was identified as containing “trace” asbestos, no caulk was identified in these locations.
- Fiberglass pipe insulation was identified in the basement, the jacketing was confirmed non-asbestos containing, no mudded fittings were observed.
- Arctic investigated the block foundation walls in the basement, next to rear porch, no vermiculite was observed. Limited water infiltration through block foundation walls was noted in the basement. Water damage to the paint was noted on the south wall, no mold growth was noted at the time of our inspection. Gutters or other methods to divert rainwater/snow melt should be considered to direct water away from the foundation.
- Non-asbestos containing linoleum flooring was noted in the main floor kitchen (on wood subfloor). The basement stair landing/back door contains the same linoleum, on plywood subfloor.



- A wood pattern laminate flooring was installed over the concrete substrate in the former garage space, now converted to office space at east side of the building. A non-asbestos containing vapor barrier was observed below the laminate flooring.
- An exterior black vapor barrier was observed behind exterior board and batten siding.
- Roofing systems were considered homogeneous and consisted of non -asbestos containing shingle and tar paper on wood deck.

## **5.0 OSHA AND NEW YORK STATE COMPLIANCE**

The Occupational Safety & Health Administration still regulates materials with any amount of asbestos present, even those with less than one percent. Although work operations conducted in areas where a material contains less than or equal to one percent asbestos is an "unclassified" operation, the employer still must follow the requirements of 29 CFR 1926.1101(g) (1) [except (g) (1) (i)], (g) (2) and (g) (3) that describe engineering and work practice controls operations to prevent unnecessary asbestos exposures to their employees.

Transmittal of Building/Structure Asbestos Survey Information – As required by New York State industrial code rule 56, copies of the building/structure asbestos survey shall be immediately transmitted by the building/structure owner, as follows:

- (1) One (1) copy of the completed asbestos survey shall be sent by the owner or their agent to the local entity charged with issuing a permit for such demolition, renovation, remodeling or repair work under State or local laws.
- (2) One (1) copy of the completed asbestos survey for controlled demolition (as per Subpart 56-11.5) or pre-demolition asbestos projects shall also be submitted to the appropriate Asbestos Control Bureau district office.
- (3) One (1) copy of the completed asbestos survey shall be kept on the construction site with the asbestos notification and variance, if required, throughout the duration of the asbestos project and any associated demolition, renovation, remodeling or repair project.

## **6.0 LEAD-BASED PAINT BULK SAMPLING**

The lead-based paint/glaze samples were collected by Arctic's Industrial Hygiene Technicians Ms. Bridget Ruane and Mr. Matthew Rodriguez. A total of five (5) lead samples were collected. Post collection, the samples were labeled and sent to Schneider Laboratories, an approved environmental laboratory for analysis.

By regulatory definition, lead-based paint (LBP) is defined as any material containing a minimum of 0.5% lead by weight. None of the samples collected were identified as lead-based paint as defined by the USEPA. It should be noted that materials containing any amount of lead are regulated by OSHA, additional handling and disposal considerations may apply. The laboratory report has been included in Attachment C. The table below summarizes the sampling results:

**Table 6.1 – LEAD BULK SAMPLE LABORATORY RESULTS**

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	LEAD CONTENT*
PAINT-001	BASEMENT – B1	SOUTH WALL WHITE PAINT	<0.00301%
PAINT-002	MAIN FLOOR	WHITE WALL PAINT	<0.00468%
PAINT-003	EXTERIOR	RED TRIM PAINT	0.0127%
PAINT-004	EXTERIOR	BROWN SIDING PAINT	0.0553%
TILE-005	MAIN FLOOR -BATHROOM	GREEN CERAMIC WALL TILE GLAZE	<0.00186%

**Table Notes:**

\* = Percentage of Lead by Weight

## 7.0 PCB BULK SAMPLING

The PCB caulk/sealant samples were collected by Arctic's Industrial Hygiene Technicians, Ms. Bridget Ruane and Mr. Matthew Rodriguez. Three (3) samples were collected and submitted to Schneider Laboratories, an approved environmental laboratory for analysis in accordance with EPA 8082a methodology.

By regulatory definition, a PCB-containing bulk material is defined as containing at least 50 parts per million (ppm) PCBs. The samples collected did not contain PCBs (above the regulatory threshold), as determined by laboratory analysis. The laboratory report has been included in Attachment D. The table below summarizes the results:

**Table 7.1 – PCB BULK SAMPLE LABORATORY RESULTS**

SAMPLE NUMBER	SAMPLE LOCATION	MATERIAL DESCRIPTION	PCB CONTENT
CAULK-026P	MAIN FLOOR – EAST	BROWN CAULK @ FLOOR	0.476 ppm
SCLK-028P	EXTERIOR – EAST SIDING	WHITE CAULK @ BRICK/SIDING	BRL
DCLK-029P	FRONT DOOR – EXTERIOR	BROWN CAULK @ FRONT DOOR	1.370 ppm

**Table Notes:**

ppm = Parts Per Million, BRL = Below Reporting Limit

## 8.0 SUMMARY

During this sampling event asbestos-containing materials were identified, no lead-based paints or PCB-Containing caulks/sealants were identified. If you have any questions pertaining to this report, please contact our office at (315) 476-1757. We thank you for the opportunity to work with you on this project.

**ATTACHMENT A**

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**Arctic's Company License and Personnel Certifications**

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**New York State – Department of Labor**

Division of Safety and Health  
License and Certificate Unit  
State Campus, Building 12  
Albany, NY 12240

**ASBESTOS HANDLING LICENSE**

Arctic Enterprises, Inc.  
Ste100A  
222 Teall Ave  
  
Syracuse, NY 13210

FILE NUMBER: 14-75469  
LICENSE NUMBER: 75469  
LICENSE CLASS: FULL  
DATE OF ISSUE: 04/07/2021  
EXPIRATION DATE: 04/30/2022

Duly Authorized Representative – Janette Van Wie:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.



Amy Phillips, Director  
For the Commissioner of Labor

## ASBESTOS CERTIFICATION



The following letter codes (as shown on the handling certificate) represent the corresponding asbestos classifications.

A - Asbestos Handler	D - Asbestos Inspector	G - Asbestos Supervisor
B - Allied Trades	E - Management Planner	H - Asbestos Project Monitor
C - Air Sampling Technician	F - Operations & Maintenance	I - Asbestos Project Designer

## ASBESTOS CERTIFICATION



The following letter codes (as shown on the handling certificate) represent the corresponding asbestos classifications.

A - Asbestos Handler	D - Asbestos Inspector	G - Asbestos Supervisor
B - Allied Trades	E - Management Planner	H - Asbestos Project Monitor
C - Air Sampling Technician	F - Operations & Maintenance	I - Asbestos Project Designer



**ATTACHMENT B**

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**Asbestos Bulk Sample Laboratory Report**

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Client Name: Arctic Enterprises, Inc.

**Table I**  
**Summary of Bulk Asbestos Analysis Results**

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center, Admin - Admin. Office Bldg.

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	CP-001A	1	----	----	----	----	Chrysotile 14.3	NA
Location: Basement - NE At Furnace - Gray Cement Board Ceiling								
02	CP-001B	1	----	----	----	----	NA/PS	NA
Location: Basement - NE At Furnace - Gray Cement Board Ceiling								
03	IWG-002A	2	0.119	10.0	87.7	2.1	Anthophyllite <0.25	Anthophyllite <1.0
Location: Basement, West / South - West / South Interior Window Glazing								
04	IWG-002B	2	0.248	8.9	88.2	2.7	Chrysotile <0.25	Chrysotile <1.0
Location: Basement, West / South - West / South Interior Window Glazing								
05	RFG-003A	3	0.249	84.1	0.5	15.3	NAD	NAD
Location: Basement B1 - Rolled Fiberglass Insulation								
06	RFG-003B	3	0.187	80.1	1.0	18.9	NAD	NAD
Location: Basement B1 - Rolled Fiberglass Insulation								
07	SR-004A	4	----	----	----	----	NAD	NA
Location: Middle Office / South Exit - Sheetrock								
08	SR-004B	4	----	----	----	----	NAD	NA
Location: Middle Office / South Exit - Sheetrock								
09	JC-005A	5	----	----	----	----	NAD	NA
Location: Kitchen / Front Entry - Joint Compound								
10	JC-005B	5	----	----	----	----	NAD	NA
Location: Kitchen / Front Entry - Joint Compound								
11	CT-006A	6	0.170	82.3	10.0	7.6	NAD	NAD
Location: Basement B2 - 2' x 4' Drop Ceiling Tile								
12	CT-006B	6	0.128	82.9	10.2	6.9	NAD	NAD
Location: Basement B2 - 2' x 4' Drop Ceiling Tile								
13	CPJ-007A	7	----	----	----	----	NAD	NA
Location: Basement B1 - Canvas Pipe Jacket At FG Insulation								
14	CPJ-007B	7	----	----	----	----	NAD	NA
Location: Basement B1 - Canvas Pipe Jacket At FG Insulation								
15	CPJ-007C	7	----	----	----	----	NAD	NA
Location: Basement B1 - Canvas Pipe Jacket At FG Insulation								
16	FB-008A	8	----	----	----	----	NAD	NA
Location: Basement - Fire Brick								

See Reporting notes on last page

Client Name: Arctic Enterprises, Inc.

**Table I**  
**Summary of Bulk Asbestos Analysis Results**

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center, Admin - Admin. Office Bldg.

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
17	FB-008B	8	----	----	----	----	NAD	NA
	Location: Basement - Fire Brick							
18	FB-008C	8	----	----	----	----	NAD	NA
	Location: Basement - Fire Brick							
19	PP-009A	9	----	----	----	----	NAD	NA
	Location: Basement - Penetration Patch							
20	PP-009B	9	----	----	----	----	NAD	NA
	Location: Basement - Penetration Patch							
21	VB-010A	10	0.109	92.9	6.4	0.6	NAD	NAD
	Location: Basement - Black Vapor Barrier							
22	VB-010B	10	0.125	93.7	5.4	0.9	NAD	NAD
	Location: Basement - Black Vapor Barrier							
23	LINO-011A	11	0.223	80.7	17.7	1.6	NAD	NAD
	Location: Main Floor - Kitchen / Back Entry - Red Brick Linoleum							
24	LINO-011B	11	0.189	80.5	17.7	1.7	NAD	NAD
	Location: Main Floor - Kitchen / Back Entry - Red Brick Linoleum							
25	SR-012A	12	----	----	----	----	NAD	NA
	Location: Main Floor - West - Sheetrock Walls / Ceilings							
26	SR-012B	12	----	----	----	----	NAD	NA
	Location: Main Floor - West - Sheetrock Walls / Ceilings							
27	JC-013A	13	----	----	----	----	Chrysotile <0.25	NA
	Location: Main Floor - West - Joint Compound							
28	JC-013B	13	----	----	----	----	Chrysotile <0.25	NA
	Location: Main Floor - West - Joint Compound							
29	FT-014A	14	0.330	35.4	37.0	27.6	NAD	NAD
	Location: Main Floor - Bathroom - 12" Tan Floor Tile							
30	FT-014B	14	0.195	36.2	34.5	29.2	NAD	NAD
	Location: Main Floor - Bathroom - 12" Tan Floor Tile							
31	FTM-015A	15	0.067	69.5	27.8	2.7	NAD	NAD
	Location: Main Floor - Bathroom - Black Floor Tile Mastic / V.B.							
32	FTM-015B	15	0.133	68.7	17.3	14.0	NAD	NAD
	Location: Main Floor - Bathroom - Black Floor Tile Mastic / V.B.							

See Reporting notes on last page

Client Name: Arctic Enterprises, Inc.

**Table I**  
**Summary of Bulk Asbestos Analysis Results**

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center, Admin - Admin. Office Bldg.

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
33	CT-016A	16	0.203	88.1	5.6	6.4	NAD	NAD
	Location: Main Floor - North Office Closet - 12" Ceiling Tile (Splined)							
34	CT-016B	16	0.138	88.7	7.0	4.4	NAD	NAD
	Location: Main Floor - North Office Closet - 12" Ceiling Tile (Splined)							
35	CBM-017A	17	0.289	54.7	4.6	40.7	NAD	NAD
	Location: Kitchen - Cove Base Mastic (Dark Brown)							
36	CBM-017B	17	0.269	23.9	39.5	36.5	Chrysotile <0.25	Chrysotile Trace
	Location: Kitchen - Cove Base Mastic (Dark Brown)							
37	CWTGRT-018A	18	----	----	----	----	NAD	NA
	Location: Main Floor - Bathroom - White Ceramic Wall Tile Grout							
38	CWTGRT-018B	18	----	----	----	----	NAD	NA
	Location: Main Floor - Bathroom - White Ceramic Wall Tile Grout							
39	TS-019A	19	----	----	----	----	NAD	NA
	Location: Main Floor - Bathroom - Gray Thinset							
40	TS-019B	19	----	----	----	----	NAD	NA
	Location: Main Floor - Bathroom - Gray Thinset							
41	WG-020A	20	0.315	9.6	77.7	12.5	Anthophyllite <0.25	Anthophyllite <1.0
	Location: Main Floor - East - White Window Glaze							
42	WG-020B	20	0.292	9.9	80.7	9.1	Anthophyllite <0.25	Anthophyllite <1.0
	Location: Main Floor - East - White Window Glaze							
43	VB-021A	21	0.165	97.5	1.8	0.7	NAD	NAD
	Location: Main Floor - East Closet - Black Vapor Barrier							
44	VB-021B	21	0.154	98.4	0.3	1.4	NAD	NAD
	Location: Main Floor - East Closet - Black Vapor Barrier							
45	VF-022A	22	0.116	99.1	0.6	0.3	NAD	NAD
	Location: Main Floor - East Closet - Wood Pattern Vinyl Flooring							
46	VF-022B	22	0.095	97.3	1.6	1.2	NAD	NAD
	Location: Main Floor - East Closet - Wood Pattern Vinyl Flooring							
47	SR-023A	23	----	----	----	----	NAD	NA
	Location: Main Floor - East (Garage) - Wall And Ceiling Sheetrock							
48	SR-023B	23	----	----	----	----	NAD	NA
	Location: Main Floor - East (Garage) - Wall And Ceiling Sheetrock							

See Reporting notes on last page

Client Name: Arctic Enterprises, Inc.

**Table I**  
**Summary of Bulk Asbestos Analysis Results**

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center, Admin - Admin. Office Bldg.

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
49	JC-024A	24	----	----	----	----	NAD	NA
Location: Main Floor - East (Garage) - Joint Compound								
50	JC-024B	24	----	----	----	----	NAD	NA
Location: Main Floor - East (Garage) - Joint Compound								
51	CPMAS-025A	25	0.221	54.5	25.3	20.2	NAD	NAD
Location: Main Floor - East (Old Garage) - Yellow Carpet Mastic								
52	CPMAS-025B	25	0.123	67.1	18.6	14.2	NAD	NAD
Location: Main Floor - East (Old Garage) - Yellow Carpet Mastic								
53	CAULK-026A	26	0.295	25.2	70.3	4.2	Anthophyllite <0.25	Anthophyllite <1.0
Location: Main Floor - East (Old Garage) - Brown Caulk / Sealant At Floor								
54	CAULK-026B	26	0.272	29.0	49.6	21.4	NAD	NAD
Location: Main Floor - East (Old Garage) - Brown Caulk / Sealant At Floor								
55	FGB-027A	27	0.130	80.2	2.5	17.2	NAD	NAD
Location: Attic - East - Rolled Fiberglass Insulation								
56	FGB-027B	27	0.161	88.5	0.8	10.7	NAD	NAD
Location: Attic - East - Rolled Fiberglass Insulation								
57	SCLK-028A	28	0.250	15.5	70.4	12.5	Anthophyllite <0.25	Anthophyllite 1.4 Chrysotile <1.0
Location: Exterior - South - White Sill / Window Trim Caulk								
58	SCLK-028B	28	0.343	18.0	64.9	17.1	Anthophyllite <0.25	NA/PS
Location: Exterior - South - White Sill / Window Trim Caulk								
59	DCLK-029A	29	0.200	39.3	58.9	1.8	NAD	NAD
Location: Exterior - South Entry - White Door Trim Caulk								
60	DCLK-029B	29	0.265	40.5	50.7	8.8	NAD	NAD
Location: Exterior - South Entry - White Door Trim Caulk								
61	SHINGLE-030A	30	0.344	22.7	40.9	36.4	NAD	NAD
Location: Exterior - Main Roof (S) - Gray Granulated Shingle								
62	SHINGLE-030B	30	0.320	24.3	42.3	33.4	NAD	NAD
Location: Exterior - Main Roof (S) - Gray Granulated Shingle								
63	TP-031A	31	0.310	54.4	20.6	25.0	NAD	NAD
Location: Exterior - Main Roof (S) - Black Tar Paper At Wood Deck								
64	TP-031B	31	0.216	44.6	5.7	49.7	NAD	NAD
Location: Exterior - Main Roof (S) - Black Tar Paper At Wood Deck								

See Reporting notes on last page

Client Name: Arctic Enterprises, Inc.

**Table I**  
**Summary of Bulk Asbestos Analysis Results**

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center, Admin - Admin. Office Bldg.

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
65	TP-032A	32	0.198	92.6	0.3	7.1	NAD	NAD
Location: Attic - West - Black Tar Paper (Residual)								
66	TP-032B	32	0.159	95.7	0.8	3.6	NAD	NAD
Location: Attic - West - Black Tar Paper (Residual)								
67	VB-033A	33	0.101	97.6	0.7	1.7	NAD	NAD
Location: Exterior - West Under Siding - Black Vapor Barrier								
68	VB-033B	33	1.100	98.8	0.9	0.4	NAD	NAD
Location: Exterior - West Under Siding - Black Vapor Barrier								
69	VB-034A	34	0.144	89.3	2.0	8.7	NAD	NAD
Location: Exterior - Front Door - Foundation Vapor Barrier								
70	VB-034B	34	0.124	89.7	5.2	5.2	NAD	NAD
Location: Exterior - Front Door - Foundation Vapor Barrier								

Analyzed by: John P. Koubiadis

Reviewed by: John P. Koubiadis

Date: 10/19/2021

\*\*Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H7000-Noran 7 System, Microscope, Serial #: 747-05-06. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

**AmeriSci New York**

117 EAST 30TH ST.  
NEW YORK, NY 10016  
TEL: (212) 679-8600 • FAX: (212) 679-3114

## PLM Bulk Asbestos Report

Arctic Enterprises, Inc.  
Attn: Janette Van Wie  
222 Teall Avenue  
Suite 201  
Syracuse, NY 13210

**Date Received** 10/14/21 **AmeriSci Job #** 221102144  
**Date Examined** 10/15/21 **P.O. #**  
**ELAP #** 11480 **Page** 1 of 13  
**RE:** 2021.213; QPK Design; NYS ODRA, Bellayre Ski Center, Admin  
- Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
CP-001A 1	221102144-01 <b>Location:</b> Basement - NE At Furnace - Gray Cement Board Ceiling	<b>Yes</b>	14.3% (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray, Homogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> Chrysotile 14.3 % <b>Other Material:</b> Non-fibrous 85.7%			
CP-001B 1	221102144-02 <b>Location:</b> Basement - NE At Furnace - Gray Cement Board Ceiling		NA/PS
<b>Analyst Description:</b> Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b>			
IWG-002A 2	221102144-03 <b>Location:</b> Basement, West / South - West / South Interior Window Glazing	<b>Yes</b>	Trace (<0.25 % pc) <sup>1</sup> (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Anthophyllite <0.25 % pc <b>Other Material:</b> Fibrous Talc Trace, Non-fibrous 2.3%			
IWG-002B 2	221102144-04 <b>Location:</b> Basement, West / South - West / South Interior Window Glazing	<b>Yes</b>	Trace (<0.25 % pc) <sup>1</sup> (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Chrysotile <0.25 % pc <b>Other Material:</b> Non-fibrous 2.9%			
RFG-003A 3	221102144-05 <b>Location:</b> Basement B1 - Rolled Fiberglass Insulation	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Silver/Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Fibrous glass Trace, Non-fibrous 15.3%			

# PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
RFG-003B 3 <b>Location:</b> Basement B1 - Rolled Fiberglass Insulation	221102144-06	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Silver/Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Fibrous glass Trace, Non-fibrous 18.9%			
SR-004A 4 <b>Location:</b> Middle Office / South Exit - Sheetrock	221102144-07	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Cellulose Trace, Non-fibrous 100%			
SR-004B 4 <b>Location:</b> Middle Office / South Exit - Sheetrock	221102144-08	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray/Brown, Heterogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Cellulose 20%, Non-fibrous 80%			
JC-005A 5 <b>Location:</b> Kitchen / Front Entry - Joint Compound	221102144-09	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Off-White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
JC-005B 5 <b>Location:</b> Kitchen / Front Entry - Joint Compound	221102144-10	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Off-White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
CT-006A 6 <b>Location:</b> Basement B2 - 2' x 4' Drop Ceiling Tile	221102144-11	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 7.6%			

## PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
CT-006B 6 <b>Location:</b> Basement B2 - 2' x 4' Drop Ceiling Tile	221102144-12	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 6.9%			
CPJ-007A 7 <b>Location:</b> Basement B1 - Canvas Pipe Jacket At FG Insulation	221102144-13	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Brown, Homogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Synthetic fibers 90%, Non-fibrous 10%			
CPJ-007B 7 <b>Location:</b> Basement B1 - Canvas Pipe Jacket At FG Insulation	221102144-14	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Brown, Homogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Synthetic fibers 90%, Non-fibrous 10%			
CPJ-007C 7 <b>Location:</b> Basement B1 - Canvas Pipe Jacket At FG Insulation	221102144-15	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Brown, Homogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Synthetic fibers 90%, Non-fibrous 10%			
FB-008A 8 <b>Location:</b> Basement - Fire Brick	221102144-16	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
FB-008B 8 <b>Location:</b> Basement - Fire Brick	221102144-17	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			



**PLM Bulk Asbestos Report**2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
FB-008C 8 Location: Basement - Fire Brick	221102144-18	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
PP-009A 9 Location: Basement - Penetration Patch	221102144-19	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Wollastonite 5%, Non-fibrous 95%			
PP-009B 9 Location: Basement - Penetration Patch	221102144-20	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Wollastonite 5%, Non-fibrous 95%			
VB-010A 10 Location: Basement - Black Vapor Barrier	221102144-21	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 0.6%			
VB-010B 10 Location: Basement - Black Vapor Barrier	221102144-22	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 0.9%			
LINO-011A 11 Location: Main Floor - Kitchen / Back Entry - Red Brick Linoleum	221102144-23	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Red, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 1.6%			

# PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
LINO-011B 11	221102144-24 <b>Location:</b> Main Floor - Kitchen / Back Entry - Red Brick Linoleum	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Red, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 1.7%			
SR-012A 12	221102144-25 <b>Location:</b> Main Floor - West - Sheetrock Walls / Ceilings	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray/Brown, Heterogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Cellulose 5%, Non-fibrous 95%			
SR-012B 12	221102144-26 <b>Location:</b> Main Floor - West - Sheetrock Walls / Ceilings	No	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/15/21
<b>Analyst Description:</b> Gray/Brown, Heterogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Cellulose 10%, Non-fibrous 90%			
JC-013A 13	221102144-27 <b>Location:</b> Main Floor - West - Joint Compound	Yes	Trace (<0.25 % pc) (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Tan, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Chrysotile <0.25 % pc <b>Other Material:</b> Non-fibrous 100%			
JC-013B 13	221102144-28 <b>Location:</b> Main Floor - West - Joint Compound	Yes	Trace (<0.25 % pc) (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Tan, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Chrysotile <0.25 % pc <b>Other Material:</b> Non-fibrous 100%			
FT-014A 14	221102144-29 <b>Location:</b> Main Floor - Bathroom - 12" Tan Floor Tile	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Tan, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 27.6%			

**PLM Bulk Asbestos Report**

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
FT-014B 14	221102144-30 <b>Location:</b> Main Floor - Bathroom - 12" Tan Floor Tile	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Tan, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 29.2%			
FTM-015A 15	221102144-31 <b>Location:</b> Main Floor - Bathroom - Black Floor Tile Mastic / V.B.	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 2.7%			
FTM-015B 15	221102144-32 <b>Location:</b> Main Floor - Bathroom - Black Floor Tile Mastic / V.B.	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 14%			
CT-016A 16	221102144-33 <b>Location:</b> Main Floor - North Office Closet - 12" Ceiling Tile (Splined)	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 6.4%			
CT-016B 16	221102144-34 <b>Location:</b> Main Floor - North Office Closet - 12" Ceiling Tile (Splined)	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 4.4%			
CBM-017A 17	221102144-35 <b>Location:</b> Kitchen - Cove Base Mastic (Dark Brown)	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Dark Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 40.7%			

## PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
CBM-017B 17	221102144-36 <b>Location:</b> Kitchen - Cove Base Mastic (Dark Brown)	<b>Yes</b>	Trace (<0.25 % pc) (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Dark Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Chrysotile <0.25 % pc <b>Other Material:</b> Non-fibrous 36.6%			
CWTGRT-018A 18	221102144-37 <b>Location:</b> Main Floor - Bathroom - White Ceramic Wall Tile Grout	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
CWTGRT-018B 18	221102144-38 <b>Location:</b> Main Floor - Bathroom - White Ceramic Wall Tile Grout	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
TS-019A 19	221102144-39 <b>Location:</b> Main Floor - Bathroom - Gray Thinset	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
TS-019B 19	221102144-40 <b>Location:</b> Main Floor - Bathroom - Gray Thinset	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
WG-020A 20	221102144-41 <b>Location:</b> Main Floor - East - White Window Glaze	<b>Yes</b>	Trace (<0.25 % pc) <sup>1</sup> (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Off-White/Gray, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Anthophyllite <0.25 % pc <b>Other Material:</b> Non-fibrous 12.7%			

# PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
WG-020B 20	221102144-42 <b>Location:</b> Main Floor - East - White Window Glaze	<b>Yes</b>	Trace (<0.25 % pc) (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Off-White/Gray, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Anthophyllite <0.25 % pc <b>Other Material:</b> Non-fibrous 9.3%			
VB-021A 21	221102144-43 <b>Location:</b> Main Floor - East Closet - Black Vapor Barrier	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 0.7%			
VB-021B 21	221102144-44 <b>Location:</b> Main Floor - East Closet - Black Vapor Barrier	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 1.4%			
VF-022A 22	221102144-45 <b>Location:</b> Main Floor - East Closet - Wood Pattern Vinyl Flooring	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 0.3%			
VF-022B 22	221102144-46 <b>Location:</b> Main Floor - East Closet - Wood Pattern Vinyl Flooring	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 1.2%			
SR-023A 23	221102144-47 <b>Location:</b> Main Floor - East (Garage) - Wall And Ceiling Sheetrock	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Gray/Brown, Heterogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Cellulose 30%, Non-fibrous 70%			

## PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
SR-023B 23	221102144-48 <b>Location:</b> Main Floor - East (Garage) - Wall And Ceiling Sheetrock	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Gray/Brown, Heterogeneous, Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Cellulose 15%, Non-fibrous 85%			
JC-024A 24	221102144-49 <b>Location:</b> Main Floor - East (Garage) - Joint Compound	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
JC-024B 24	221102144-50 <b>Location:</b> Main Floor - East (Garage) - Joint Compound	<b>No</b>	NAD (by NYS ELAP 198.1) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 100%			
CPMAS-025A 25	221102144-51 <b>Location:</b> Main Floor - East (Old Garage) - Yellow Carpet Mastic	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Yellow, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 20.2%			
CPMAS-025B 25	221102144-52 <b>Location:</b> Main Floor - East (Old Garage) - Yellow Carpet Mastic	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Yellow, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 14.2%			
CAULK-026A 26	221102144-53 <b>Location:</b> Main Floor - East (Old Garage) - Brown Caulk / Sealant At Floor	<b>Yes</b>	Trace (<0.25 % pc) <sup>1</sup> (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Anthophyllite <0.25 % pc <b>Other Material:</b> Non-fibrous 4.4%			

## PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
CAULK-026B 26	221102144-54 <b>Location:</b> Main Floor - East (Old Garage) - Brown Caulk / Sealant At Floor	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Brown, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 21.4%			
FGB-027A 27	221102144-55 <b>Location:</b> Attic - East - Rolled Fiberglass Insulation	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Silver/Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Fibrous glass 2%, Non-fibrous 15.2%			
FGB-027B 27	221102144-56 <b>Location:</b> Attic - East - Rolled Fiberglass Insulation	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Silver/Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Fibrous glass Trace, Non-fibrous 10.7%			
SCLK-028A 28	221102144-57 <b>Location:</b> Exterior - South - White Sill / Window Trim Caulk	Yes	Trace (<0.25 % pc) <sup>1</sup> (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Off-White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Anthophyllite <0.25 % pc <b>Other Material:</b> Fibrous Talc Trace, Non-fibrous 14.1%			
SCLK-028B 28	221102144-58 <b>Location:</b> Exterior - South - White Sill / Window Trim Caulk	Yes	Trace (<0.25 % pc) <sup>1</sup> (ELAP 400 PC) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Off-White, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> Anthophyllite <0.25 % pc <b>Other Material:</b> Fibrous Talc Trace, Non-fibrous 17.1%			
DCLK-029A 29	221102144-59 <b>Location:</b> Exterior - South Entry - White Door Trim Caulk	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Maroon, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 1.8%			



# PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
DCLK-029B 29	221102144-60 <b>Location:</b> Exterior - South Entry - White Door Trim Caulk	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Maroon, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 8.8%			
SHINGLE-030A 30	221102144-61 <b>Location:</b> Exterior - Main Roof (S) - Gray Granulated Shingle	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 36.4%			
SHINGLE-030B 30	221102144-62 <b>Location:</b> Exterior - Main Roof (S) - Gray Granulated Shingle	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 33.4%			
TP-031A 31	221102144-63 <b>Location:</b> Exterior - Main Roof (S) - Black Tar Paper At Wood Deck	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 25%			
TP-031B 31	221102144-64 <b>Location:</b> Exterior - Main Roof (S) - Black Tar Paper At Wood Deck	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 49.7%			
TP-032A 32	221102144-65 <b>Location:</b> Attic - West - Black Tar Paper (Residual)	No	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 7.1%			



## PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
TP-032B 32	221102144-66 <b>Location:</b> Attic - West - Black Tar Paper (Residual)	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 3.6%			
VB-033A 33	221102144-67 <b>Location:</b> Exterior - West Under Siding - Black Vapor Barrier	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 1.7%			
VB-033B 33	221102144-68 <b>Location:</b> Exterior - West Under Siding - Black Vapor Barrier	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 0.4%			
VB-034A 34	221102144-69 <b>Location:</b> Exterior - Front Door - Foundation Vapor Barrier	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 8.7%			
VB-034B 34	221102144-70 <b>Location:</b> Exterior - Front Door - Foundation Vapor Barrier	<b>No</b>	NAD (by NYS ELAP 198.6) by Jared C. Clarke on 10/18/21
<b>Analyst Description:</b> Black, Homogeneous, Non-Fibrous, Bulk Material <b>Asbestos Types:</b> <b>Other Material:</b> Non-fibrous 5.2%			

## PLM Bulk Asbestos Report

2021.213; QPK Design; NYS ODRA, Bellayre Ski Center,  
Admin - Admin. Office Bldg.

### Reporting Notes:

(1) Sample prepared for analysis by ELAP 198.6 method

Analyzed by: Jared C. Clarke

Date: 10/15/2021



Reviewed by: John P. Koubiadis



\*NAD/MSD = no asbestos detected; NA = not analyzed; NA/PS = not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000326, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab. This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

\_\_\_\_\_END OF REPORT\_\_\_\_\_

**ASBESTOS BULK SAMPLE CHAIN OF CUSTODY**

Project Number 2021.213  
Client QPK Design  
Address NYS OGRA  
Bellayre Ski Center - Admin  
Admin. OFFICE BLDG

Contact Name: Bridget Ruane  
Office Number: 315-476-1757  
Fax Number: 315-476-1764  
Email: [arcticlab@arcticent.com](mailto:arcticlab@arcticent.com)

SAMPLE ID	LOCATION	DESCRIPTION
CP-001AB	Basement - NE @ FURNACE	gray cement board ceiling
ING-002AB	Basement west / south	west / south interior window glazing
REG-003AB	Basement - B1	rolled fiberglass insulation
SR-004AB	middle office / South Exit	Sheetrock
JL-005AB	Kitchen / Front Entry	joint compound
CT-006AB	Basement - B2	12"x4" drop ceiling tile
CRJ-007ABC	Basement - B1	CANVAS PIPE JACKET @ FG INSULATION
FB-008ABC	Basement	Fire Brick
PP-009AB	Basement	Penetration Patch
VB-010AB	Basement	Black VIBRA VAPOR BARRIER
LINO-011AB	MAIN FLR. - KITCHEN / BACK ENTRY	Red BRICK LINOLEUM
SR-012AB	MAIN FLR. - WEST	Sheetrock WALLS / ceiling
JL-013AB	MAIN FLR. WEST	joint compound
FT-014AB	MAIN FLR. BATHRM	12" TAN FLOOR TILE
FTM-015AB	MAIN FLR. BATHRM	BLACK FLOOR TILE MASTIC / V.B.
CT-016AB	MAIN FLR. north office closet	12" ceiling tile (splined)
CBM-017AB	Kitchen	Cove Base Mastic (DARK BROWN)
CWTRT-018AB	MAIN FLR. - BATHRM	WHITE CERAMIC WALL TILE GROUT

**Analyzing Sequence:**

- 1 - Separate layers/mastics for individual analysis, if applicable.
- 2 - Determine method of analysis for PLM (198.1 or 198.6).
- 3 - If the PLM NOB result is equal to or greater than 1% asbestos, testing of material is complete. If the PLM NOB result is less than 1% asbestos, please analyze utilizing TEM.
- 4 - If submitted in series (A, B, C), please stop at first positive
- 5 - Report Results via e-mail

Sample Turnaround Time: 5 day

Sampled By: <u>DJR</u>	Date: <u>10/12/21</u>	Samples: <u>38</u> <u>170</u>
Shipped By: <u>Fedex</u>	Date:	
Received By Lab: <u>[Signature]</u>	Date: <u>10/14/21</u>	<u>1140</u>
Results e-mailed By: <u>[Signature]</u>	Date:	



**221102144**

**ASBESTOS BULK SAMPLE CHAIN OF CUSTODY**

Project Number 2021.213  
Client QPK Design  
Address NYS ORDA  
Bellayre Ski Center  
Administration Office Bldg.

Contact Name: Bridget Ruane  
Office Number: 315-476-1757  
Fax Number: 315-476-1764  
Email: [arcticlab@arcticent.com](mailto:arcticlab@arcticent.com)

SAMPLE ID	LOCATION	DESCRIPTION
TS-019AB	MAIN FLOOR - BATHRM	gray THINSET
WG-020AB	MAIN FLOOR - EAST	WHITE WINDOW GLAZE
VB-021AB	↓ closet	BLACK VAPOR BARRIER
VF-022AB	↓ closet	WOOD PATTERN VINYL FLOORING
SR-023AB	MAIN FLOOR - EAST (garage)	WALL & Ceiling SKEETROCK
JC-024AB	↓	JOINT compound
CPMAS-025AB	MAIN FLOOR - EAST (old garage)	yellow carpet MASTIC
CAULK-026AB	↓	WHITE CAULK / SEALANT @ FLOOR
027AB	ATTIC - EAST	ROLED FIBERGLASS INSULATION
SCLK-028AB	EXTERIOR - NORTH SOUTH	WHITE SILL / WINDOW TRIM CAULK
DCLK-029AB	EXTERIOR - SOUTH ENTRY	WHITE DOOR TRIM CAULK
SHINGLE-030AB	EXTERIOR - MAIN ROOF (S)	gray granulated Shingle
TP-031AB	↓	BLACK TAR PAPER @ WOOD DECK
TP-032AB	ATTIC - WEST	BLACK TAR PAPER (RESIDUAL)
VB-033AB	EXT. - WEST UNDER SIDING	BLACK VAPOR BARRIER
VB-034AB	Exterior Front Door	foundatray Vapor Barrier

**Analyzing Sequence:**

- 1 - Separate layers/mastics for individual analysis, if applicable.
- 2 - Determine method of analysis for PLM (198.1 or 198.6).
- 3 - If the PLM NOB result is equal to or greater than 1% asbestos, testing of material is complete. If the PLM NOB result is less than 1% asbestos, please analyze utilizing TEM.
- 4 - If submitted in series (A, B, C), please stop at first positive
- 5 - Report Results via e-mail

Sample Turnaround Time: 5 day

Sampled By: <u>Bru</u>	Date: <u>10/12/21</u>	Samples: <u>32 1 70</u>
Shipped By: <u>Fedex</u>	Date:	
Received By Lab: <u>[Signature]</u>	Date: <u>10/14/21</u>	<u>1140</u>
Results e-mailed By:	Date:	

**ATTACHMENT C**

**Lead Sample Laboratory Report**

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## Analysis Report

# Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117  
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

**Customer:** Arctic Enterprises, Inc. (4677)  
**Address:** 222 Teall Ave. Ste. 201  
Syracuse, NY 13210

**Order #:** 443359

**Attn:**  
**Project:** NYS ORDA  
**Location:** Belleayre Ski Center  
**Number:** 2021.213

**Matrix** Bulk, Paint  
**Received** 10/15/21  
**Analyzed** 10/18/21  
**Reported** 10/19/21

**PO Number:**

Sample ID	Cust. Sample ID	Location	Sample Date	Weight			
Parameter		Method		Total µg	% / Wt.	Conc.	RL*
443359-001	Paint-001	Basement BI	10/12/21	333 mg			
Lead		EPA 7000B		<10.0 µg	<0.00301 %	<30.1 mg/kg	30.0 mg/kg
443359-002	Paint-002	Main Flr	10/12/21	214 mg			
Lead		EPA 7000B		<10.0 µg	<0.00468 %	<46.8 mg/kg	46.7 mg/kg
443359-003	Paint-003	Ext N	10/12/21	324 mg			
Lead		EPA 7000B		41.1 µg	0.0127 %	127 mg/kg	30.9 mg/kg
443359-004	Paint-004	Ext N	10/12/21	320 mg			
Lead		EPA 7000B		177 µg	0.0553 %	553 mg/kg	31.3 mg/kg
443359-005	Tile-005	Main Flr Bathrm	10/12/21	539 mg			
Lead		EPA 7000B		<10.0 µg	<0.00186 %	<18.6 mg/kg	18.6 mg/kg

**Analyst:** SA  
443359-10/19/21 04:52 PM

*Kelly Muncy*

Reviewed By: **Kelly Muncy**  
Manager

### Federal Lead Paint Statute

Location	Level	Unit
Lead in paint by weig	0.50	%
Lead in paint as PP	5000	mg/kg

Minimum reporting limit: 10.0 µg. All internal QC parameters were met. Unusual sample conditions, if any, are described. Do not reproduce this report except in full. Values are reported to three significant figures. PPM = mg/kg | PPB = µg/kg. The test results apply to the sample as received. AIHA-LAP, LLC accredited for Lead (Lab ID 100527).



**ATTACHMENT D**

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**PCB Bulk Sample Laboratory Report**

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## Analysis Report

## Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117  
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

**Customer:** Arctic Enterprises, Inc. (4677)  
**Address:** 222 Teall Ave. Ste. 201  
Syracuse, NY 13210

**Order #:** 443360

**Matrix** Bulk  
**Received** 10/15/21  
**Reported** 10/22/21

**PO Number:**

**Attn:**  
**Project:** NYS ORDA  
**Location:** Bellayre Ski Center  
**Number:** 2021.213

Sample ID	Cust. Sample ID	Location	Result	RL*	Units	Analysis Date	Analyst
Parameter		Method					
443360-001	Caulk 026P	Main Floor East					
<b>Semi-volatile Organic Compounds</b>							
Aroclor - 1016		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1221		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1232		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1242		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1248		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1254		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1260		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1262		SW846 8082A	<476	475	µg/kg	10/21/21	AE
Aroclor - 1268		SW846 8082A	<476	475	µg/kg	10/21/21	AE
443360-002	DCLK 029P	Front Door Exterior					
<b>Semi-volatile Organic Compounds</b>							
Aroclor - 1016		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1221		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1232		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1242		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1248		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1254		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1260		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1262		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
Aroclor - 1268		SW846 8082A	<1370	1360	µg/kg	10/21/21	AE
443360-003	SCLK 028P	Exterior East Siding					
<b>Semi-volatile Organic Compounds</b>							
Aroclor - 1016		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1221		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1232		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1242		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1248		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1254		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and \*Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.



## Analysis Report

# Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117  
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

**Customer:** Arctic Enterprises, Inc. (4677)  
**Address:** 222 Teall Ave. Ste. 201  
Syracuse, NY 13210

**Order #:** 443360

**Matrix** Bulk  
**Received** 10/15/21  
**Reported** 10/22/21

**Attn:**

**Project:** NYS ORDA  
**Location:** Bellayre Ski Center  
**Number:** 2021.213

**PO Number:**

Sample ID	Cust. Sample ID	Location	Result	RL*	Units	Analysis Date	Analyst
Parameter		Method					
<b>443360-003</b>	SCLK 028P	Exterior East Siding					
Aroclor - 1260		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1262		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE
Aroclor - 1268		SW846 8082A	<1460	1460	µg/kg	10/21/21	AE

443360-10/22/21 12:17 PM

*Kelly Muncy*

Reviewed By: **Kelly Muncy**  
Manager

### Surrogate Recoveries

#### 443360-001 - PCB

DCB 74%  
TCMX 71%

#### 443360-002 - PCB

DCB 87%  
TCMX 78%

#### 443360-003 - PCB

DCB 64%  
TCMX 80%

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and \*Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.



## Analysis Report

# Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117  
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

**Customer:** Arctic Enterprises, Inc. (4677)  
**Address:** 222 Teall Ave. Ste. 201  
Syracuse, NY 13210

**Order #:** 443360

**Matrix** Bulk  
**Received** 10/15/21  
**Reported** 10/22/21

**Attn:**

**Project:** NYS ORDA  
**Location:** Bellayre Ski Center  
**Number:** 2021.213

**PO Number:**

Sample ID	Cust. Sample ID	Location	Result	RL*	Units	Analysis Date	Analyst
Parameter		Method					

### State Certifications

Method	Parameter	New York	Virginia
SW846 8082A	Aroclor - 1016	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1221	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1232	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1242	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1248	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1254	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1260	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1262	ELAP Certified	VELAP Certified
SW846 8082A	Aroclor - 1268	ELAP Certified	VELAP Certified

State	Certificate Number
New York	ELAP 63558
Virginia	VELAP 11259

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and \*Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results apply to the sample as received.

Page of

**ATTACHMENT E**

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**Sample Location & Positive Material Location Drawings**

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Kathy Hochul, Governor

Roberta Reardon, Commissioner

Olympic Regional Dev Authority

Matthew Lynch, Project Manager  
37 Church St  
Lake Placid NY 12946

Schedule Year 2022 through 2023  
Date Requested 04/10/2023  
PRC# 2023004078

Location Belleayre Mountain Ski Center  
Project ID# BEL.21.006  
Project Type Renovation of and addition to existing Admin building and new construction of new gondola maintenance building at Belleayre Mountain Ski Center. Includes carpentry, masonry, earthwork, electrical,

### PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2022 through June 2023. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website [www.labor.ny.gov](http://www.labor.ny.gov). Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

#### NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: \_\_\_\_\_ Date Cancelled: \_\_\_\_\_

Name & Title of Representative: \_\_\_\_\_

Phone: (518) 457-5589 Fax: (518) 485-1870  
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

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# General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

## Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

## Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission; a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion [online](#).

## Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the ["Request for a dispensation to work overtime" form \(PW30\)](#) and ["4 Day / 10 Hour Work Schedule" form \(PW 30.1\)](#).

## Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule from the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website [www.labor.ny.gov](http://www.labor.ny.gov).

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website [www.labor.ny.gov](http://www.labor.ny.gov).

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website [www.labor.ny.gov](http://www.labor.ny.gov).

## Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid



or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment. Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed \$100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds \$25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

### **Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties**

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

### **Withholding of Payments**

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

### **Summary of Notice Posting Requirements**

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers' compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

## **Apprentices**

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeymen in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyman's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

## **Interest and Penalties**

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

## **Debarment**

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

## **Criminal Sanctions**

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

## **Discrimination**

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b) ).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of \$50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c) ).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d) ).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

### **Workers' Compensation**

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

### **Unemployment Insurance**

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Olympic Regional Dev Authority

Matthew Lynch, Project Manager  
37 Church St  
Lake Placid NY 12946

Schedule Year 2022 through 2023  
Date Requested 04/10/2023  
PRC# 2023004078

Location Belleayre Mountain Ski Center  
Project ID# BEL.21.006  
Project Type Renovation of and addition to existing Admin building and new construction of new gondola maintenance building at Belleayre Mountain Ski Center. Includes carpentry, masonry, earthwork, electrical,

### Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

### Contractor Information

All information must be supplied

Federal Employer Identification Number: _____		
Name: _____		
Address: _____		
_____		
City: _____	State: _____	Zip: _____
Amount of Contract: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	<input type="checkbox"/> (01) General Construction	
Approximate Completion Date: ____/____/____	<input type="checkbox"/> (02) Heating/Ventilation	
	<input type="checkbox"/> (03) Electrical	
	<input type="checkbox"/> (04) Plumbing	
	<input type="checkbox"/> (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870  
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

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### **Social Security Numbers on Certified Payrolls:**

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

### **Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d**

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, <https://dol.ny.gov/public-work-and-prevailing-wage>

If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: [dol.misclassified@labor.ny.gov](mailto:dol.misclassified@labor.ny.gov).

### **Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)**

**Effective June 23, 2020**

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub*\*. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website [www.labor.ny.gov](http://www.labor.ny.gov) or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. \*In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

(12.20)

**To all State Departments, Agency Heads and Public Benefit Corporations  
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

**Budget Policy & Reporting Manual**

**B-610**

**Public Work Enforcement Fund**

*effective date December 7, 2005*

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**1. Purpose and Scope:**

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

**2. Background and Statutory References:**

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

**3. Procedures and Agency Responsibilities:**

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.



**To all State Departments, Agency Heads and Public Benefit Corporations**  
**IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor  
Administrative Finance Bureau-PWEF Unit  
Building 12, Room 464  
State Office Campus  
Albany, NY 12240

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.



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Required Notice under Article 25-B of the Labor Law

**Attention All Employees, Contractors and Subcontractors:  
You are Covered by the Construction Industry Fair Play Act**

**The law says that you are an employee unless:**

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

**It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.**

**Employee Rights:** If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

**Independent Contractors:** If you are an independent contractor, **you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

**Penalties** for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty**
  - First offense: Up to \$2,500 per employee
  - Subsequent offense(s): Up to \$5,000 per employee
- **Criminal Penalty**
  - First offense: Misdemeanor - up to 30 days in jail, up to a \$25,000 fine and debarment from performing public work for up to one year.
  - Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a \$50,000 fine and debarment from performing public work for up to 5 years.

**If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to [dol.misclassified@labor.ny.gov](mailto:dol.misclassified@labor.ny.gov). All complaints of fraud and violations are taken seriously. You can remain anonymous.**

**Employer Name:**

IA 999 (09/16)

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# Attention Employees

## THIS IS A: **PUBLIC WORK PROJECT**

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Chapter 629 of  
the Labor Laws  
of 2007:

**These wages are set by law and must be posted at the work site. They can also be found at:**

<https://dol.ny.gov/public-work-and-prevailing-wage>

If you feel that you have not received proper wages or benefits,  
please call our nearest office.\*

Albany	(518) 457-2744
Binghamton	(607) 721-8005
Buffalo	(716) 847-7159
Garden City	(516) 228-3915
New York City	(212) 932-2419
Newburgh	(845) 568-5156

Patchogue	(631) 687-4882
Rochester	(585) 258-4505
Syracuse	(315) 428-4056
Utica	(315) 793-2314
White Plains	(914) 997-9507

\* For New York City government agency construction projects, please  
contact the Office of the NYC Comptroller at (212) 669-4443, or  
[www.comptroller.nyc.gov](http://www.comptroller.nyc.gov) – click on Bureau of Labor Law.

Contractor Name: \_\_\_\_\_

Project Location: \_\_\_\_\_

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## Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is \$250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

### The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.*)
- Training roster, attendance record or other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

\*\*A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

### WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is \$3 million in Bronx, Kings, New York, Queens and, Richmond counties; \$1.5 million in Nassau, Suffolk and Westchester counties; and \$500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirements on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clinton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

## Introduction to the Prevailing Rate Schedule

### Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

#### Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

#### Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

#### Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

#### Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

#### Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

#### Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website ([www.labor.ny.gov](http://www.labor.ny.gov)) for current wage rate information.

#### Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor  
Bureau of Public Work  
State Office Campus, Bldg. 12  
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870



## Ulster County General Construction

### Boilermaker

04/01/2023

**JOB DESCRIPTION** Boilermaker

**DISTRICT** 4

#### ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

#### WAGES

Per Hour: 07/01/2022

Boilermaker \$ 63.38  
Repairs & Renovations 63.38

#### SUPPLEMENTAL BENEFITS

Per Hour:

Boilermaker 32% of hourly  
Repair \$ Renovations Wage Paid  
+ \$ 25.38

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

#### OVERTIME PAY

See (D, O) on OVERTIME PAGE

Repairs & Renovation see (B,E,Q)

#### HOLIDAY

Paid: See (8, 16, 23, 24) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 12, 15, 16, 22, 23, 24, 25) on HOLIDAY PAGE

NOTE: \*Employee must work in pay week to receive Holiday Pay.

\*\*Employee gets 4 times the hourly wage rate for working Labor Day.

#### REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

Apprentice(s) 32% of Hourly  
Wage Paid Plus  
Amount Below

1st Term	\$ 19.41
2nd Term	20.26
3rd Term	21.11
4th Term	21.96
5th Term	22.82
6th Term	23.68
7th Term	24.52

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

### Carpenter - Building / Heavy&Highway

04/01/2023

**JOB DESCRIPTION** Carpenter - Building / Heavy&Highway

**DISTRICT** 2

#### ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

#### PARTIAL COUNTIES

Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing west to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

## WAGES

Wages per hour:	07/01/2022	07/01/2023 Additional	07/01/2024 Additional
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	\$ 33.08	\$ 2.25*	\$2.25*

\*To be allocated at a later date

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 25.45

## OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

## HOLIDAY

Paid: See (5) on HOLIDAY PAGE

Overtime: See (5, 6, 16) on HOLIDAY PAGE

Notes:

When a holiday falls upon a Saturday, it shall be observed on the preceding Friday. When a holiday falls upon a Sunday, it shall be observed on the following Monday.

An employee taking an unexcused day off the regularly scheduled day before or after a paid Holiday shall not receive Holiday pay.

## REGISTERED APPRENTICES

Wages per hour (1300 hour terms at the following percentage of Journeyman's wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

1st term	\$ 16.97
2nd term	17.41
3rd term	19.40
4th term	19.84

2-42AtSS

## Carpenter - Building / Heavy&Highway

04/01/2023

**JOB DESCRIPTION** Carpenter - Building / Heavy&Highway

**DISTRICT** 11

## ENTIRE COUNTIES

Columbia, Dutchess, Orange, Sullivan, Ulster

## WAGES

WAGES (per hour)

Applies to Carpenter (Building/Heavy & Highway/Tunnel), Dockbuilder, Piledriver, Dive Tender, and Diver (Dry):

	07/01/2022	07/01/2023 Additional	07/01/2024 Additional	07/01/2025 Additional
Base Wage	\$ 34.68 + 4.80*	\$ 2.10**	\$ 2.16**	\$ 2.23**
Applies to Diver (Wet):				
Base Wage	\$ 50.00 + 4.80*	2.10**	2.16**	2.23**

\*For all hours paid straight or premium.

\*\*To be allocated at a later date.

SHIFT DIFFERENTIAL: When mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen percent (15%) of the base wage.

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 30.41

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

**HOLIDAY**

BUILDING:

Paid: See ( 1 ) on HOLIDAY PAGE.

Overtime: See ( 5, 6, 16, 25 ) on HOLIDAY PAGE.

- Holidays that fall on Sunday will be observed Monday.

**HEAVY&HIGHWAY/TUNNEL:**

Paid: See ( 5, 6, 25 ) on HOLIDAY PAGE

Overtime: See ( 5, 6 ) on HOLIDAY PAGE

- Holidays that fall on Sunday will be observed Monday

- Must be employed during the five (5) work days immediately preceding a holiday or during the five (5) work days following the paid holiday to receive holiday pay

- If Employee is entitled to a paid holiday, the Employee is paid the Holiday wage and supplemental benefits whether they work or not. If Employee works the Holiday, the Employee will receive holiday pay (including supplemental benefits), plus the applicable premium wage for working the Holiday. If Employee works in excess of 8 hours on Holiday, then benefits will be paid for any hours in excess of 8 hours.

**REGISTERED APPRENTICES**

1 Year terms at the following wage rates.

	1st	2nd	3rd	4th	5th
07/01/2022	\$ 17.34	\$ 20.81	\$ 22.54	\$ 24.28	\$ 27.74
	+2.57*	+2.57*	+2.57*	+2.57*	+2.57*

\*For all hours paid straight or premium

**SUPPLEMENTAL BENEFITS per hour:**

Apprentices (all terms)

07/01/2022 \$ 16.33

11-279.2B/H&H

**Carpenter - Floor Coverer**

04/01/2023

**JOB DESCRIPTION** Carpenter - Floor Coverer

**DISTRICT** 11

**ENTIRE COUNTIES**

Columbia, Sullivan, Ulster

**PARTIAL COUNTIES**

Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing west to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

**WAGES**

WAGES:(per hour)

	07/01/2022	07/01/2023	07/01/2024
		Additional	Additional
Carpet/Resilient Floor Coverer	\$ 34.68	\$ 2.10**	\$ 2.16**
	+4.80*		

\* For all hours paid straight or premium

\*\* To be allocated at a later date.

**SHIFT DIFFERENTIAL:** When mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen (15) percent of wage plus applicable benefits.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journey worker \$ 30.41

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

**HOLIDAY**

BUILDING:

Paid: See ( 1 ) on HOLIDAY PAGE.

Overtime: See ( 5, 6, 16, 25 ) on HOLIDAY PAGE.  
- Holidays that fall on Sunday will be observed Monday.

**HEAVY&HIGHWAY/TUNNEL:**

Paid: See ( 5, 6, 25 ) on HOLIDAY PAGE  
Overtime: See ( 5, 6 ) on HOLIDAY PAGE

- Holidays that fall on Sunday will be observed Monday

- Must be employed during the five (5) work days immediately preceding a holiday or during the five (5) work days following the paid holiday to receive holiday pay

- If Employee is entitled to a paid holiday, the Employee is paid the Holiday wage and supplemental benefits whether they work or not. If Employee works the Holiday, the Employee will receive holiday pay (including supplemental benefits), plus the applicable premium wage for working the Holiday. If Employee works in excess of 8 hours on Holiday, then benefits will be paid for any hours in excess of 8 hours.

**REGISTERED APPRENTICES**

1 Year terms at the following wage rates.

1st	2nd	3rd	4th	5th
\$ 17.34	\$ 20.81	\$ 22.54	\$ 24.28	\$ 27.74
+2.57*	+2.57*	+2.57*	+2.57*	+2.57*

\*For all hours paid straight or premium

**SUPPLEMENTAL BENEFITS per hour:**

All terms \$ 16.33

11-279.2Floor

**Electrician**

**04/01/2023**

**JOB DESCRIPTION** Electrician

**DISTRICT 11**

**ENTIRE COUNTIES**

Sullivan, Ulster

**PARTIAL COUNTIES**

Delaware: Only in the Townships of Andes, Harpersfield, Kortwright, Stamford, Bovina, Roxbury, Middletown and those portions of Colchester and Hancock south of the East Branch of the Delaware River.

Dutchess: All of the county except for the towns of Fishkill, East Fishkill, and Beacon.

Greene: That portion of the county south of a line following the south limits of the city of Catskill in a Westerly direction from the Hudson River to Highway 23A along 23A to the road following the Little Westkill and continuing along this road to Delaware County.

**WAGES**

Per hour:

Electrician Wireman/ Technician Electrical/Technician Projects under \$ 250,000.00	07/01/2022	04/01/2023	04/01/2024
	\$ 44.00	\$ 45.50	\$ 46.50
	+ 9.00*	+ 9.00*	+ 9.50*
over \$ 250,000.00	\$ 48.00	\$ 49.50	\$ 50.50
	+ 9.00*	+ 9.00*	+ 9.50*

**SHIFT DIFFERENTIAL:** On Public Work in New York State when shift work is mandated either in the job specifications or by the contracting agency, the following rates apply:

Shift worked between 4:30pm & 12:30am

Electrical/Technician Projects

under \$ 250,000.00	\$ 51.62	\$ 53.39	\$ 54.56
	+ 9.00*	+ 9.00*	+ 9.50*
over \$ 250,000.00	\$ 56.32	\$ 58.08	\$ 59.30
	+ 9.00*	+ 9.00*	+ 9.50*

Shift worked between 12:30am & 8:30am

Electrical/Technician Projects

under \$ 250,000.00	\$ 57.83	\$ 59.81	\$ 61.12
	+ 9.00*	+ 9.00*	+ 9.50*
over \$ 250,000.00	\$ 63.09	\$ 65.06	\$ 66.35
	+ 9.00*	+ 9.00*	+ 9.50*

\*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (subject to overtime premiums):

- On jobs where employees are required to work from boatswain chairs, swinging scaffolds, etc., forty (40) feet or more above the ground, or under compressed air, using Scottair packs, or gas masks, they shall receive an additional \$2.00 per hour above the regular straight time rate.

- Journeyman Wireman working in Shafts, Tunnels or on Barges: \$5.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman when performing welding or cable splicing: \$3.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman required to have a NYS Asbestos Certificate: \$3.00 above the Journeyman Wireman rate of pay
- Journeyman Wireman required to have a CDL: \$3.00 above the Journeyman Wireman rate of pay.

#### SUPPLEMENTAL BENEFITS

Per hour:	07/01/2022	04/01/2023	04/01/2024
Journeyman	\$ 27.68 plus 3% of straight or premium wage	\$ 28.68 plus 3% of straight or premium wage	\$ 29.68 plus 3% of straight or premium wage

#### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 13, 15, 16, 25) on HOLIDAY PAGE

When the holiday falls on a Saturday it is observed the Friday before. When the holiday falls on a Sunday it is observed on the Monday after.

#### REGISTERED APPRENTICES

##### WAGES:

(1)year terms at the following rates

07/01/2022	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 13.80	\$ 18.40	\$ 23.00	\$ 27.60	\$ 32.20	\$ 34.50
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
2nd Shift	16.19	21.59	26.99	32.38	37.78	40.48
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
3rd Shift	18.14	24.18	30.23	36.28	42.32	45.35
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
04/01/2023	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 14.25	\$ 19.00	\$ 23.75	\$ 28.50	\$ 33.25	\$ 35.63
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
2nd Shift	16.72	22.29	27.87	33.44	39.01	41.80
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
3rd Shift	18.73	24.97	31.22	37.46	43.70	46.83
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
04/01/2024	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 14.55	\$ 19.40	\$ 24.25	\$ 29.10	\$ 33.95	\$ 36.38
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
2nd Shift	17.08	22.77	28.47	34.16	39.85	42.70
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
3rd Shift	19.12	25.49	31.87	38.24	44.61	47.80
	+1.00*	+1.00*	+1.50*	+2.00*	+2.50*	+2.50*
09/01/2024	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 14.55	\$ 19.40	\$ 24.25	\$ 29.10	\$ 33.95	\$ 36.38
	+0.50*	+1.00*	+1.00*	+2.00*	+2.50*	+2.50*
2nd Shift	17.08	22.77	28.47	34.16	39.85	42.70
	+0.50*	+1.00*	+1.00*	+2.00*	+2.50*	+2.50*
3rd Shift	19.12	25.49	31.87	38.24	44.61	47.80
	+0.50*	+1.00*	+1.00*	+2.00*	+2.50*	+2.50*

\*For all hours paid straight or premium, not to be included in 3% calculation for supplemental benefits.

#### SUPPLEMENTAL BENEFITS per hour:

07/01/2022	
1st term	\$ 15.31 plus 3% of straight or premium wage
2nd term	\$ 15.81 plus 3% of straight or premium wage
3rd term	\$ 17.31 plus 3% of straight or premium wage
4th term	\$ 18.31 plus 3% of straight or premium wage
5th term	\$ 19.81 plus 3% of straight or premium wage
6th term	\$ 19.81 plus 3% of straight or premium wage

09/01/2022

1st term	\$ 16.28 plus 3% of straight or premium wage
2nd term	\$ 16.28 plus 3% of straight or premium wage
3rd term	\$ 18.28 plus 3% of straight or premium wage
4th term	\$ 18.78 plus 3% of straight or premium wage
5th term	\$ 20.28 plus 3% of straight or premium wage
6th term	\$ 20.28 plus 3% of straight or premium wage

09/01/2024

1st term	\$ 16.28 plus 3% of straight or premium wage
2nd term	\$ 17.78 plus 3% of straight or premium wage
3rd term	\$ 18.78 plus 3% of straight or premium wage
4th term	\$ 19.78 plus 3% of straight or premium wage
5th term	\$ 21.28 plus 3% of straight or premium wage
6th term	\$ 21.28 plus 3% of straight or premium wage

11-363/2

## Elevator Constructor

04/01/2023

**JOB DESCRIPTION** Elevator Constructor

**DISTRICT** 1

### ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

### PARTIAL COUNTIES

Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford

Rockland: Only the Township of Stony Point.

Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

### WAGES

Per Hour	07/01/2022	01/01/2023
Mechanic	\$ 64.63	\$ 67.35
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

Four (4), ten (10) hour days may be worked for New Construction and Modernization Work at straight time during a week, Monday thru Thursday or Tuesday thru Friday.

\*\*\*Four (4), ten (10) hour days are not permitted for Contract Work/Repair Work

NOTE - In order to use the '4 Day/10 Hour Work Schedule' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule', form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

### SUPPLEMENTAL BENEFITS

Per hour	07/01/2022	01/01/2023
Journeyman/Helper	\$ 36.885*	\$ 37.335*

(\*)Plus 6% of regular hourly if less than 5 years of service. Plus 8% of regular hourly rate if more than 5 years of service.

### OVERTIME PAY

See (D, O) on OVERTIME PAGE

### HOLIDAY

Paid: See (5, 6, 15, 16) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

### REGISTERED APPRENTICES

Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

(\*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyperson/Helper

1-138

**Glazier** **04/01/2023**

**JOB DESCRIPTION** Glazier

**DISTRICT 8**

**ENTIRE COUNTIES**

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

**WAGES**

Per hour:	7/01/2022	11/01/2022
Glazier	\$ 59.59	\$ 60.34
*Scaffolding	61.55	62.55
Glass Tinting &	30.11	30.11
Window Film		
**Repair & Maintenance	30.11	30.11

\*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

\*\*Repair & Maintenance- All repair & maintenance work on a particular building whenever performed, where the total cumulative contract value is under \$148,837. All Glass tinting, window film, regardless of material or intended use, and all affixing of decals to windows or glass.

**SUPPLEMENTAL BENEFITS**

Per hour:	7/01/2022	11/01/2022
Journeyworker	\$ 37.55	\$ 38.05
Glass tinting &	22.01	22.01
Window Film		
Repair & Maintenance	22.01	22.01

**OVERTIME PAY**

See (B,H,V) on OVERTIME PAGE.

For 'Repair & Maintenance' see (B, B2, I, S) on overtime page.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE

For 'Repair & Maintenance'

Paid: See(5, 6, 16, 25)

Overtime: See(5, 6, 16, 25)

**REGISTERED APPRENTICES**

Wage per hour:

(1) year terms at the following wage rates:

	7/01/2022	11/01/2022
1st term	\$ 21.15	\$ 21.45
2nd term	29.07	29.45
3rd term	35.20	35.65
4th term	47.38	47.98

Supplemental Benefits:

(Per hour)

1st term	\$ 17.15	\$ 17.35
2nd term	24.42	24.67
3rd term	27.06	27.36
4th term	32.15	32.55

8-1087 (DC9 NYC)

**Insulator - Heat & Frost** **04/01/2023**

**JOB DESCRIPTION** Insulator - Heat & Frost

**DISTRICT 1**



## ENTIRE COUNTIES

Albany, Columbia, Delaware, Essex, Fulton, Greene, Hamilton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, Sullivan, Ulster, Warren, Washington

## WAGES

Wages per hour	07/01/2022	05/01/2023 Additional	05/01/2024 Additional
Asbestos Worker*	\$ 38.40	+\$2.50	+\$2.00
Insulator*	38.40		
Firestopping Worker*	32.64		

(\*)On Mechanical Systems only.

On government mandated shift work additional 12% of wage for all shifts starting after 3:30 P.M.

## SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 24.42

## OVERTIME PAY

See (\*B1, \*\*Q) on OVERTIME PAGE

\*B1=Double time begins after 10 hours on Saturday

\*\*Q=Triple time on Labor Day if worked.

## HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

When a holiday falls on Sunday the following Monday shall be observed as the holiday.

## REGISTERED APPRENTICES

Wages per hour

one year terms at the following percentage of Journey person's wage.

1st	2nd	3rd	4th
60 %	70 %	80 %	90 %

Supplemental Benefits per hour worked:

Apprentices \$ 24.42

1-40

## Ironworker

04/01/2023

**JOB DESCRIPTION** Ironworker

**DISTRICT** 11

## ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster

## WAGES

Per hour:

	07/01/2022	07/01/2023 Additional
Structural	\$ 51.38	\$ 2.34*
Reinforcing*	51.38	2.34*
Ornamental	51.38	2.34*
Chain Link Fence	51.38	2.34*

\* To be allocated at a later date.

NOTE: For Reinforcing classification ONLY, Ironworker 4-46Reinf rates apply in Rockland County's southern section (south of Convent Road and east of Blue Hills Road).

On Government Mandated Irregular Work Days or Shift Work, the following wage will be paid:

1st Shift	\$ 51.38
2nd Shift	65.79
3rd Shift	70.59

\*\*Note- Any shift that works past 12:00 midnight shall receive the 3rd shift differential.

## SUPPLEMENTAL BENEFITS

Per hour:



Journeyman \$ 42.71

**OVERTIME PAY**

See (B1, Q, V) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16) on HOLIDAY PAGE

If a holiday falls on Saturday, it will be observed Friday. If a holiday falls on Sunday, it will be observed Monday.

**REGISTERED APPRENTICES**

Wages:

(1) year terms at the following wage:

	1st yr	2nd yr	3rd yr	4th yr
1st Shift	\$ 25.69	\$ 30.83	\$ 35.97	\$ 41.10
2nd Shift	35.34	41.44	47.53	53.61
3rd Shift	38.56	44.97	51.38	57.77

Supplemental Benefits per hour:

1st year	\$ 36.71
2nd year	37.91
3rd year	39.11
4th year	40.31

11-417

**Laborer - Building**

**04/01/2023**

**JOB DESCRIPTION** Laborer - Building

**DISTRICT** 11

**ENTIRE COUNTIES**

Orange, Sullivan, Ulster

**PARTIAL COUNTIES**

Delaware: Only the Townships of Andes, Bovina, Davenport, Delhi, Franklin, Hamden, Harpersfield, Kortright, Meredith, Middletown, Roxbury, and Stamford.

Greene: Only the Township of Catskill.

**WAGES**

GENERAL LABORER: flag person, portable generator tender, portable pump tender, temporary heat tender, chipping hammer, acoustic pump, mixer, concrete laborer, demolition, demo saw, general cleanup, landscaping, mason tender, jackhammer, pavement breaker, pressure blasting, signalperson, buggies, wrecking, chain saw, vacuums, cutting torch, discharge pipe, mega mixer, pump crete machine.

INTERMEDIATE LABORER: excavation, grading, backfilling, tampers, walk behind roller, when OSHA or contractor requires negative respirator.

PREMIUM LABORER: Environmental work, asbestos abatement, toxic and hazardous abatement, lead abatement work, mold remediation and biohazards.

WAGES:(per hour)

07/01/2022

General	\$ 40.40
Intermediate	42.30
Premium	45.30

These rates will cover all work within five feet of the building foundation line.

Shift Differential: On all Governmental mandated irregular or off shift work, an additional 25% of wage is required. The 25% shift differential will be paid on public works contract for shifts or irregular workdays outside the normal working hours for 2nd and 3rd shifts or irregular work day or when mandated or required by state, federal, county, local or other governmental agency contracts.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 31.65
Shift	38.61

**OVERTIME PAY**

See (B, E, E5, Q) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Holidays that fall on Saturday shall be observed on Friday, when holidays fall on Sunday they shall be observed on Monday.

**REGISTERED APPRENTICES**

1000 hour terms at the following wage rates:

1st term	\$ 22.22
2nd term	26.26
3rd term	30.30
4th term	34.34

Supplemental Benefits per hour:

Apprentices	\$ 27.03
Shift	32.71

11-17.BA

## **Laborer - Heavy&Highway**

**04/01/2023**

**JOB DESCRIPTION** Laborer - Heavy&Highway

**DISTRICT** 11

### **ENTIRE COUNTIES**

Orange, Sullivan, Ulster

### **PARTIAL COUNTIES**

Delaware: Only the Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Meredith, and Davenport.

Greene: Only the Township of Catskill.

### **WAGES**

CLASS 1: Flagperson, gateperson.

CLASS 2: General laborer, chuck tender, nipper, powder carrier, magazine tender, concrete men, vibrator men, mason tender, mortar men, traffic control, custodial work, temporary heat, pump men, pit men, dump men, asphalt men, joint setter, signalman, pipe men, riprap, dry stone layers, jack hammer, bush hammer, pavement breaker, men on mulching & seeding machines, all seeding & sod laying, landscape work, walk behind self-propelled power saws, grinder, walk behind rollers and tampers of all types, burner men, filling and wiring of baskets for gabion walls, chain saw operator, railroad track laborers, power buggy, plaster & acoustic pump, power brush cutter, retention liners, walk behind surface planer, chipping hammer, manhole, catch basin or inlet installing, mortar mixer, laser men. \*Micropaving and crack sealing.

CLASS 3: Asbestos, toxic, bio remediation and phyto-remediation, lead or hazardous materials abatement when certification or license is required, Drilling Equipment Only Where a Separate Air Compressor Unit Supplies Power.

CLASS 4: Asphalt screedman, blaster, all laborers involved in pipejacking and boring operations not exceeding more than 10 feet into pipe, boring or drilled area.

WAGES: (per hour)	07/01/2022	06/01/2023	06/01/2024 Additional
Class 1	\$ 39.05	\$ 40.80	\$ 2.65**
Class 2	43.30	44.80	2.35**
Class 3	47.75	49.40	2.45**
Class 4	52.90	54.70	2.20**

\* When laborers are performing micro paving, crack sealing or slurry application when not part of asphalt prep operations laborers shall receive an additional \$2.50 per hour over rate.

\*\*To be allocated at a later date.

**SHIFT DIFFERENTIAL:** Night work and irregular shift require 20% increase on wages for all Government mandated night and irregular shift work.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

### **SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 31.53	\$ 32.28
Shift	37.09	37.96

### **OVERTIME PAY**

See (B, E, P, \*R, \*\*S, \*\*\*T, X) on OVERTIME PAGE

\*For Mon-Fri Holidays, Double Benefits to be paid for all hours worked.

\*\*For Saturday Holidays, Two and one Half Benefits for all hours worked.

\*\*\*For Sunday Holidays, Triple Benefits for all hours worked.

### **HOLIDAY**

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE

To be eligible for a paid holiday, an employee must work at least two (2) days in the calendar week or payroll week in which the holiday falls.

### REGISTERED APPRENTICES

(1000) hour terms at the following wages.

	07/01/2022
1st term	\$ 22.22
2nd term	26.26
3rd term	30.30
4th term	34.34

Supplemental Benefits per hour:

All Terms Regular	\$ 27.03
All Terms Shift Rate	31.57

11-17.1H/H

### Laborer - Tunnel

04/01/2023

**JOB DESCRIPTION** Laborer - Tunnel

**DISTRICT** 11

### ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

### PARTIAL COUNTIES

Chenango: Townships of Columbus, Sherburne and New Berlin.

Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

### WAGES

Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

	07/01/2022
Class 1	\$ 53.45
Class 2	55.60
Class 4	62.00
Class 5	44.80

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

### SUPPLEMENTAL BENEFITS

Per hour:

Benefit 1	\$ 34.45
Benefit 2	51.60
Benefit 3	68.75

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, and Saturday hours worked.

Benefit 3 applies to Sunday and Holiday hours worked.

### OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

### HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

## REGISTERED APPRENTICES

FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

### Lineman Electrician

04/01/2023

#### JOB DESCRIPTION Lineman Electrician

DISTRICT 6

#### ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

#### WAGES

A Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors, assembly of all electrical materials, conduit, pipe, or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

Below rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of fiber optic cable where no other construction trades are or have been involved. (Ref #14.01.01)

Per hour:	07/01/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 56.00	\$ 57.40	\$ 58.90
Crane, Crawler Backhoe	56.00	57.40	58.90
Welder, Cable Splicer	56.00	57.40	58.90
Digging Mach. Operator	50.40	51.66	53.01
Tractor Trailer Driver	47.60	48.79	50.07
Groundman, Truck Driver	44.80	45.92	47.12
Equipment Mechanic	44.80	45.92	47.12
Flagman	33.60	34.44	35.34

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work". (Ref #14.02.01-A)

Lineman, Technician	\$ 56.00	\$ 57.40	\$ 58.90
Crane, Crawler Backhoe	56.00	57.40	58.90
Cable Splicer	61.60	63.14	64.79
Certified Welder			
Pipe Type Cable	58.80	60.27	61.85
Digging Mach. Operator	50.40	51.66	53.01
Tractor Trailer Driver	47.60	48.79	50.07
Groundman, Truck Driver	44.80	45.92	47.12
Equipment Mechanic	44.80	45.92	47.12
Flagman	33.60	34.44	35.34

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates apply on switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. (Ref #14.02.01-B)

Lineman, Tech, Welder	\$ 57.32	\$ 58.72	\$ 60.22
Crane, Crawler Backhoe	57.32	58.72	60.22
Cable Splicer	63.05	64.59	66.24

Certified Welder -			
Pipe Type Cable	60.19	61.66	63.23
Digging Mach. Operator	51.59	52.85	54.20
Tractor Trailer Driver	48.72	49.91	51.19
Groundman, Truck Driver	45.86	46.98	48.18
Equipment Mechanic	45.86	46.98	48.18
Flagman	34.39	35.23	36.13

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all overhead and underground transmission line work & fiber optic cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction. (Ref #14.03.01)

Lineman, Tech, Welder	\$ 58.51	\$ 59.91	\$ 61.41
Crane, Crawler Backhoe	58.51	59.91	61.41
Cable Splicer	58.51	59.91	61.41
Digging Mach. Operator	52.66	53.92	55.27
Tractor Trailer Driver	49.73	50.92	52.20
Groundman, Truck Driver	46.81	47.93	49.13
Equipment Mechanic	46.81	47.93	49.13
Flagman	35.11	35.95	36.85

Additional \$1.00 per hour for entire crew when a helicopter is used.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM to 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM to 1:00 AM REGULAR RATE PLUS 17.3 %
3RD SHIFT	12:30 AM to 9:00 AM REGULAR RATE PLUS 31.4 %

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

#### SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	07/01/2022	05/01/2023	05/06/2024
Journeyman	\$ 25.90	\$ 26.40	\$ 26.90
	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid
Journeyman Lineman or Equipment Operators with Crane License	\$ 27.90	\$ 29.40	\$ 30.90
	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

#### OVERTIME PAY

See (B, E, Q.) on OVERTIME PAGE. \*Note\* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

#### HOLIDAY

Paid	See ( 5, 6, 8, 13, 25 ) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See ( 5, 6, 8, 13, 25 ) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

#### REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st 60%	2nd 65%	3rd 70%	4th 75%	5th 80%	6th 85%	7th 90%
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SUPPLEMENTAL BENEFITS per hour:

07/01/2022	05/01/2023	05/06/2024
\$ 25.90 *plus 7% of the hourly wage paid	\$ 26.40 *plus 7% of the hourly wage paid	\$ 26.90 *plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a

**Lineman Electrician - Teledata**

**04/01/2023**

**JOB DESCRIPTION** Lineman Electrician - Teledata

**DISTRICT 6**

**ENTIRE COUNTIES**

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

**WAGES**

Per hour:

For outside work, stopping at first point of attachment (demarcation).

	07/01/2022	01/01/2023	01/01/2024	01/01/2025
Cable Splicer	\$ 36.28	\$ 37.73	\$ 39.24	\$ 40.81
Installer, Repairman	\$ 34.43	\$ 35.81	\$ 37.24	\$ 38.73
Teledata Lineman	\$ 34.43	\$ 35.81	\$ 37.24	\$ 38.73
Tech., Equip. Operator	\$ 34.43	\$ 35.81	\$ 37.24	\$ 38.73
Groundman	\$ 18.25	\$ 18.98	\$ 19.74	\$ 20.53

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

**SUPPLEMENTAL BENEFITS**

Per hour:	07/01/2022	01/01/2023	01/01/2024	01/01/2025
Journeyman	\$ 5.14 *plus 3% of the hourly wage paid	\$ 5.14 *plus 3% of the hourly wage paid	\$ 5.14 *plus 3% of the hourly wage paid	\$ 5.14 *plus 3% of the hourly wage paid

\*The 3% is based on the hourly wage paid, straight time rate or premium rate.

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

**Lineman Electrician - Traffic Signal, Lighting**

**04/01/2023**

**JOB DESCRIPTION** Lineman Electrician - Traffic Signal, Lighting

**DISTRICT 6**

**ENTIRE COUNTIES**

Columbia, Dutchess, Orange, Putnam, Rockland, Ulster



## WAGES

Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.  
(Ref #14.01.02)

Per hour:	07/01/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 49.47	\$ 50.60	\$ 51.82
Crane, Crawler Backhoe	49.47	50.60	51.82
Certified Welder	51.94	53.13	54.41
Digging Machine	44.52	45.54	46.64
Tractor Trailer Driver	42.05	43.01	44.05
Groundman, Truck Driver	39.58	40.48	41.46
Equipment Mechanic	39.58	40.48	41.46
Flagman	29.68	30.36	31.09

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

## SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	07/01/2022	05/01/2023	05/06/2024
Journeyman	\$ 25.90	\$ 26.40	\$ 26.90
	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid
Journeyman Lineman or Equipment Operators with Crane License	\$ 27.90	\$ 29.40	\$ 30.90
	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

## OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE. \*Note\* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

## HOLIDAY

Paid: See ( 5, 6, 8, 13, 25 ) on HOLIDAY PAGE and Governor of NYS Election Day.

Overtime: See ( 5, 6, 8, 13, 25 ) on HOLIDAY PAGE and Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

### REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2022	05/01/2023	05/06/2024
\$ 25.90 *plus 7% of the hourly wage paid	\$ 26.40 *plus 7% of the hourly wage paid	\$ 26.90 *plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aReg8LT

### Lineman Electrician - Tree Trimmer

04/01/2023

**JOB DESCRIPTION** Lineman Electrician - Tree Trimmer

**DISTRICT** 6

### ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

### WAGES

Applies to line clearance, tree work and right-of-way preparation on all new or existing energized overhead or underground electrical, telephone and CATV lines. This also would include stump removal near underground energized electrical lines, including telephone and CATV lines.

Per hour:	07/01/2022	01/01/2023
Tree Trimmer	\$ 28.25	\$ 29.80
Equipment Operator	24.98	26.35
Equipment Mechanic	24.98	26.35
Truck Driver	20.80	21.94
Groundman	17.13	18.07
Flag person	13.20*	13.20*

\*NOTE- Rate effective 12/31/2022: \$14.20

### SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

	07/01/2022	01/01/2023
Journeyman	\$ 10.23 *plus 3% of the hourly wage paid	\$ 10.48 *plus 3% of the hourly wage paid

\* The 3% is based on the hourly wage paid, straight time rate or premium rate.

### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

### HOLIDAY

Paid: See (5, 6, 8, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE

NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday.

All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT



**Mason - Building**

**04/01/2023**

**JOB DESCRIPTION** Mason - Building

**DISTRICT** 11

**ENTIRE COUNTIES**

Dutchess, Sullivan, Ulster

**PARTIAL COUNTIES**

Orange: Entire county except the Township of Tuxedo.

**WAGES**

Per hour:

07/01/2022 06/01/2023

Bricklayer	\$ 43.94	\$ 45.00
Cement Mason	43.94	45.00
Plasterer/Stone Mason	43.94	45.00
Pointer/Caulker	43.94	45.00

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 36.44	\$ 37.39
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**OVERTIME PAY**

Cement Mason See ( B, E, Q, W ) on OVERTIME PAGE.

All Others See ( B, E, Q ) on OVERTIME PAGE.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

**REGISTERED APPRENTICES**

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5du-b

**Mason - Building**

**04/01/2023**

**JOB DESCRIPTION** Mason - Building

**DISTRICT** 9

**ENTIRE COUNTIES**

Dutchess, Orange, Putnam, Sullivan, Ulster

**WAGES**

Per hour:

07/01/2022 12/05/2022 06/05/2023

Building: Additional

Tile, Marble, & Terrazzo

Mechanic/Setter	\$ 56.42	\$ 56.96	\$ 0.64
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### SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:	\$ 22.66*	\$ 22.76*
	+ \$7.67	+ \$7.67

\* This portion of benefits subject to same premium rate as shown for overtime wages.

### OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

Double time rate applies after 10 hours

### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

### REGISTERED APPRENTICES

Wage per hour:

(Counties of Orange & Putnam)

750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6751-
750	1500	2250	3000	3750	4500	5250	6000	6750	7500
07/01/2022									
\$21.23	\$26.11	\$33.26	\$38.14	\$41.67	\$45.04	\$48.60	\$53.47	\$56.25	\$60.33
12/05/2022									
\$21.47	\$26.39	\$33.60	\$38.52	\$42.06	\$45.47	\$49.05	\$53.96	\$56.77	\$60.90

Supplemental Benefits per hour:

(Counties of Orange & Putnam)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
07/01/2022									
\$12.55*	\$12.55*	\$15.16*	\$15.16*	\$16.75*	\$18.30*	\$19.35*	\$19.40*	\$17.45*	\$22.80*
+\$0.69	+\$0.74	+\$0.84	+\$0.88	+\$1.28	+\$1.33	+\$1.70	+\$1.75	+\$5.90	+\$6.42
12/05/2022									
\$12.55*	\$12.55*	\$15.16*	\$15.16*	\$16.16*	\$17.66*	\$18.66*	\$18.66*	\$16.66*	\$21.91*
+\$0.71	+\$0.76	+\$0.86	+\$0.90	+\$1.32	+\$1.37	+\$1.76	+\$1.81	+\$5.96	+\$6.51

Wages per hour:

(Counties of Dutchess, Sullivan, Ulster)

750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-	751-	1501-	2251-	3001-	3751-	4501-	5251-	6001-	6751-
750	1500	2250	3000	3750	4500	5250	6000	6750	7500
07/01/2022									
\$19.83	\$23.92	\$25.89	\$29.98	\$32.74	\$36.32	\$39.61	\$42.71	\$44.31	\$47.73
12/05/2022									
\$20.72	\$24.92	\$27.01	\$31.22	\$34.05	\$37.76	\$41.11	\$44.32	\$46.01	\$49.65

Supplemental Benefits per hour:

(Counties of Dutchess, Sullivan, Ulster)

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
07/01/2022									
\$12.55*	\$12.55*	\$14.66*	\$14.66*	\$15.60*	\$16.16*	\$16.66*	\$17.66*	\$15.66*	\$20.41*
+\$0.65	+\$0.69	+\$0.74	+\$0.78	+\$1.15	+\$1.19	+\$1.53	+\$1.57	+\$6.09	+\$6.18
12/05/2022									
\$12.55*	\$12.55*	\$14.66*	\$14.66*	\$15.66*	\$16.16*	\$16.66*	\$17.66*	\$15.66*	\$20.41*
+\$0.70	+\$0.74	+\$0.79	+\$0.83	+\$1.24	+\$1.28	+\$1.67	+\$1.71	+\$6.27	+\$6.36

\* This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/52B

<b>Mason - Building</b>	<b>04/01/2023</b>
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**JOB DESCRIPTION** Mason - Building

**DISTRICT** 9

**ENTIRE COUNTIES**

Dutchess, Orange, Putnam, Sullivan, Ulster

**WAGES**

Per hour: 07/01/2022 12/05/2022 06/05/2023

Building

Additional

Tile, Marble, &  
Terrazzo Finisher

\$ 46.38

\$ 46.78

\$ 0.54

**SUPPLEMENTAL BENEFITS**

Journeyworker:

Per Hour

\$ 19.76\*

\$ 19.91\*

+ \$7.54

+ \$7.54

\*This portion of benefits subject to same premium rate as shown for overtime wages

**OVERTIME PAY**

See (A, \*E, Q) on OVERTIME PAGE

Double time rate applies after 10 hours on Saturdays.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88B-tf

<b>Mason - Building</b>	<b>04/01/2023</b>
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**JOB DESCRIPTION** Mason - Building

**DISTRICT** 9

**ENTIRE COUNTIES**

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

**WAGES**

Wages: 07/01/2022

Marble Cutters & Setters

\$ 62.17

**SUPPLEMENTAL BENEFITS**

Per Hour:

Journeyworker

\$ 38.27

**OVERTIME PAY**

See (B, E, Q, V) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

Wage Per Hour:

750 hour terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
-----	-----	-----	-----	-----	-----	-----	-----	-----	------

1- 750	751- 1500	1501- 2250	2251- 3000	3001- 3750	3751- 4500	4501- 5250	5251- 6000	6001- 6751	6751- 7500
\$ 24.88	\$ 27.97	\$ 31.08	\$ 34.17	\$ 37.29	\$ 40.39	\$ 43.51	\$ 46.61	\$ 52.82	\$ 59.05

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 20.55	\$ 22.04	\$ 23.52	\$ 25.01	\$ 26.47	\$ 27.96	\$ 29.42	\$ 30.91	\$ 33.86	\$ 36.81

9-7/4

## Mason - Heavy&Highway

04/01/2023

**JOB DESCRIPTION** Mason - Heavy&Highway

**DISTRICT** 11

### ENTIRE COUNTIES

Dutchess, Sullivan, Ulster

### PARTIAL COUNTIES

Orange: Entire county except the Township of Tuxedo.

### WAGES

Per hour:

07/01/2022

06/01/2023

Bricklayer	\$ 44.44	\$ 45.50
Cement Mason	44.44	45.50
Marble/Stone Mason	44.44	45.50
Plasterer	44.44	45.50
Pointer/Caulker	44.44	45.50

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

**SHIFT WORK:** When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 36.44	\$ 37.39
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### OVERTIME PAY

Cement Mason See ( B, E, Q, W )

All Others See ( B, E, Q )

### HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

- Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

- Supplemental Benefits are not paid for paid Holiday

- If Holiday is worked, Supplemental Benefits are paid for hours worked.

- Whenever an Employee works within three (3) calendar days before a holiday, the Employee shall be paid for the Holiday.

### REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5du-H/H

**Millwright**

**04/01/2023**

**JOB DESCRIPTION** Millwright

**DISTRICT 6**

**ENTIRE COUNTIES**

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

**WAGES**

THE FOLLOWING RATE APPLIES TO ANY GAS/STEAM TURBINE AND OR RELATED COMPONENT WORK, INCLUDING NEW INSTALLATIONS OR MAINTENANCE AND ANY/ALL WORK PERFORMED WITHIN THE PROPERTY LIMITS OF A NUCLEAR FACILITY.

Per hour: 07/01/2022

Millwright - Power Generation \$ 41.23

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):

- Certified Welders shall receive an additional \$1.75 per hour provided he/she is directed to perform certified welding.
- If a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive an additional \$1.50 per hour.
- An employee performing the work of a machinist shall receive an additional \$2.00 per hour. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.
- When performing work underground at 500 feet and below, the employee shall receive an additional \$1.00 per hour.

**SUPPLEMENTAL BENEFITS**

Per hour paid:

Journeyman \$ 26.72\*

\*NOTE: Subject to OT premium

**OVERTIME PAY**

See (B, E, \*E2, Q, V) on OVERTIME PAGE

\*NOTE - Saturday may be used as a make-up day and worked at the straight time rate of pay during a work week when conditions such as weather, power failure, fire, or natural disaster prevent the performance of work on a regular scheduled work day.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

NOTE: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

**REGISTERED APPRENTICES**

WAGES per hour: One year terms at the following percentage of Journeyman's wage:

Appr. 1st year	65 %*
Appr. 2nd year	75 %*
Appr. 3rd year	80 %*
Appr. 4th year	90 %*

\*NOTE: Additional premium for the following work listed below:

Certified Welder	\$ 1.75
Hazardous Waste Work	1.50
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	\$ 11.83
Appr. 2nd year	22.26
Appr. 3rd year	23.74
Appr. 4th year	25.24

**Millwright**

**04/01/2023**

**JOB DESCRIPTION** Millwright

**DISTRICT** 2

**ENTIRE COUNTIES**

Sullivan, Ulster

**WAGES**

Per hour: 07/01/2022

Building	\$ 39.14
Heavy & Highway	41.14

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):

- Certified Welders shall receive \$1.75 per hour in addition to the current Millwrights rate provided he/she is directed to perform certified welding.

- For Building work if a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive a \$1.50 premium per hour for Building work.

- For Heavy & Highway work if the work is performed at a State or Federally designated hazardous waste site where employees are required to wear protective gear, the employees performing the work shall receive an additional \$2.00 per hour over the millwright heavy and highway wage rate for all hours worked on the day protective gear was worn.

- An employee performing the work of a machinist shall receive \$2.00 per hour in addition to the current Millwrights rate. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.

- When performing work underground at 500 feet and below, the employee shall receive an additional \$1.00.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 30.39
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**OVERTIME PAY**

See (B, E, \*E2, Q) on OVERTIME PAGE

\*Note - Saturday may be used as a make-up day and worked at the straight time rate of pay during a work week when conditions such as weather, power failure, fire, or natural disaster prevent the performance of work on a regular scheduled work day.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Note: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

**REGISTERED APPRENTICES**

Wages per hour:

(1)year terms at the following percentage of Journeyman's rate.

1st	2nd	3rd	4th
65%	75%	80%	90%

Supplemental Benefits per hour:

Apprentices:	
1st term	\$ 13.35
2nd term	25.28
3rd term	26.98
4th term	28.69

2-1163.3

**Operating Engineer - Building / Heavy&Highway**

**04/01/2023**

**JOB DESCRIPTION** Operating Engineer - Building / Heavy&Highway

**DISTRICT** 11

**ENTIRE COUNTIES**

Delaware, Orange, Rockland, Sullivan, Ulster

**WAGES**

CLASS A5: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with 140ft boom and over.

CLASS A4: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with 100ft to 139ft boom.

CLASS A3: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes with a boom under 100ft.

CLASS A2: Cranes, Derricks and Pile Drivers less than 100 tons with 140ft boom and over.

CLASS A1: Cranes, Derricks and Pile Drivers less than 100 tons with a 100ft to 139ft boom.

CLASS A: Cranes, Derricks and Pile Drivers less than 100 tons with a boom under 100ft.; Autograde Combination Subgrader, Base Material Spreader and Base Trimmer (CMI and Similar Types); Autograde Pavement profiler (CMI and Similar Types); Autograde Pavement Profiler and Recycle type (CMI and Similar Type); Autograde Placer-Trimmed-Spreader Comb. (CMI & Similar types); Autograde Slipform Paver (CMI & Similar Types); Central Power Plants (all types); Chief of Party; Concrete Paving Machines; Drill (Bauer, AML and Similar Types); Drillmaster, Quarrymaster (Down the Hole Drill), Rotary Drill, Self-Propelled Hydraulic Drill, Self-Powered Drill; Draglines; Elevator Graders; Excavator; Front End Loaders (5 yds. and over); Gradalls; Grader-Rago; Helicopters (Co-Pilot); Helicopters (Communications Engineer); Juntann Pile Driver; Locomotive (Large); Mucking Machines; Pavement & Concrete Breaker, i.e., Superhammer & Hoe Ram; Roadway Surface Grinder; Prentice Truck; Scooper (Loader and Shovel); Shovels; Tree Chopper with Boom; Trench Machines (Cable Plow); Tunnel Boring Machine; Vacuum Truck

CLASS B: "A" Frame; Backhoe (Combination); Boom Attachment on Loaders (Rate based on size of Bucket) not applicable to Pipehook; Boring and Drilling Machines; Brush Chopper, Shredder and Tree Shredder, Tree Shearer; Bulldozer (Fine Grade); Cableways; Carryalls; Concrete Pump; Concrete Pumping System, Pump Concrete and Similar Types; Conveyors (125 ft. and over); Drill Doctor (duties incl. Dust Collector Maintenance); Front End Loaders (2 yds. but less than 5 yds.); Graders (Finish); Groove Cutting Machine (Ride on Type); Heater Planer; Hoists (all type Hoists, shall also include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft Caisson, Snorkel Roof, and/or any other Similar Type Hoisting Machines, portable or stationary, except Chicago Boom Type); Long Boom Rate to be applied if Hoist is "Outside Material Tower Hoist"; Hydraulic Cranes-10 tons and under; Hydraulic Dredge; Hydro-Axe; Hydro Blaster; Jacks-Screw Air Hydraulic Power Operated Unit or Console Type (not hand Jack or Pile Load Test Type); Log Skidder; Pans; Pavers (all) concrete; Plate and Frame Filter Press; Pumpcrete Machines, Squeezcrete & Concrete Pumping (regardless of size); Scrapers; Side Booms; "Straddle" Carrier-Ross and similar types; Winch Trucks (Hoisting); Whip Hammer

CLASS C: Asphalt Curbing Machine; Asphalt Plant Engineer; Asphalt Spreader; Autograde Tube Finisher and Texturing Machine (CMI & Similar types); Autograde Curecrete Machine (CMI & Similar Types); Autograde Curb Trimmer & Sidewalk, Shoulder, Slipform (CMI & Similar Types); Bar Bending Machines (Power); Batchers, Batching Plant and Crusher on Site, Belt Conveyor Systems; Boom Type Skimmer Machines; Bridge Deck Finisher; Bulldozer (except fine grade); Car Dumpers (Railroad); Compressor and Blower Type Units (used independently or mounted on dual purpose Trucks, on Job Site or in conjunction with jobsite, in Loading and Unloading of Concrete, Cement, Fly Ash, Instantcrete, or Similar Type Materials); Compressors (2 or 3 in Battery); Concrete Finishing Machines; Concrete cleaning decontamination machine operator; Concrete Saws and Cutters (Ride-on type); Concrete Spreaders (Hetzl, Rexomatic and Similar Types); Concrete Vibrators; Conveyors (under 125 feet); Crushing Machines; Directional Boring Machines; Ditching Machine-small (Ditch-witch, Vermeer, or Similar type); Dope Pots (Mechanical with or without pump); Dumpsters; Elevator; Fireman; Fork Lifts (Economobile, Lull and Similar Types of Equipment); Front End Loaders (1 yd. and over but under 2 yds.); Generators (2 or 3 in Battery); Giraffe Grinders; Grout Pump; Gunnite Machines (excluding nozzle); Hammer Vibrator (in conjunction with Generator); Heavy Equipment Robotics Operator Technician; Hoists-Roof, Tugger, Aerial Platform Hoist & House Cars; Hoppers; Hopper Doors (power operated); Hydro Blaster; Hydraulic Jacking Trailer; Ladders (motorized); Laddervator; Locomotive-dinky type; Maintenance -Utility Man; Master Environmental Maintenance Technician; Mechanics; Mixers (Excepting Paving Mixers); Motor Patrols; Pavement Breakers (small self propelled ride on type-also maintains compressor hydraulic unit); Pavement Breaker-truck mounted; Pipe Bending Machine (Power); Pitch Pump; Plaster Pump (regardless of size); Post Hole Digger (Post Pounder & Auger); Rod Bending Machines (Power); Roller-Black Top; Scales (Power); Seaman pulverizing mixer; Shoulder widener; Silos; Skidsteer (all attachments); Skimmer Machines (boom-type); Steel Cutting Machine (service & maintain); Tam Rock Drill; Tractors; Transfer Machine; Captain (Power Boats); Tug Master (powerboats); Ultra High Pressure Waterjet Cutting Tool System operator/maintenance technician; Vacuum Blasting Machine; Vibrating Plants (used in conjunction with unloading); Welder and Repair Mechanics

CLASS D: Brooms and Sweepers; Chippers; Compressor (single); Concrete Spreaders (small type); Conveyor Loaders (not including Elevator Graders); Engines-large diesel (1620 HP) and Staging Pump; Farm Tractors; Fertilizing Equipment (Operation & Maintenance of); Fine Grade Machine (small type); Form Line Graders (small type); Front End Loader (under 1 yard); Generator (single); Grease, Gas, Fuel and Oil supply trucks; Heaters (Nelson or other type incl. Propane, Natural Gas or Flowtype Units); Lights, Portable Generating Light Plants; Mixers (Concrete, small); Mulching Equipment (Operation and Maintenance of); Pumps (2 or less than 4 inch suction); Pumps (4 inch suction and over incl. submersible pumps); Pumps (Diesel Engine and Hydraulic-immaterial of power); Road Finishing Machines (small type); Rollers-grade, fill or stone base; Seeding Equip. (Operation and Maintenance of); Sprinkler & Water Pump Trucks (used on jobsite or in conjunction with jobsite); Steam Jennies and Boilers-irrespective of use; Stone Spreader; Tamping Machines, Vibrating Ride-on; Temporary Heating Plant (Nelson or other type, incl. Propane, Natural Gas or Flow Type Units); Water & Sprinkler Trucks (used on or in conjunction with jobsite); Welding Machines (Gas, Diesel, and/or Electric Converters of any type, single, two, or three in a battery); Wellpoint Systems (including installation by Bull Gang and Maintenance of)

CLASS E: Assistant Engineer/Oiler; Drillers Helper; Maintenance Apprentice (Deck Hand); Maintenance Apprentice (Oiler); Mechanics' Helper; Tire Repair and Maintenance; Transit/Instrument Man

WAGES:(per hour)

07/01/2022

Class A5	\$ 63.72 plus 3.00*
Class A4	62.72 plus 3.00*
Class A3	61.72 plus 3.00*
Class A2	59.22 plus 3.00*
Class A1	58.22 plus 3.00*
Class A	57.22 plus 3.00*



Class B	55.63 plus 3.00*
Class C	53.72 plus 3.00*
Class D	52.09 plus 3.00*
Class E	50.38 plus 3.00*
Safety Engineer	57.96 plus 3.00*

Helicopter:	
Pilot/Engineer	59.04 plus 3.00*
Co Pilot	57.22 plus 3.00*
Communications Engineer	57.22 plus 3.00*

Surveying:	
Chief of Party	57.22 plus 3.00*
Transit/Instrument Man	50.38 plus 3.00*
Rod/Chainman	47.80 plus 3.00*
Additional \$0.75 for Survey work Tunnel under compressed air.	
Additional \$0.50 for Hydrographic work.	

\*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

\*\*Outside Material Hoist (Class B) receives additional \$ 1.00 per hour on 110 feet up to 199 feet total height, \$ 2.00 per hour on 200 feet and over total height.

- SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.

- On HAZARDOUS WASTE REMOVAL or ASBESTOS REMOVAL work, or any state or federally DESIGNATED HAZARDOUS WASTE SITE:

For projects bid on or before April 1, 2020...Where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection, the Operating Engineer shall receive the hourly wage plus an additional twenty percent (20%) of that wage for the entire shift.

For projects bid after April 1, 2020...On hazardous waste removal work of any kind, including state or federally designated site where the operating engineer is required to wear level A, B, or C personal protection the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour. An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$ 1.00 per hour. This shall also apply to sites where the level D personal protection is required.

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 33.50
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SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.

## OVERTIME PAY

See (B, E, Q, \*V, X) on OVERTIME PAGE

\*15% premium is also required on shift work benefits

## HOLIDAY

Paid: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Holidays falling on Sunday will be celebrated on Monday.

## REGISTERED APPRENTICES

(1) year terms at the following percentage of journeyman's wage:

1st year	60% of Class base wage plus \$3.00*
2nd year	70% of Class base wage plus \$3.00*
3rd year	80% of Class base wage plus \$3.00*
4th year	90% of Class base wage plus \$3.00*

\*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

Supplemental Benefits per hour:

Apprentices	\$ 33.50
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**Operating Engineer - Marine Dredging**

**04/01/2023**

**JOB DESCRIPTION** Operating Engineer - Marine Dredging

**DISTRICT 4**

**ENTIRE COUNTIES**

Albany, Bronx, Cayuga, Clinton, Columbia, Dutchess, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Orange, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

**WAGES**

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour: 07/01/2022 10/01/2022

CLASS A1	\$ 42.66	\$ 43.94
Deck Captain, Leverman		
Mechanical Dredge Operator		
Licensed Tug Operator 1000HP or more.		

CLASS A2	38.02	39.16
Crane Operator (360 swing)		

CLASS B	To conform to Operating Engineer	
Dozer, Front Loader	Prevailing Wage in locality where work	
Operator on Land	is being performed including benefits.	

CLASS B1	36.89	38.00
Derrick Operator (180 swing)		
Spider/Spill Barge Operator		
Operator II, Fill Placer,		
Engineer, Chief Mate, Electrician,		
Chief Welder, Maintenance Engineer		
Licensed Boat, Crew Boat Operator		

CLASS B2	34.73	35.77
Certified Welder		

CLASS C1	33.78	34.79
Drag Barge Operator,		
Steward, Mate,		
Assistant Fill Placer		

CLASS C2	32.69	33.67
Boat Operator		

CLASS D	27.16	27.97
Shoreman, Deckhand, Oiler,		
Rodman, Scowman, Cook,		
Messman, Porter/Janitor		

**SUPPLEMENTAL BENEFITS**

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B	\$ 11.40 plus 6% of straight time wage, Overtime hours add \$ 0.63	\$ 11.85 plus 6% of straight time wage, Overtime hours add \$ 0.63
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All Class C	\$ 11.10 plus 6% of straight time wage, Overtime hours add \$ 0.48	\$ 11.60 plus 6% of straight time wage, Overtime hours add \$ 0.50
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All Class D	\$ 10.80 plus 6% of straight time	\$ 11.35 plus 6% of straight time
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wage, Overtime hours  
add \$ 0.33

wage, Overtime hours  
add \$ 0.38

# **OVERTIME PAY**

See (B2, F, R) on OVERTIME PAGE

# **HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

## **Operating Engineer - Steel Erectors**

04/01/2023

**JOB DESCRIPTION** Operating Engineer - Steel Erectors

**DISTRICT** 11

## **ENTIRE COUNTIES**

Delaware, Orange, Rockland, Sullivan, Ulster

## **WAGES**

CLASS A3: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with a 140 ft. boom and over.

CLASS A2: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with up to a 139 ft. boom and under.

CLASS A1: Cranes, Derricks and Pile Drivers less than 100 tons with a 140 ft. boom and over.

CLASS A: Cranes, Derricks and Pile Drivers less than 100 tons with up to a 139 ft. boom and under.

CLASS B: "A" Frame; Cherry Pickers(10 tons and under); Hoists (all type Hoists, shall also include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft Caisson, Snorkel Roof, and/or any other Similar Type Hoisting Machines, portable or stationary, except Chicago Boom Type); Jacks-Screw Air Hydraulic Power Operated Unit or Console Type (not hand Jack or Pile Load Test Type); Side Booms; Straddle Carrier

CLASS C: Aerial Platform used as Hoist; Compressors (2 or 3 in Battery); Concrete cleaning/ decontamination machine operator; Directional Boring Machines; Elevator or House Cars; Conveyers and Tugger Hoists; Fireman; Fork Lifts; Generators (2 or 3 in Battery); Heavy Equipment Robotics Operator/Technician; Master Environmental Maintenance Technician; Maintenance -Utility Man; Rod Bending Machines (Power); Captain(powerboat); Tug Master; Ultra High Pressure Waterjet Cutting Tool System; Vacuum Blasting Machine; Welding Machines(gas or electric,2 or 3 in battery, including diesels); Transfer Machine; Apprentice Engineer/Oiler with either one compressor or one welding machine when used for decontamination and remediation

CLASS D: Compressor (single); Welding Machines (Gas, Diesel, and/or Electric Converters of any type); Welding System Multiple (Rectifier Transformer type)

CLASS E: Assistant Engineer/Oiler; Maintenance Apprentice (Deck Hand);Drillers Helper; Maintenance Apprentice (Oiler); Mechanics' Helper; Transit/Instrument Man

WAGES:(per hour)

07/01/2022

Class A3	\$ 65.74 plus 3.00*
Class A2	64.08 plus 3.00*
Class A1	61.24 plus 3.00*
Class A	59.58 plus 3.00*
Class B	56.79 plus 3.00*
Class C	54.13 plus 3.00*
Class D	52.60 plus 3.00*
Class E	50.84 plus 3.00*
Vacuum Truck	57.55 plus 3.00*
Safety Engineer	58.41 plus 3.00*

Helicopter:	
Pilot/Engineer	61.24 plus 3.00*
Co Pilot	60.85 plus 3.00*
Communications Engineer	60.85 plus 3.00*

Surveying:	
Chief of Party	57.55 plus 3.00*
Transit/Instrument man	50.84 plus 3.00*
Rod/Chainman	47.80 plus 3.00*
Additional \$0.75 for Survey work Tunnels under compressed air.	
Additional \$0.50 for Hydrographic work.	

\*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

- SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.
- On HAZARDOUS WASTE REMOVAL or ASBESTOS REMOVAL work, or any state or federally DESIGNATED HAZARDOUS WASTE SITE:

For projects bid on or before April 1, 2020...Where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection, the Operating Engineer shall receive the hourly wage plus an additional twenty percent (20%) of that wage for the entire shift.

For projects bid after April 1, 2020...On hazardous waste removal work of any kind, including state or federally designated site where the operating engineer is required to wear level A, B, or C personal protection the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour. An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$ 1.00 per hour. This shall also apply to sites where the level D personal protection is required.

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 33.50

#### OVERTIME PAY

See (B, E, Q, \*V, X) on OVERTIME PAGE

\*15% premium is also required on shift work benefits

#### HOLIDAY

Paid: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Holidays falling on Sunday will be celebrated on Monday.

#### REGISTERED APPRENTICES

(1) year terms at the following percentage of journeyman's wage.

1st year	60% of Class base wage plus \$3.00*
2nd year	70% of Class base wage plus \$3.00*
3rd year	80% of Class base wage plus \$3.00*
4th year	90% of Class base wage plus \$3.00*

\*The \$3.00 is added to the Class Base Wage for all hours worked. Additionally, the \$3.00 is subject to the V-Code listed on the OVERTIME CODE Sheet.

Supplemental Benefits per hour:

Apprentices \$ 33.50

11-825SE

#### Painter

04/01/2023

#### JOB DESCRIPTION Painter

DISTRICT 1

#### ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Sullivan, Ulster

#### WAGES

Per hour

07/01/2022

Brush/Paper Hanger	\$ 37.09
Dry Wall Finisher	37.09
Lead Abatement	37.09
Sandblaster-Painter	37.09
Spray Rate	38.09

See Bridge Painting rates for the following work:

Structural Steel , all work performed on tanks, ALL BRIDGES, towers, smoke stacks, flag poles. Rate shall apply to all of said areas from the ground up.

#### SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 25.29

#### OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFT(S) OR SINGULAR IRREGULAR SHIFT OF AT LEAST A FIVE (5) DAY DURATION (MONDAY THROUGH FRIDAY), WHEN THE SHIFT STARTS BETWEEN THE HOURS LISTED BELOW:

4:00 PM to 6:30 AM REGULAR RATE PLUS 15%\*\*

OVERTIME ON MULTIPLE SHIFT WORK AND SINGULAR IRREGULAR SHIFT THE SHIFT RATE IS THE BASE RATE

\*\*SHIFT RATE STOPS AFTER 6:30AM

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

#### REGISTERED APPRENTICES

Wages per hour

Six (6) month terms at the following percentage of Journey person's wage

1st	2nd	3rd	4th	5th	6th
40%	50%	60%	70%	80%	90%

Supplemental Benefits per hour worked

1st term	\$ 10.99
All others	25.29

1-155

#### Painter - Bridge & Structural Steel

04/01/2023

**JOB DESCRIPTION** Painter - Bridge & Structural Steel

**DISTRICT** 8

#### ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

#### WAGES

Per Hour:

STEEL:

Bridge Painting:	07/01/2022	10/01/2022
	\$ 53.00	\$ 54.50
	+ 9.63*	+ 10.10*

ADDITIONAL \$6.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

\* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SHIFT WORK:

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate.

When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

#### SUPPLEMENTAL BENEFITS

Per Hour:

Journey worker:	\$ 10.90	\$ 11.78
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+ 30.60\*

+ 30.75\*

\* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

#### OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (4, 6) on HOLIDAY PAGE

#### REGISTERED APPRENTICES

Wage - Per hour:

Apprentices: (1) year terms

1st year	\$ 21.20 + 3.86	\$ 21.80 + 4.04
2nd year	\$ 31.80 + 5.78	\$ 32.70 + 6.06
3rd year	\$ 42.40 + 7.70	\$ 43.60 + 8.08
Supplemental Benefits - Per hour:		
1st year	\$ .25 + 12.24	\$ .25 + 12.34
2nd year	\$ 10.90 + 18.36	\$ 10.90 + 18.51
3rd year	\$ 10.90 + 24.48	\$ 10.90 + 24.68

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

#### Painter - Line Striping

04/01/2023

**JOB DESCRIPTION** Painter - Line Striping

**DISTRICT** 8

#### ENTIRE COUNTIES

Albany, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Montgomery, Nassau, Orange, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

#### WAGES

Per hour:

Painter (Striping-Highway):	07/01/2022
Striping-Machine Operator*	\$ 31.53
Linerman Thermoplastic	38.34

Note: \* Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

#### SUPPLEMENTAL BENEFITS

Per hour paid:

Journeyworker:	
Striping Machine Operator:	\$ 10.03
Linerman Thermoplastic:	10.03

#### OVERTIME PAY

See (B, B2, E2, F, S) on OVERTIME PAGE

## HOLIDAY

Paid: See (5, 20) on HOLIDAY PAGE  
Overtime: See (5, 20) on HOLIDAY PAGE

## REGISTERED APPRENTICES

One (1) year terms at the following wage rates:

1st Term:	\$ 15.00
2nd Term:	18.92
3rd Term:	25.22

Supplemental Benefits per hour:

1st term:	\$ 9.16
2nd Term:	10.03
3rd Term:	10.03

8-1456-LS

## Painter - Metal Polisher

04/01/2023

**JOB DESCRIPTION** Painter - Metal Polisher

**DISTRICT** 8

## ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

## WAGES

	07/01/2022
Metal Polisher	\$ 37.78
Metal Polisher*	38.80
Metal Polisher**	41.78

\*Note: Applies on New Construction & complete renovation

\*\* Note: Applies when working on scaffolds over 34 feet.

## SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2022

Journeyworker:  
All classification \$ 11.24

## OVERTIME PAY

See (B, E, P, T) on OVERTIME PAGE

## HOLIDAY

Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE  
Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

## REGISTERED APPRENTICES

Wages per hour:

One (1) year term at the following wage rates:

	07/01/2022
1st year	\$ 16.00
2nd year	17.00
3rd year	18.00
1st year*	\$ 16.39
2nd year*	17.44
3rd year*	18.54
1st year**	\$ 18.50
2nd year**	19.50
3rd year**	20.50

\*Note: Applies on New Construction & complete renovation

\*\* Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:

Per hour:

1st year	\$ 7.99
2nd year	7.99
3rd year	7.99

8-8A/28A-MP

**Plumber**

**04/01/2023**

**JOB DESCRIPTION** Plumber

**DISTRICT** 11

**ENTIRE COUNTIES**

Orange, Rockland, Sullivan

**PARTIAL COUNTIES**

Ulster: Only the Townships of Plattekill, Marlboro, Wawarsing, and Shawangunk (except for Wallkill and Shawangunk Prisons).

**WAGES**

REFRIGERATION: For commercial and industrial refrigeration which means service, maintenance, and installation work where the combined compressor tonnage does not exceed 40 tons.

AIR CONDITIONING: Air conditioning to be installed that is water cooled shall not exceed 25 tons. This will include the piping of the component system and erection of water tower. Air conditioning that is air cooled shall not exceed 50 tons.

WAGES: (per hour)

	07/01/2022	05/01/2023 Additional	05/01/2024 Additional	05/01/2025 Additional
Plumber	\$ 37.34	\$ 2.25*	\$ 2.25*	\$ 2.50*

\*to be allocated at a later date

Star Certification: an additional \$ 1.00 per hour over scale will be paid to all those who have Star Certification.

Shift Differential: When mandated by the governmental agency, an additional 15% premium will be paid for irregular work day or for 2nd and 3rd shift.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 35.07*
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\*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

**OVERTIME PAY**

See (B, G, P, \*V) on OVERTIME PAGE

\* A portion of the benefit amount is subject to the V code for overtime and shift differential work.

**HOLIDAY**

Paid: See (5, 6, 13, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 15, 25) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

(1)year terms at the following wage:

	07/01/2022
1st term	\$ 16.81
2nd term	20.54
3rd term	24.28
4th term	28.01
5th term	31.74

Supplemental Benefits per hour:

Apprentices

1st term	\$ 15.86*
2nd term	19.36*
3rd term	22.85*
4th term	26.36*
5th term	29.85*

\*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

11-373 Refrig

**Plumber**

**04/01/2023**



**JOB DESCRIPTION** Plumber

**DISTRICT** 11

**ENTIRE COUNTIES**

Orange, Rockland, Sullivan

**PARTIAL COUNTIES**

Ulster: Only the Townships of Plattekill, Marlboro, Wawarsing, and Shawangunk (except for Wallkill and Shawangunk Prisons).

**WAGES**

WAGES:(per hour)	07/01/2022	05/01/2023 Additional	05/01/2024 Additional
Plumber/Steamfitter	\$ 49.45	\$ 2.25*	\$ 2.25*

\*to be allocated at a later date

Note: For all work 40-60 feet above ground add \$ 0.25 per hour, over 60 feet add \$ 0.50 per hour.

Shift Differential: When mandated by the governmental agency, an additional 15% premium will be paid for irregular work day or for 2nd and 3rd shift.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman \$ 43.07\*

\*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

**OVERTIME PAY**

See (B, E, Q, \*V) on OVERTIME PAGE

\* A portion of the benefit amount is subject to the V code for overtime and shift differential work.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

When a holiday falls on a Saturday, the day prior shall be considered and recognized as the holiday. When a holiday falls on a Sunday, the day proceeding shall be considered and recognized as the holiday to be observed.

**REGISTERED APPRENTICES**

( 1 ) year terms at the following wages.

	07/01/2022
1st term	\$ 17.31
2nd term	22.26
3rd term	27.20
4th term	32.15
5th term	39.56

Supplemental Benefits per hour:

1st term	\$ 15.16*
2nd term	19.45*
3rd term	23.74*
4th term	28.04*
5th term	34.47*

\*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

11-373 SF

**Plumber**

**04/01/2023**

**JOB DESCRIPTION** Plumber

**DISTRICT** 8

**ENTIRE COUNTIES**

Dutchess

**PARTIAL COUNTIES**

Delaware: Only the Townships of Middletown and Roxbury.

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

**WAGES**

Per hour:	07/01/2022
Plumber & Steamfitter	\$ 54.83

SHIFT WORK:



When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker: \$ 40.98

#### OVERTIME PAY

See (B, E, E2, Q, V) on OVERTIME PAGE

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

#### REGISTERED APPRENTICES

(1)year terms at the following rates:

07/01/2022

1st year	\$ 20.90
2nd year	28.91
3rd year	33.54
4th year	40.25
5th year	46.38

Supplemental Benefits per hour:

1st year	\$ 17.38
2nd year	22.21
3rd year	25.79
4th year	29.79
5th year	32.83

8-21.2-SF

#### Plumber - HVAC / Service

04/01/2023

**JOB DESCRIPTION** Plumber - HVAC / Service

**DISTRICT** 8

#### ENTIRE COUNTIES

Dutchess, Putnam, Westchester

#### PARTIAL COUNTIES

Delaware: Only the townships of Middletown and Roxbury

Ulster: Entire County(including Wallkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

#### WAGES

Per hour: 07/01/2022

HVAC Service \$ 41.68  
+ \$ 4.32\*

\*Note: This portion of wage is not subject to overtime premium.

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker HVAC Service  
\$ 27.79

#### OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

#### HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

#### REGISTERED APPRENTICES

HVAC SERVICE

(1)year terms at the following wages:

1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
\$ 18.87	\$ 22.36	\$ 27.91	\$ 34.33	\$ 37.25
+\$2.37*	+\$2.67*	+\$3.22*	+\$3.84*	+\$4.07*

\*Note: This portion of wage is not subject to overtime premium.

Supplemental Benefits per hour:

Apprentices 07/01/2022

1st term	\$ 20.30
2nd term	21.62
3rd term	23.07
4th term	25.05
5th term	26.47

8-21.1&2-SF/Re/AC

## Plumber - Jobbing & Alterations

04/01/2023

**JOB DESCRIPTION** Plumber - Jobbing & Alterations

**DISTRICT** 8

### ENTIRE COUNTIES

Dutchess, Putnam, Westchester

### PARTIAL COUNTIES

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

### WAGES

Per hour:	07/01/2022
Journeyworker:	\$ 46.79

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

### SHIFT WORK:

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

### SUPPLEMENTAL BENEFITS

Per hour:  
Journeyworker

\$ 33.56

### OVERTIME PAY

See (B, \*E, E2, Q, V) on OVERTIME PAGE

\*When used as a make-up day, hours after 8 on Saturday shall be paid at time and one half.

### HOLIDAY

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

### REGISTERED APPRENTICES

(1) year terms at the following wages:

1st year	\$ 20.25
2nd year	22.48
3rd year	24.40
4th year	34.25
5th year	36.19

Supplemental Benefits per hour:

1st year	\$ 10.98
2nd year	12.92
3rd year	16.89
4th year	22.82
5th year	24.77

8-21.3-J&A

**Roofer**

**04/01/2023**

**JOB DESCRIPTION** Roofer

**DISTRICT** 9

**ENTIRE COUNTIES**

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

**WAGES**

Per Hour:	07/01/2022	05/01/2023
		Additional
Roofer/Waterproofers	\$ 45.25	\$ 2.00
	+ \$7.00*	

\* This portion is not subjected to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

**SUPPLEMENTAL BENEFITS**

Per Hour: \$ 30.62

**OVERTIME PAY**

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

( 1 ) year term

	1st	2nd	3rd	4th
	\$ 15.84	\$ 22.63	\$ 27.15	\$ 33.94
		+ 3.50*	+ 4.20*	+ 5.26*
Supplements:				
	1st	2nd	3rd	4th
	\$ 3.88	\$ 15.48	\$ 18.50	\$ 23.04

\* This portion is not subjected to overtime premiums.

9-8R

**Sheetmetal Worker**

**04/01/2023**

**JOB DESCRIPTION** Sheetmetal Worker

**DISTRICT** 8

**ENTIRE COUNTIES**

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

**WAGES**

	07/01/2022
SheetMetal Worker	\$ 45.25
	+ 3.52*

\*This portion is not subject to overtime premiums.

**SHIFT WORK**

For all NYS D.O.T. and other Governmental mandated off-shift work:  
10% increase for additional shifts for a minimum of five (5) days

**SUPPLEMENTAL BENEFITS**

Journeyworker \$ 45.20

**OVERTIME PAY**

OVERTIME: See ( B, E, Q, ) on OVERTIME PAGE.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE  
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

	1st	2nd	3rd	4th	5th	6th	7th	8th
	\$ 16.79	\$ 18.88	\$ 21.00	\$ 23.08	\$ 25.20	\$ 27.30	\$ 29.89	\$ 32.43
	+ 1.41*	+ 1.58*	+ 1.76*	+ 1.94*	+ 2.11*	+ 2.29*	+ 2.46*	+ 2.64*

\*This portion is not subject to overtime premiums.

Supplemental Benefits per hour:

Apprentices	
1st term	\$ 19.37
2nd term	21.81
3rd term	24.21
4th term	26.65
5th term	29.06
6th term	31.48
7th term	33.42
8th term	35.40

8-38

<b>Sprinkler Fitter</b>	<b>04/01/2023</b>
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**JOB DESCRIPTION** Sprinkler Fitter

**DISTRICT** 1

**ENTIRE COUNTIES**

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

**WAGES**

Per hour 07/01/2022

Sprinkler \$ 48.98  
Fitter

**SUPPLEMENTAL BENEFITS**

Per hour

Journey person \$ 29.13

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

**REGISTERED APPRENTICES**

Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 23.70	\$ 26.34	\$ 28.72	\$ 31.35	\$ 33.99	\$ 36.62	\$ 39.25	\$ 41.89	\$ 44.52	\$ 47.15

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.37	\$ 8.37	\$ 19.76	\$ 19.76	\$ 20.01	\$ 20.01	\$ 20.01	\$ 20.01	\$ 20.01	\$ 20.01
									1-669.2

<b>Teamster - Building / Heavy&amp;Highway</b>	<b>04/01/2023</b>
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**JOB DESCRIPTION** Teamster - Building / Heavy&Highway

**DISTRICT** 11

**ENTIRE COUNTIES**

Dutchess, Orange, Rockland, Sullivan, Ulster

**WAGES**

GROUP 1: LeTourneau Tractors, Double Barrel Euclids, Athney Wagons and similar equipment (except when hooked to scrapers), I-Beam and Pole Trailers, Tire Trucks, Tractor and Trailers with 5 axles and over, Articulated Back Dumps and Road Oil Distributors, Articulated Water Trucks and Fuel Trucks/Trailers, positions requiring a HAZMAT CDL endorsement.

GROUP 1A: Drivers on detachable Gooseneck Low Bed Trailers rated over 35 tons.

GROUP 2: All equipment 25 yards and up to and including 30 yard bodies and cable Dump Trailers and Powder and Dynamite Trucks.

GROUP 3: All Equipment up to and including 24-yard bodies, Mixer Trucks, Dump Crete Trucks and similar types of equipment, Fuel Trucks, Batch Trucks and all other Tractor Trailers, Hi-Rail Truck.

GROUP 4: Tri-Axles, Ten Wheelers, Grease Trucks, Tillerman, Pattern Trucks, Attenuator Trucks, Water Trucks, Bus.

GROUP 5: Straight Trucks.

GROUP 6: Pick-up Trucks for hauling materials and parts, and Escort Man over-the-road.

WAGES: (per hour)	07/01/2022	05/01/2023
GROUP 1	\$ 34.28	\$ 34.58
GROUP 1A	35.42	35.72
GROUP 2	33.72	34.02
GROUP 3	33.50	33.80
GROUP 4	33.39	33.69
GROUP 5	33.27	33.57
GROUP 6	33.27	33.57

**NOTE ADDITIONAL PREMIUMS:**

- On projects requiring an irregular shift a premium of 10% will be paid on wages. The premium will be paid for off-shift or irregular shift work when mandated by Governmental Agency.
- Employees engaged in hazardous/toxic waste removal, on a State or Federally designated hazardous/toxic waste site, where the employee comes in contact with hazardous/toxic waste material and when personal protective equipment is required for respiratory, skin, or eye protection, the employee shall receive an additional 20% premium above the hourly wage.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.  
NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

**SUPPLEMENTAL BENEFITS**

Per hour:		
First 40 hours	\$ 42.16	\$ 44.59
Over 40 hours	34.76	36.99

**OVERTIME PAY**

See (\*B, E, \*\*E2, \*\*\*P, X) on OVERTIME PAGE

\*Holidays worked Monday through Friday receive Double Time (2x) after 8 hours.

\*\*Makeup day limited to the employees who were working on the site that week.

\*\*\*Sunday Holidays are paid at a rate of double time and one half (2.5x) for all hours worked.

**HOLIDAY**

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (\*1) on HOLIDAY PAGE

- Any employee working two (2) days in any calendar week during which a holiday occurs shall receive a days pay for each holiday occurring during said week. This provision shall also apply if a holiday falls on a Saturday or Sunday.

\*See OVERTIME PAY section for when additional premium is applicable on Holiday hours worked.

11-445B/HH

**Teamster - Delivery - Building / Heavy&Highway**

**04/01/2023**

**JOB DESCRIPTION** Teamster - Delivery - Building / Heavy&Highway

**DISTRICT** 11

**ENTIRE COUNTIES**

Dutchess, Orange, Rockland, Sullivan, Ulster

**WAGES**

Group 1	Tractor Trailer Drivers
Group 2	Tri-Axle
Group 3	Senior Teamster

Wages:	07/01/2022	05/01/2023
Group 1	\$ 33.20	\$ 33.70
Group 2	29.20	29.70
Group 3	34.20	34.70

Hazardous/Toxic Waste Removal additional 20% when personal protective equipment is required

**SUPPLEMENTAL BENEFITS**

Per hour paid:		
First 40 hours	\$ 31.50	\$ 32.30
Over 40 hours	0.00	0.00

**OVERTIME PAY**

See (B, E, Q, X) on OVERTIME PAGE

**HOLIDAY**

Paid: See (5, 13, 15, 16, 20, 22, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 13, 15, 16, 20, 22, 25, 26) on HOLIDAY PAGE

- Employee must work either the scheduled day of work before or the scheduled day of work after the holiday in the workweek.
- Any employee working one (1) day in the calendar week during which a holiday occurs shall receive a day's pay for each holiday occurring during said week. This provision shall also apply if a holiday falls on a Saturday.
- When any of the recognized holidays occur on Sunday and are celebrated any day before or after the holiday Sunday, such days shall be considered as the holiday and paid for as such.

11-445 B/HH Delivery

**Welder**

**04/01/2023**

**JOB DESCRIPTION** Welder

**DISTRICT** 1

**ENTIRE COUNTIES**

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

**WAGES**

Per hour 07/01/2022

Welder: To be paid the same rate of the mechanic performing the work.\*

\*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

**OVERTIME PAY**

**HOLIDAY**

1-As Per Trade

## Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- ( AA ) Time and one half of the hourly rate after 7 and one half hours per day
- ( A ) Time and one half of the hourly rate after 7 hours per day
- ( B ) Time and one half of the hourly rate after 8 hours per day
- ( B1 ) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.  
Double the hourly rate for all additional hours
- ( B2 ) Time and one half of the hourly rate after 40 hours per week
- ( C ) Double the hourly rate after 7 hours per day
- ( C1 ) Double the hourly rate after 7 and one half hours per day
- ( D ) Double the hourly rate after 8 hours per day
- ( D1 ) Double the hourly rate after 9 hours per day
- ( E ) Time and one half of the hourly rate on Saturday
- ( E1 ) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- ( E2 ) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- ( E3 ) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- ( E4 ) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- ( E5 ) Double time after 8 hours on Saturdays
- ( F ) Time and one half of the hourly rate on Saturday and Sunday
- ( G ) Time and one half of the hourly rate on Saturday and Holidays
- ( H ) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- ( I ) Time and one half of the hourly rate on Sunday
- ( J ) Time and one half of the hourly rate on Sunday and Holidays
- ( K ) Time and one half of the hourly rate on Holidays
- ( L ) Double the hourly rate on Saturday
- ( M ) Double the hourly rate on Saturday and Sunday
- ( N ) Double the hourly rate on Saturday and Holidays
- ( O ) Double the hourly rate on Saturday, Sunday, and Holidays
- ( P ) Double the hourly rate on Sunday
- ( Q ) Double the hourly rate on Sunday and Holidays
- ( R ) Double the hourly rate on Holidays
- ( S ) Two and one half times the hourly rate for Holidays

- ( S1 ) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- ( T ) Triple the hourly rate for Holidays
- ( U ) Four times the hourly rate for Holidays
- ( V ) Including benefits at SAME PREMIUM as shown for overtime
- ( W ) Time and one half for benefits on all overtime hours.
- ( X ) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

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## Holiday Codes

### PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

### OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

- ( 1 ) None
- ( 2 ) Labor Day
- ( 3 ) Memorial Day and Labor Day
- ( 4 ) Memorial Day and July 4th
- ( 5 ) Memorial Day, July 4th, and Labor Day
- ( 6 ) New Year's, Thanksgiving, and Christmas
- ( 7 ) Lincoln's Birthday, Washington's Birthday, and Veterans Day
- ( 8 ) Good Friday
- ( 9 ) Lincoln's Birthday
- ( 10 ) Washington's Birthday
- ( 11 ) Columbus Day
- ( 12 ) Election Day
- ( 13 ) Presidential Election Day
- ( 14 ) 1/2 Day on Presidential Election Day
- ( 15 ) Veterans Day
- ( 16 ) Day after Thanksgiving
- ( 17 ) July 4th
- ( 18 ) 1/2 Day before Christmas
- ( 19 ) 1/2 Day before New Years
- ( 20 ) Thanksgiving
- ( 21 ) New Year's Day
- ( 22 ) Christmas
- ( 23 ) Day before Christmas
- ( 24 ) Day before New Year's
- ( 25 ) Presidents' Day
- ( 26 ) Martin Luther King, Jr. Day
- ( 27 ) Memorial Day
- ( 28 ) Easter Sunday

( 29 )

Juneteenth

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New York State Department of Labor - Bureau of Public Work  
State Office Building Campus  
Building 12 - Room 130  
Albany, New York 12240

**REQUEST FOR WAGE AND SUPPLEMENT INFORMATION**

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

**This Form Must Be Typed**

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

**A. Public Work Contract to be let by:** (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ( )

Fax: ( )

E-Mail:

2. NY State Units (see Item 5)

☐ 01 DOT

☐ 02 OGS

☐ 03 Dormitory Authority

☐ 04 State University  
Construction Fund

☐ 05 Mental Hygiene  
Facilities Corp.

☐ 06 OTHER N.Y. STATE UNIT

☐ 07 City

☐ 08 Local School District

☐ 09 Special Local District, i.e.,  
Fire, Sewer, Water District

☐ 10 Village

☐ 11 Town

☐ 12 County

☐ 13 Other Non-N.Y. State  
(Describe)

3. SEND REPLY TO ☐ (check if new or change)  
Name and complete address:

Telephone: ( )

Fax: ( )

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR  
THIS PROJECT :

OFFICE USE ONLY

**B. PROJECT PARTICULARS**

5. Project Title

Description of Work

Contract Identification Number

Note: For NYS units, the OSC Contract No.

6. Location of Project:

Location on Site

Route No/Street Address

Village or City

Town

County

7. Nature of Project - Check One.

☐ 1. New Building

☐ 2. Addition to Existing Structure

☐ 3. Heavy and Highway Construction (New and Repair)

☐ 4. New Sewer or Waterline

☐ 5. Other New Construction (Explain)

☐ 6. Other Reconstruction, Maintenance, Repair or Alteration

☐ 7. Demolition

☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

☐ Construction (Building, Heavy  
Highway/Sewer/Water)

☐ Tunnel

☐ Residential

☐ Landscape Maintenance

☐ Elevator maintenance

☐ Exterminators, Fumigators

☐ Fire Safety Director, NYC Only

☐ Guards, Watchmen

☐ Janitors, Porters, Cleaners,  
Elevator Operators

☐ Moving furniture and  
equipment

☐ Trash and refuse removal

☐ Window cleaners

☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding?

YES ☐

NO ☐

10. Name and Title of Requester

Signature



NEW YORK STATE DEPARTMENT OF LABOR  
Bureau of Public Work - Debarment List

**LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE  
AWARDED ANY PUBLIC WORK CONTRACT**

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

**Debarment Database:** To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: <https://applications.labor.ny.gov/EDList/searchPage.do>

**For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322**

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**NYSDOL Bureau of Public Work Debarment List    04/17/2023**

**Article 8**

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5754	0369 CONTRACTORS, LLC		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		ARADCO CONSTRUCTION CORP		115-46 132RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC	*****2591	AVI 212 INC.		260 CROPEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		AVM CONSTRUCTION CORP		117-72 123RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		BERNARD BEGLEY		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****3627	BJB CONSTRUCTION CORP.		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****4083	C.P.D. ENTERPRISES, INC		P.O BOX 281 WALDEN NY 12586	03/03/2020	03/03/2025

**NYSDOL Bureau of Public Work Debarment List    04/17/2023**

**Article 8**

DOL	DOL	****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL	****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	****1143	CARMODY BUILDING CORP	CARMODY CONTRACTING AND CARMODY CONTRACTING CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	AG	****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	NYC		CHARLES ZAHRAKKA		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANOU A/K/A CHRIS PAPASTEFANOU		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL	****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	DOL	****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	AG		EDWIN HUTZLER		23 NORTH HOWELLS RD BELLPORT NY 11713	08/04/2021	08/04/2026
DOL	DA		EDWIN HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002

**NYSDOL Bureau of Public Work Debarment List     04/17/2023**

**Article 8**

DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	NYC		GAYATRI MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026



**NYSDOL Bureau of Public Work Debarment List    04/17/2023**

**Article 8**

DOL	DOL	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN LUCIANO			05/14/2018	05/14/2023
DOL	DOL		JOHN MARKOVIC		47 MANDON TERRACE HAWTHORN NJ 07506	03/29/2021	03/29/2026
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JORI PEDERSEN		415 FLAGLER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023

**NYSDOL Bureau of Public Work Debarment List     04/17/2023**

**Article 8**

DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DA	*****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL	*****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARIA NUBILE		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DOL	*****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	NYC	*****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	*****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		NAMOW, INC.		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DA	*****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	DOL	*****3684	NATIONAL LAWN SPRINKLERS, INC.		645 N BROADWAY WHITE PLAINS NY 10603	05/14/2018	05/14/2023
DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTION, INC.	444 SCHANTZ ROAD ALLETOWN PA 18104	09/17/2020	09/17/2025
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027

**NYSDOL Bureau of Public Work Debarment List 04/17/2023**

**Article 8**

DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PETER STEVENS		8269 21ST ST BELLEROSSE NY 11426	12/22/2022	12/22/2027
DOL	DOL	*****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DA	*****7559	REGAL CONTRACTING INC.		24 WOODBINE AVE NORTHPORT NY 11768	10/01/2020	10/01/2025
DOL	DOL	*****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL	*****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSEsar		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	*****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL	*****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		SAL FRESINA MASONRY CONTRACTORS, INC.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		SAL MASONRY CONTRACTORS, INC.		(SEE COMMENTS) SYRACUSE NY 13202	07/16/2021	07/16/2026
DOL	DOL	*****9874	SALFREE ENTERPRISES INC		P.O BOX 14 2821 GARDNER RDPOMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		SALVATORE A FRESINA A/K/A SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DOL		SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	NYC	*****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC	*****1130	SCANA CONSTRUCTION CORP.		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL	*****2045	SCOTT DUFFIE	DUFFIE'S ELECTRIC, INC.	P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	DOL		SCOTT DUFFIE		P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025

**NYSDOL Bureau of Public Work Debarment List    04/17/2023**

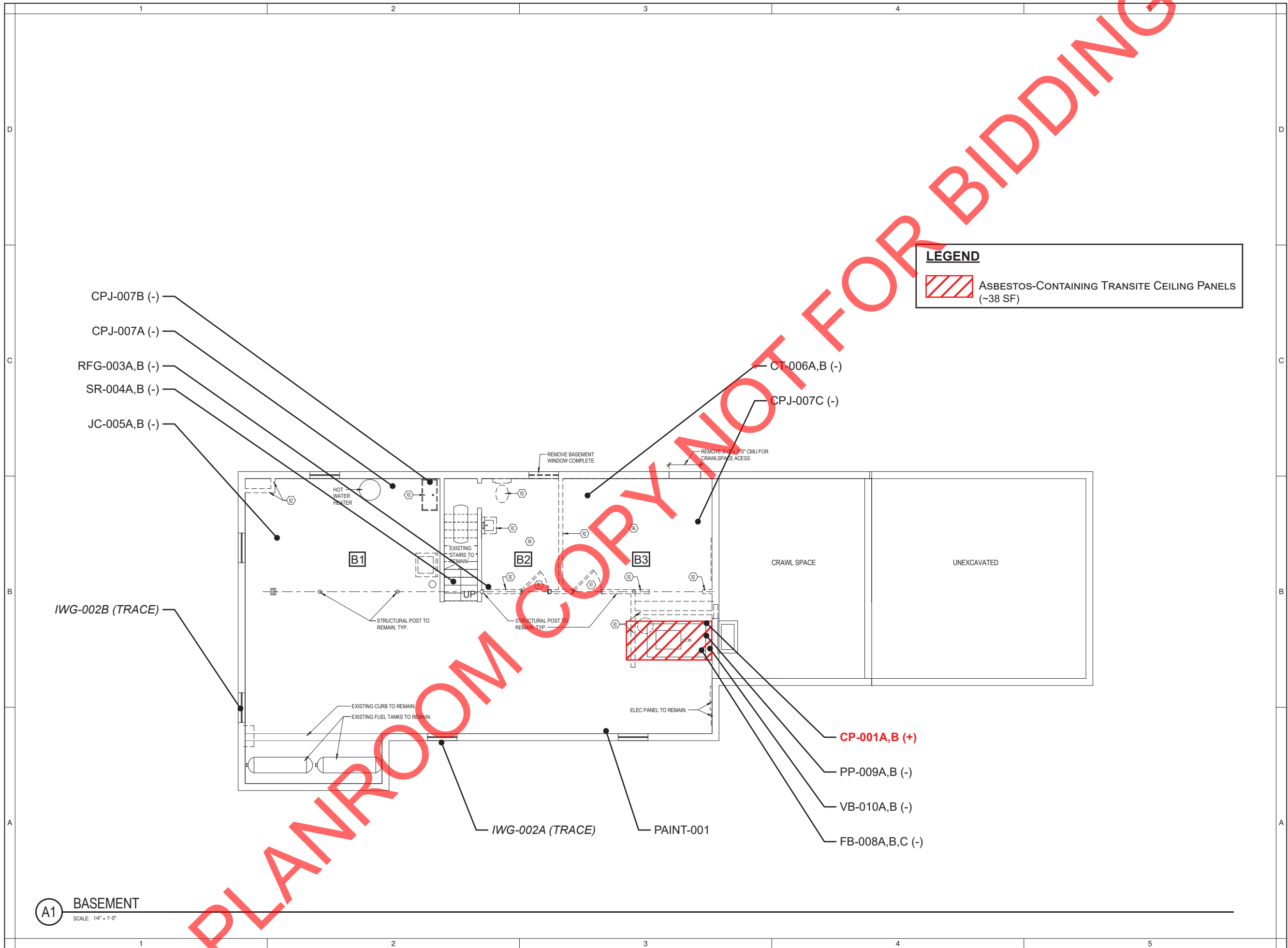
**Article 8**

DOL	NYC	*****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC		SOMATIE RAMSUNAHAI		115-46 132ND ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL	*****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC	*****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	*****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	*****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEFANOS PAPASTEFANOU, JR. A/K/A STEVE PAPASTEFANOU, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL		STEVE TATE		415 FLAGLER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL	*****3800	SUBURBAN RESTORATION CO. INC.		5-10 BANTA PLACE FAIR LAWN PLACE NJ 07410	03/29/2021	03/29/2026
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL	*****9733	TERSAL CONSTRUCTION SERVICES INC		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13208	07/16/2021	07/16/2026
DOL	DOL		TERSAL CONTRACTORS, INC.		221 GARDNER RD P.O BOX 14POMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		TERSAL DEVELOPMENT CORP.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****6789	TEST1000		P.O BOX 123 ALBANY NY 12044	03/01/2021	03/01/2026
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATION	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATION	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DA	*****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025

**NYSDOL Bureau of Public Work Debarment List     04/17/2023**

**Article 8**

DOL	NYC	****2426	VICKRAM MANGRU	VICK CONSTRUCTI ON	21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	NYC		VICKRAM MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		VIKTAR PATONICH		2630 CROPSY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL	****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM G. PROERFRIEDT		85 SPRUCEWOOD ROAD WEST BABYLON NY 11704	01/19/2021	01/19/2026
DOL	DOL	****5924	WILLIAM G. PROPHY, LLC	WGP CONTRACTIN G, INC.	54 PENTAQUIT AVE BAYSHORE NY 11706	01/19/2021	01/19/2026
DOL	DOL	****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023



**PK DESIGN**

450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

NOT FOR CONSTRUCTION

IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING ARCHITECT SHALL AFFIX THEIR SEAL AND THE NOTATION ALTERED BY FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NEW YORK STATE OLYMPIC  
DEVELOPMENT REGIONAL  
AUTHORITY

BELLEAYRE SKI CENTER ADMIN  
OFFICE BLDG

HIGHMOUNT, NEW YORK  
12441

PROJECT STATUS  
**PROGRESS**

PROJECT NORTH

REVISIONS

NO.	DESCRIPTION	DATE

PROJECT NUM  
221101.00

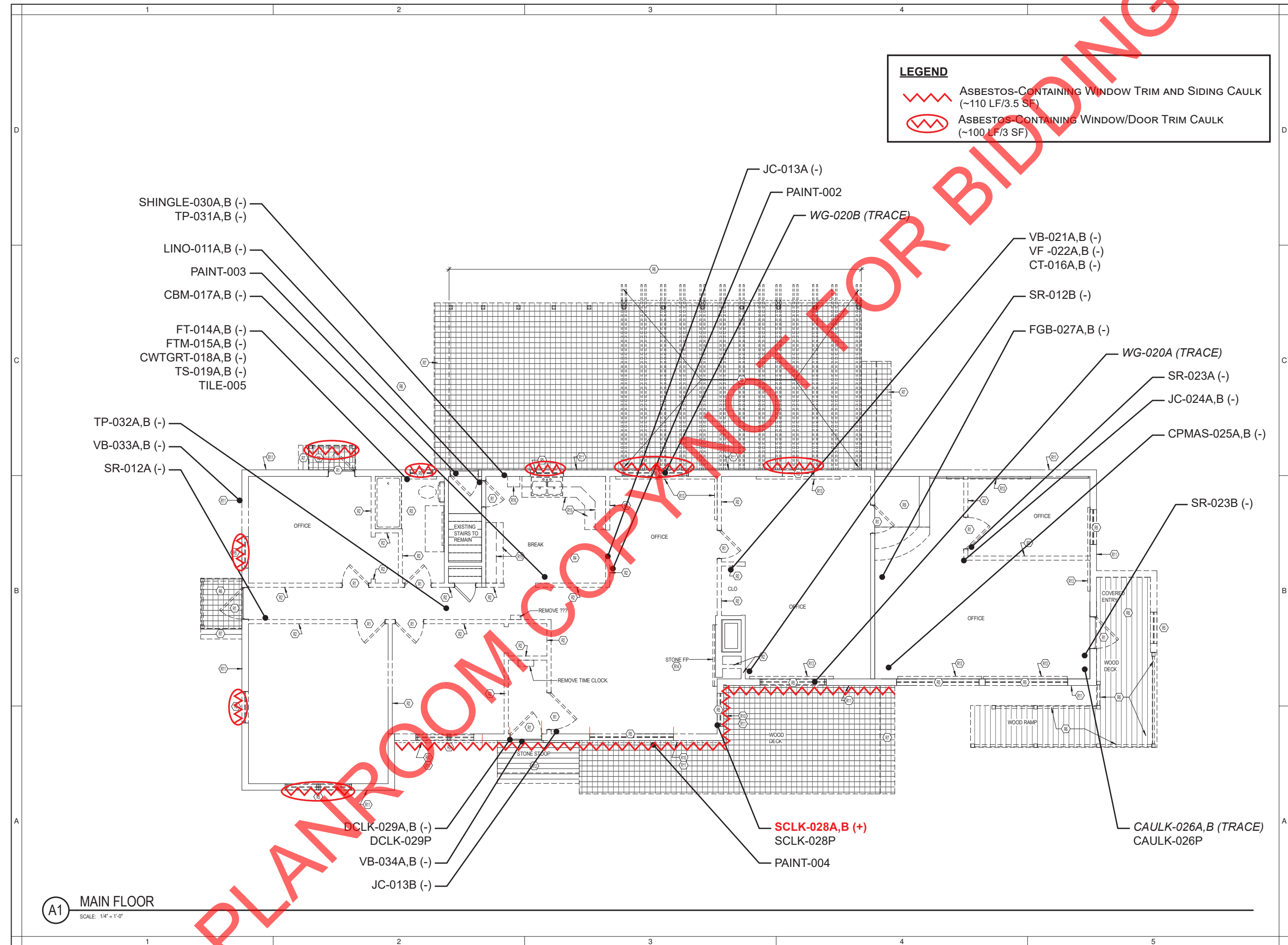
D A T E  
XX/XX/XX

SHEET TITLE  
**BASEMENT FLOOR**

SAMPLE LOCATION  
&  
POSITIVE MATERIAL  
LOCATION

**Figure 1**





**PK DESIGN**

450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

NOT FOR CONSTRUCTION

IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING ARCHITECT SHALL AFFIX THEIR SEAL AND THE NOTATION ALTERED BY FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NEW YORK STATE OLYMPIC  
DEVELOPMENT REGIONAL  
AUTHORITY

BELLEAYRE SKI CENTER ADMIN  
OFFICE BLDG

HIGHMOUNT, NEW YORK  
12441

PROJECT STATUS  
**PROGRESS**

PROJECT NORTH

REVISIONS

NO.	DESCRIPTION	DATE

PROJECT NUM  
221101.00

D A T E  
XX/XX/XX

SHEET TITLE  
**MAIN FLOOR PLAN**

SAMPLE LOCATION  
&  
POSITIVE MATERIAL  
LOCATION

**Figure 2**



NEW YORK STATE OLYMPIC REGIONAL DEVELOPMENT AUTHORITY

# BELLEAYRE ADMINISTRATIVE BUILDING & GONDOLA STORAGE BUILDING

BELLEAYRE SKI AREA  
HIGHMOUNT, NEW YORK

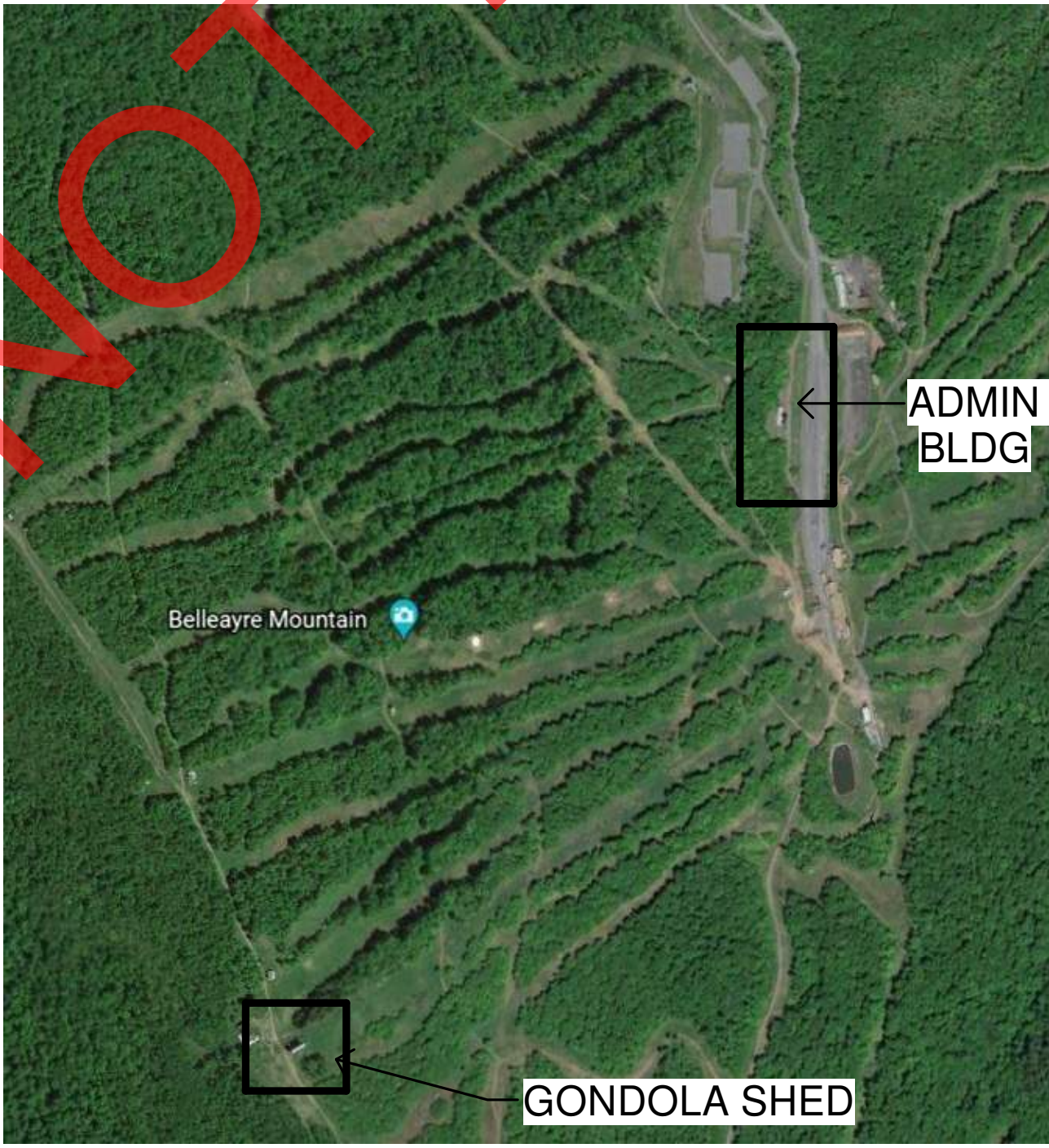
ORDA PIN: BEL.21.006 QPK # 221101

**BID SET** 4/17/23

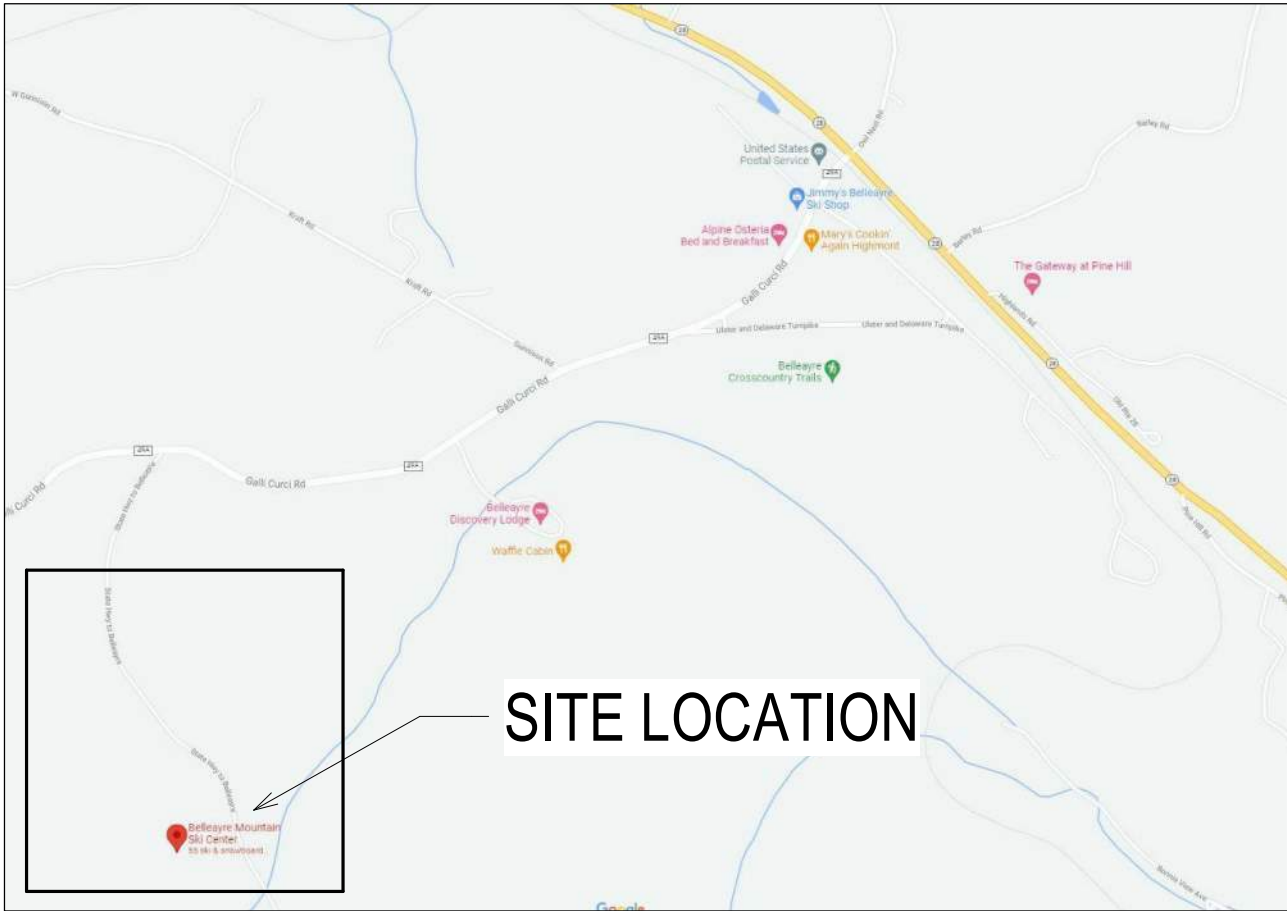
ORDA PIN: BEL.21.006  
Project Name: Belleayre Ski Area Administration Office Building Renovation  
CIN: BEL.21.006.101 General Trades Contract (G)  
CIN: BEL.21.006.102 Electrical Contract (E)  
CIN: BEL.21.006.103 Heating, Ventilation & Air Conditioning Contract (H)  
CIN: BEL.21.006.104 Plumbing Contract (P)



IMAGE FOR ILLUSTRATIVE PURPOSES ONLY



AERIAL MAP



SITE MAP

DRAWING LIST		
GENERAL		
	---	COVER SHEET
	G-001	GENERAL INFORMATION
	G-002	REGULATORY PLAN
G - CONTRACT - HAZARDOUS MATERIAL		
	HM100	BASEMENT HAZMAT PLAN
	HM101	MAIN FLOOR HAZMAT PLAN
G-CONTRACT - CIVIL		
	L-001	SITE GENERAL INFORMATION
	LDA-101	DEMOLITION / EROSION & SEDIMENTATION CONTROL PLAN - ADMINISTRATION BUILDING
	LA-101	LAYOUT PLAN - ADMINISTRATION BUILDING
	LA-102	GRADING & STORM SYSTEM PLAN- ADMINISTRATION BUILDING
	LA-103	PLANTING PLAN - ADMINISTRATION BUILDING
	LDG-101	DEMOLITION / EROSION & SEDIMENTATION CONTROL PLAN - GONDOLA BUILDING
	LG-101	LAYOUT PLAN - GONDOLA BUILDING
	LG-102	GRADING PLAN - GONDOLA BUILDING
	LG-103	PLANTING PLAN - GONDOLA BUILDING
	L-501	DETAILS
	L-502	DETAILS
	L-503	DETAILS
	L-504	DETAILS
	V-001	SITE SURVEY - ADMINISTRATION BUILDING
	V-003	SITE SURVEY - GONDOLA BUILDING
G - CONTRACT - STRUCTURAL		
	S-001	GENERAL NOTES
	S-101	FOUNDATION PLAN
	S-102	FIRST FLOOR FRAMING PLAN
	S-103	ATTIC FRAMING PLAN
	S-104	ROOF FRAMING PLAN
	S-311	FLOOR FRAMING SECTIONS & DETAILS
	S-312	FLOOR FRAMING SECTIONS & DETAILS
	S-321	ROOF FRAMING SECTIONS & DETAILS
	S-322	ROOF FRAMING SECTIONS & DETAILS
	SG-001	GENERAL NOTES
	SG-101	FIRST FLOOR / FOUNDATION & ROOF FRAMING PLANS
	SG-201	FRAMING ELEVATION
	SG-301	SECTIONS & DETAILS
	SG-302	SECTIONS & DETAILS
G - CONTRACT - ARCHITECTURAL		
	AD-102	MAIN FLOOR PLAN REMOVALS
	AD-101	BASEMENT FLOOR REMOVALS
	A-101	BASEMENT FLOOR PLAN
	A-102	MAIN FLOOR PLAN
	A-103	RCP- FIRST FLOOR
	A-104	ROOF PLAN
	A-201	ELEVATIONS- EXTERIOR
	A-202	ELEVATIONS- EXTERIOR
	A-301	SECTIONS- BUILDING
	A-302	SECTIONS- BUILDING
	A-303	SECTIONS- WALL
	A-304	SECTIONS- WALL
	A-305	SECTIONS- WOOD DECKS, STAIRS AND RAILS
	A-401	ENLARGED PLANS, ELEVATIONS, ROOM SCHEDULE & LEGEND
	A-501	DETAILS- EXTERIOR
	AG-101	GONDOLA STORAGE BLDG FLOOR PLAN, ELEVATIONS & BLDG SECTION
	AG-102	GONDOLA STORAGE BLDG - BLDG SECTIONS
P-CONTRACT		
	P-001	DRAWING INDEX, SYMBOL LIST & ABBREVS.
	PD-100	BASEMENT FLOOR REMOVALS
	PD-101	MAIN FLOOR PLAN REMOVALS
	P-100	BASEMENT FLOOR PLAN
	P-101	MAIN FLOOR PLAN & SCHEDULES
H-CONTRACT		
	M-001	DRAWING INDEX, SYMBOLS & ABBREVS.
	MD-100	BASEMENT REMOVALS
	MD-101	FIRST FLOOR REMOVALS
	M-100	BASEMENT PLAN
	M-101	FIRST FLOOR PLAN - POWER & SIGNAL
	M-201	HVAC ZONING
	M-501	DETAILS
	M-601	SCHEDULES
E-CONTRACT		
	E-001	DRAWING INDEX, SYMBOLS & ABBREVS.
	ED-101	BASEMENT FLOOR REMOVALS
	ED-102	MAIN FLOOR PLAN REMOVALS
	E-101	BASEMENT PLAN
	E-102	MAIN FLOOR PLAN
	E-103	FIRST FLOOR PLAN - LIGHTING
	E-104	ROOF PLAN
	E-601	SCHEDULES AND DETAILS
	EG-101	GONDOLA ELECTRIC

NYS OLYMPIC REGIONAL DEVELOPMENT AUTHORITY

HIGHMOUNT, NEW YORK  
12441



ARCHITECTURAL, STRUCTURAL:

MEP:

QPK DESIGN, LLP  
ARCHITECTS/ENGINEERS  
450 SOUTH SALINA ST  
SYRACUSE NY 13201  
315-472-7806



FS ENGINEERING, DPC  
721 E. GENESSEE ST.  
SYRACUSE, NY 13210  
315-471-4013

FS  
ENGINEERING,  
DPC  
721 E. Genessee Street  
Syracuse, NY 13210  
Tel: 315-471-4013  
Fax: 315-471-4044



ABBREVIATIONS	
A	
A/C	AIR CONDITIONING
AB	ANCHOR BOLT
ACC	ACCESSIBLE
ACS PNL	ACCESS PANEL
ADDUM	ADDENDUM
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AHR	ANCHOR(AGE)
ALT	ALTERNATE
ALUM	ALUMINUM
ANN PNL	ANNUNCIATOR PANEL
ANOD	ANODIZED
APC	ACOUSTICAL PANEL CEILING
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
ASB	ASBESTOS
ASPH	ASPHALT
ATC	ACOUSTICAL TILE CEILING

B	
BD	BOARD
BEV	BEVELED
BLDG	BUILDING
BLKG	BLOCKING
BLKT	BLACKET
BM	BEAM, BENCHMARK
BOT OF	BOTTOM OF
BRG	BEARING
BSMT	BASEMENT
BUR	BUILT-UP ROOF

C	
CAB	CABINET
CEM	CEMENT
CH BD	CHALKBOARD
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLL	CONTRACT LIMIT LINE
CLO	CLOSET
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMPS	COMPOSITE
CMT	CERAMIC MOSAIC TILE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMB	COMBINATION
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CORR	CORRIDOR
CPRS FL	COMPRESSIBLE FILLER
CPT	CARPET
CR	CARD READER
CRS	COLD ROLLED STEEL
CT	CERAMIC TILE

D	
D	DEPTH
DET	DETAIL
DF	DRINKING FOUNTAIN
DFLCT	DEFLECTION
DH	DOUBLE HUNG
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DMPF	DAMP PROOFING
DR	DOOR
DWG	DRAWING

E	
EA	EACH
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EMHO	ELECTROMAGNETIC HOLD OPEN
ENTR	ENTRANCE
EP	ELECTRIC PANEL
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPOSED, EXPANSION
EXT	EXTERIOR

F	
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FH	FIRE HYDRANT
FIN	FINISH(ED)
FIXT	FIXTURE
FLASH	FLASHING
FLG	FLOORING
FLR	FLOOR

ABBREVIATIONS	
FM	FACTORY MUTUAL
FO	FACE OF
FOF	FACE OF FINISH
FOS	FACE OF STUD
FP	FIREPROOFING
FR	FRAME
FRMG	FRAMING
FRP	FIBERGLASS REINFORCED PLASTIC/PANEL
FRTW	FIRE RETARDANT TREATED WOOD
FT	FOOT/FEET
FTG	FOOTING
FURG	FURRING
FURN	FURNISHED/FURNITURE
FWC	FABRIC WALL COVERING

G	
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GCT	GLAZED CERAMIC TILE
GL	GLASS/GLAZING
GWB	GYPSUM WALLBOARD
GYP	GYPSUM

H	
HC	HOLLOW CORE
HCP	HANDICAPPED
HDBD	HARDBOARD
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING/VENTILATING/AIR CONDITIONING

I	
ID	INSIDE DIAMETER
INCL	INCLUDE(D)-ING
INSUL	INSULATE(D)-ION(-ING)
INT	INTERIOR
INV	INVERT

J	
JAN	JANITOR
JT	JOINT

L	
LAM	LAMINATE(D)
LAV	LAVATORY
LF	LINEAR FEET
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT GA	LIGHT GAUGE
LTG	LIGHTING
LVR	LOUVER

M	
MACH	MACHINE
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MKR BD	MARKER BOARD
MLDG	MOULDING
MO	MASONRY OPENING
MR	MOISTURE RESISTANT
MTL	METAL
MULL	MULLION

N	
NA	NOT APPLICABLE
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NTS	NOT TO SCALE

O	
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE

P	
PBD	PARTICLE BOARD
PCT	PORCELAIN CERAMIC TILE
PERIM	PERIMETER
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLBG	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PNT	PAINT
PNTD	PAINTED

ABBREVIATIONS	
PR	PAIR
PREFAB	PREFABRICAT(D)
PT	PRESSURE TREATED
PTD	PAPER TOWER DISPENSER
PTN	PARTITION
PVC	POLY(VINYL CHLORIDE (PLASTIC)
PVG	PAVING

Q	
QT	QUARRY TILE
QTY	QUANTITY

R	
R	RADIUS/RISER
RB	RESILIENT BASE
RBR	RUBBER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFRIGERATOR
REINF	REINFORCE(D)
REQD	REQUIRED
RESIL	RESILIENT
RESIL C	RESILIENT CHANNEL
RET	RETURN
REV	REVISION
RM	ROOM
RO	ROUGH OPENING

S	
SC	SOLID CORE
SCHED	SCHEDULE
SECT	SECTION
SF	SQUARE FEET
SHT	SHEET
SHTHG	SHEATHING
SIM	SIMILAR
SLNT	SEALANT
SND	SANITARY NAPKIN DISPENSER
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SPEC	SPECIFICATION
SPKLR	SPEAKER
SQ	SQUARE
SSM	SOLID SURFACE MATERIAL
SST	STAINLESS STEEL
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STL JST	STEEL JOIST
STL LNTL	STEEL LINTEL
STL PLATE	STEEL PLATE
STN	STONE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SV	SHEET VINYL
SVT	SHEET VINYL FLOORING
SYMM	SYMMETRICAL

T	
T	TREAD
T&G	TONGUE AND GROOVE
TEL	TELEPHONE
TEMP	TEMPERATURE
TER	TERRAZZO
TERM	TERMINAL
THK	THICKNESS
THRES	THRESHOLD
TK BD	TACKBOARD
TMPD	TEMPERED
TO	TOP OF
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
TOW	TOP OF WALL
TRANS	TRANSOM, TRANSPARENT
TYP	TYPICAL

U	
UC	UNDERCUT
UL	UNDERWRITER'S LABORATORY (TEST)
UNO	UNLESS NOTED OTHERWISE
UR	URINAL

V	
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VNR	VENER
VP	VENER PLASTER
VR	VAPOR RETARDER
VT	VINYL TILE
VWC	VINYL WALLCOVERING

W	
W	WIDE
WI	WITH
W/O	WITHOUT
W/C	WATER CLOSET
WD	WOOD
WDW	WINDOW
WDWT	WINDOW TREATMENT
WGL	WIGGLER GLASS
WIP	WATERPROOFING
WPT	WORKPOINT
WS	WEATHERSTRIP
WWF	WELDED WIRE FABRIC

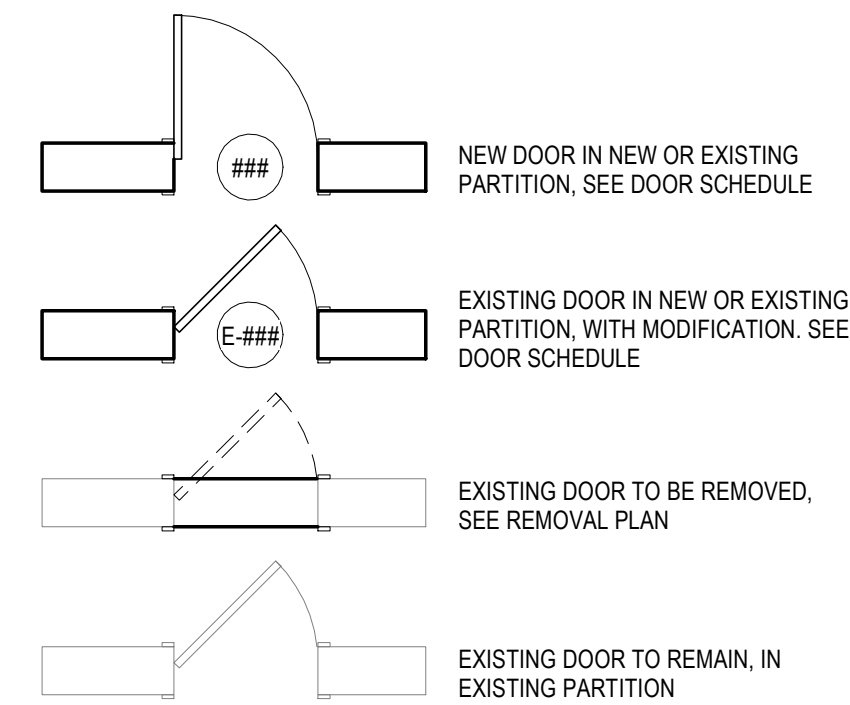
- DATUM POINT OR WORK POINT
- ACCESSORY ITEM- SEE ACCESSORY SCHEDULE
- WINDOW TYPE DESIGNATION
- SPECIAL NOTATION (e.g. DEMO NOTE)
- DOOR NUMBER DESIGNATION
- PARTITION TYPE DESIGNATION. SEE PARTITION LEGEND

ROOM NAME

ROOM NAME DESIGNATION

ROOM NUMBER DESIGNATION (IF PRESENT)

ROOM AREA DESIGNATION (IF PRESENT)



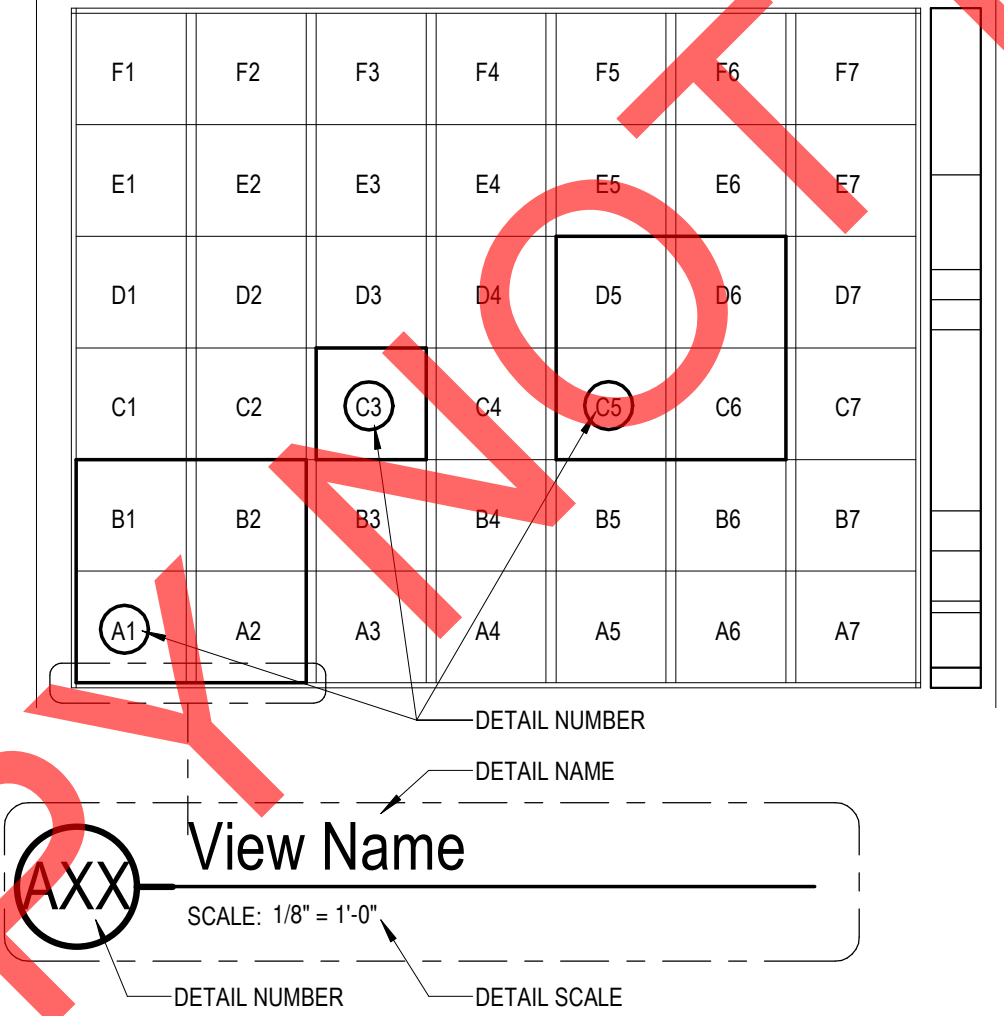
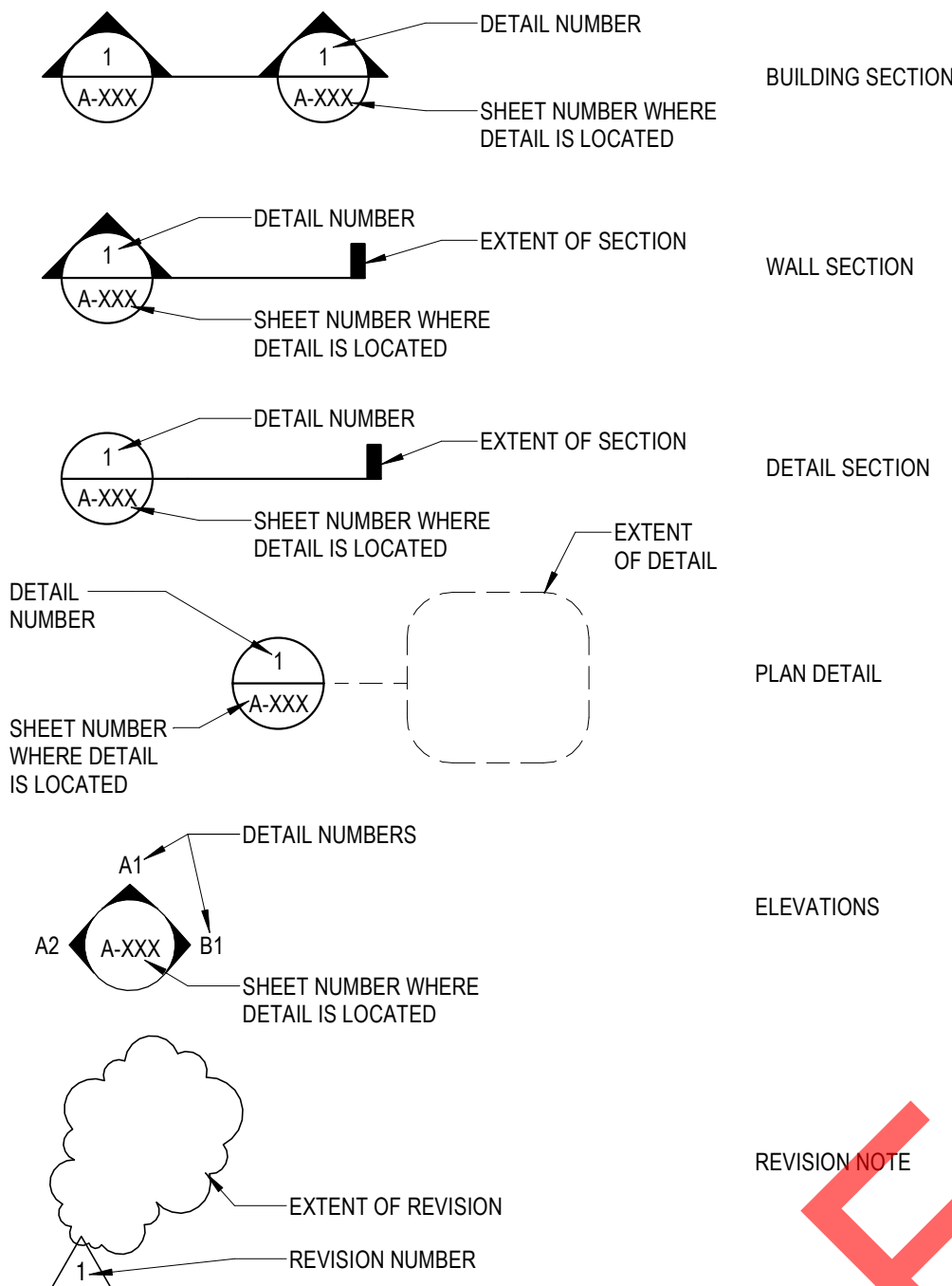
## C2 GRAPHIC KEY

SCALE: NO SCALE

CONCRETE - CAST IN PLACE	RIGID INSULATION	REINFORCING - WWF
CONCRETE - PRECAST	BATT INSULATION	WOOD BLOCKING
CONCRETE MASONRY UNIT	GYPSUM WALLBOARD	ACOUSTIC TILE
BRICK	TILE	CARPET
STONE GRANITE MARBLE	P LAM OVER COMPOSITE WOOD	EARTH
ALUMINUM	PLYWOOD	GRAVEL / STONE
STEEL	WOOD - FINISHED	SAND / MORTAR
SOLID SURFACE QUARTZ COUNTERED MARBLE SYNTHETIC		

## B2 MATERIALS LEGEND

SCALE: NO SCALE



## GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES AND ACCEPTED INDUSTRY STANDARDS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS AND ESTABLISHING THE COMPATIBILITY OF ALL NEW WORK WITH THE EXISTING CONDITIONS.

GENERAL CONTRACTOR SHALL TAKE EVERY PRECAUTION TO MINIMIZE DISRUPTION WITH ADJACENT OCCUPIED SPACE. SCHEDULE AND SEQUENCING OF WORK TO BE COORDINATED WITH OWNER AND ARCHITECT PRIOR TO BEGINNING WORK.

GENERAL CONTRACTOR SHALL PATCH ALL SURFACES TO REMAIN EFFECTED BY DEMOLITION OR REMOVAL OF EXISTING EQUIPMENT, SERVICES, & CONSTRUCTION. NEW SURFACES TO BE FILLED, SANDED SMOOTH & FINISHED TO MATCH ADJACENT SURFACE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION AND CONTINUOUS MAINTENANCE OF ALL WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S PROPERTY FROM DAMAGE OR LOSS BY DUST, DIRT, WATER, THEFT, FIRE OR ANY OTHER PHYSICAL DAMAGE IN CONNECTION WITH THE CONTRACT.

MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN, KEEP IN SERVICE, AND PROTECT AGAINST DAMAGE DURING ALL RENOVATION WORK. GENERAL CONTRACTOR TO COORDINATE CONSTRUCTION AROUND EXISTING EQUIPMENT, CONDUIT CABBING, ETC. WITH OWNER AND ARCHITECT AS REQUIRED TO MAINTAIN CONTINUOUS OPERATION.

GENERAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL NEW EQUIPMENT TO BE INSTALLED IN CEILING WITH EXISTING MECHANICAL AND ELECTRICAL WORK TO REMAIN IN PLACE.

COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION FOR POLLUTION CONTROL & HAZARDOUS MATERIALS.

ALL PENETRATIONS IN RATED ASSEMBLIES SHALL BE SEALED WITH UL/FM APPROVED MATERIAL ASSEMBLIES AND PROCEDURES.

ALL DIMENSIONS ARE FROM FINISH FACE OF WALL TO FINISH FACE OF WALL

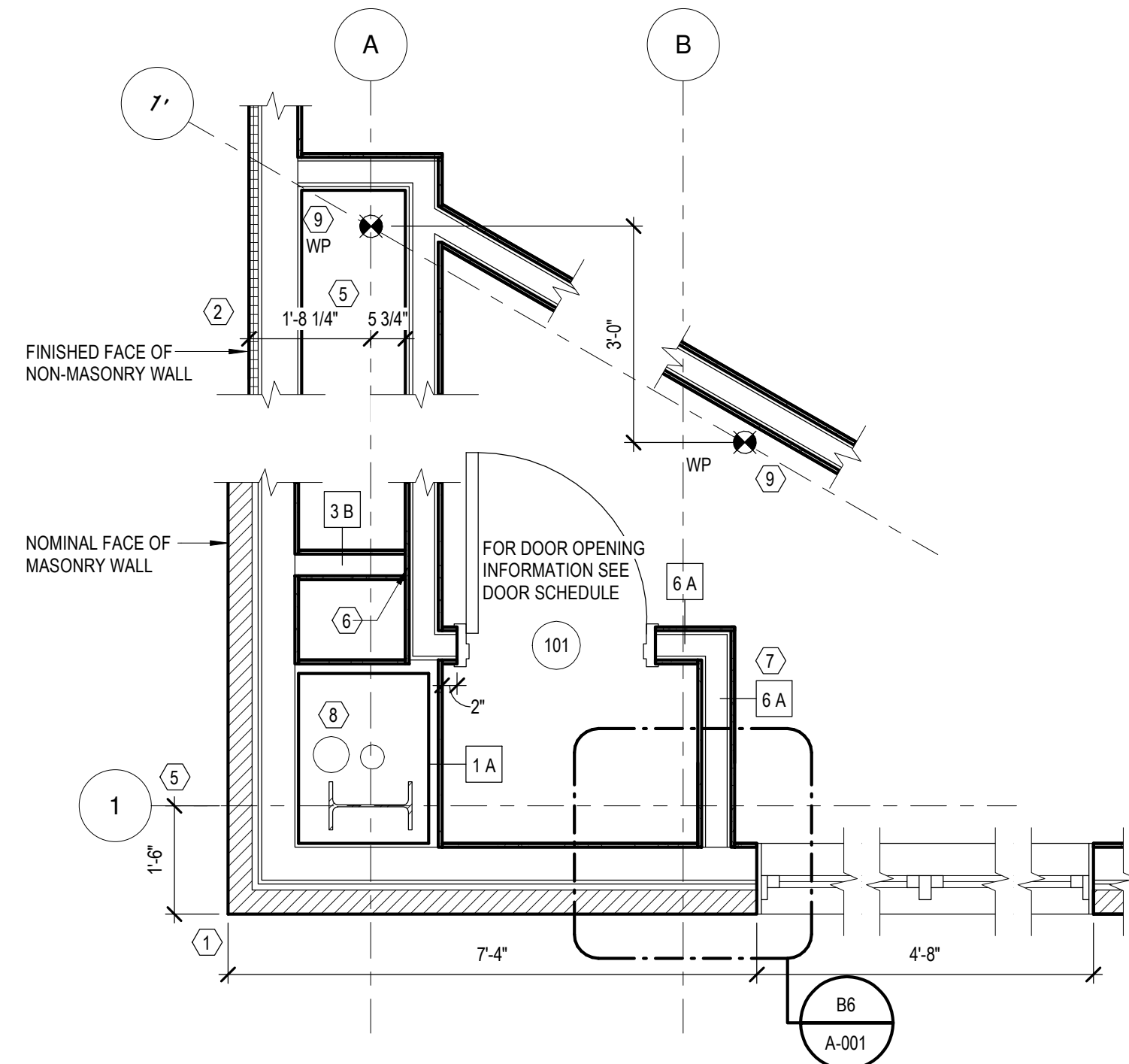
CONTRACTOR TO PROVIDE NON COMBUSTIBLE BLOCKING AS REQUIRED BEHIND ALL WALLS FOR PROPER INSTALLATION OF WALL MOUNTED EQUIPMENT, WALL CABINETRY, ACCESSORIES, ETC.

DRAWINGS SHALL NOT BE SCALED AS A BASIS FOR ESTABLISHING DIMENSIONS OR OTHER INFORMATION.

## C5 GENERAL NOTES

SCALE: NO SCALE

GENERAL NOTES-ARCHITECTURE	
Key Name	GENERAL NOTES
1	SEE STRUCTURAL DRAWINGS FOR WIND, SNOW, SEISMIC AND OTHER STRUCTURAL LOAD INFORMATION



DIMENSIONING LEGEND NOTES	
1	DIMENSIONS ARE FROM STRUCTURAL COLUMN CENTERLINES, UNO.
2	NON-ARCHITECTURAL DISCIPLINE INFORMATION IF SHOWN IS FOR REFERENCE ONLY. OBJECTS AND INFORMATION SHOWN MAY NOT BE ALL INCLUSIVE. REFER TO APPROPRIATE DISCIPLINE FOR INFORMATION.
GENERAL	DIMENSIONS, PARTITIONS TYPES AND OTHER SPECIFIC INFORMATION IN THE GUIDE DRAWINGS ARE EXAMPLES FOR ILLUSTRATIVE PURPOSES AND DO NOT REPRESENT ACTUAL INFORMATION FOR CONSTRUCTION OF A PARTICULAR PROJECT.

## A4 DIMENSIONING GUIDE PLAN

SCALE: NO SCALE



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



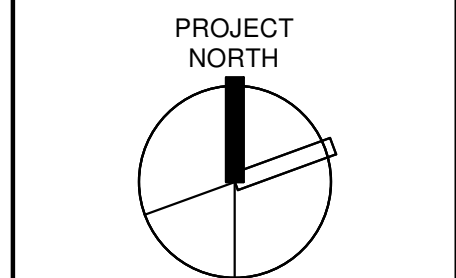
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA  
STORAGE BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
G-CONTRACT



REVISIONS	

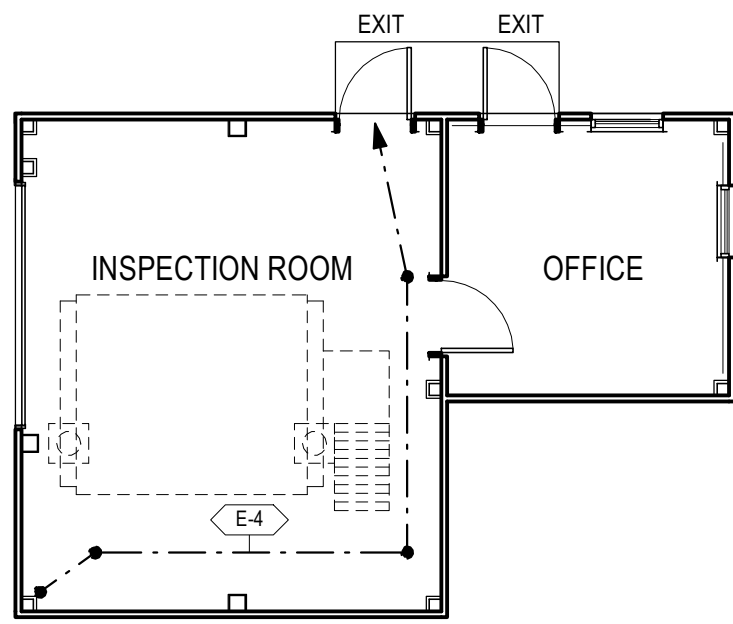
PROJECT NUMBER  
221101.00

D A T E  
4/17/23

SHEET TITLE  
GENERAL  
INFORMATION

G-001





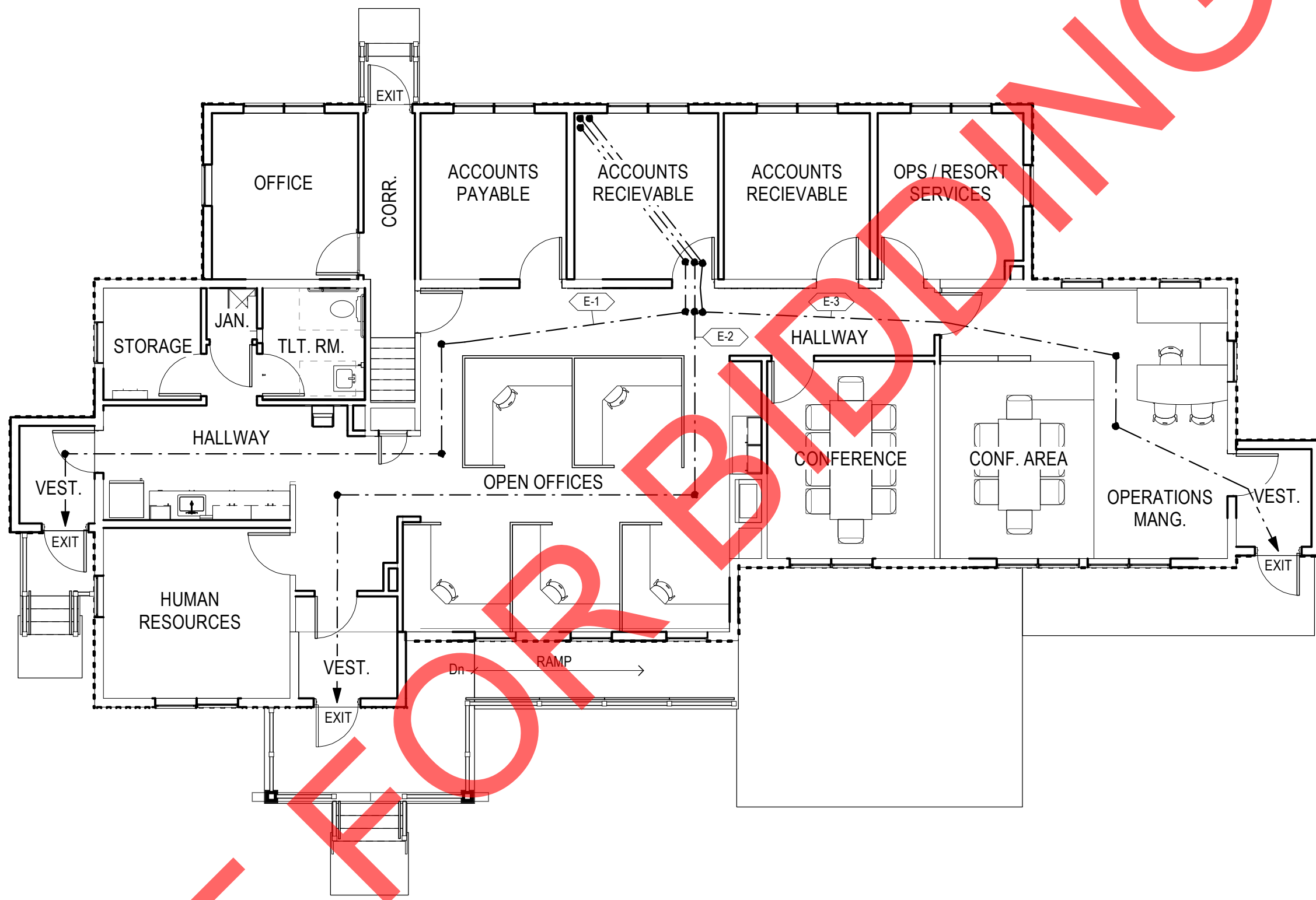
C1 GONDOLA REGULATORY PLAN  
SCALE: 1/8" = 1'-0"

GONDOLA BUILDING  
2020 BUILDING CODE OF NEW YORK STATE  
Building Occupancy:  
Section 312 UTILITY & MISC Group U  
Building Construction Type:  
Table 601 - Type IIB  
Allowable Height: Group U Non-Sprinklered - 55'-0", Provided 24'-0"  
Allowable Area: 8500sf max, 522sf Provided  
Means of Egress:  
Occupant Load 522sf / 100sf/occ = 5 occupants (Table 1004.5)

B1 BUILDING CODE - GONDOLA BLDG  
SCALE: NO SCALE

ENERGY CODE  
CHAPTER 4 - COMMERCIAL ENERGY EFFICIENCY  
ULSTER COUNTY, CLIMATE ZONE 6A:  
C402.1.1 Low-Energy Buildings  
The following low-energy buildings, or portions thereof separated from the remainder of the building by building thermal envelope assemblies complying with this section, shall be exempt from the building thermal envelope provisions of Section C402.  
1. Those with a peak design rate of energy usage less than 3.4 Btu/h • ft<sup>2</sup> (10.7 W/m<sup>2</sup>) or 1.0 watt per square foot (10.7 W/m<sup>2</sup>) of floor area for space conditioning purposes.  
2. Those that do not contain conditioned space.  
3. Greenhouses.

A1 ENERGY CODE - GONDOLA BLDG  
SCALE: NO SCALE



C3 ADMIN BLDG REGULATORY PLAN  
SCALE: 1/8" = 1'-0"

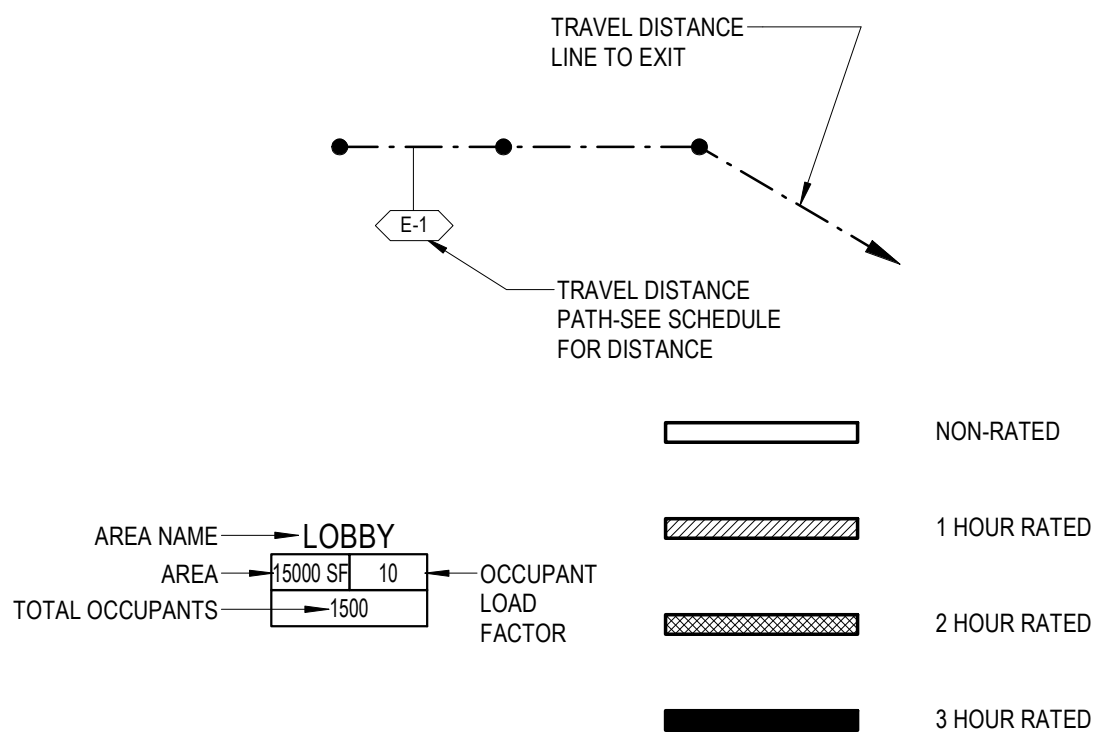
GENERAL CODES: 2020 EXISTING BUILDING CODE OF NEW YORK STATE  
PROJECT DESCRIPTION:  
EXISTING WOOD FRAMED, SINGLE-STORY OFFICE BUILDING w/ MANSION  
BUILDING CRITERIA:  
EXISTING BUILDING AREA: 1,976sf  
ADDITIONS: 883sf  
TOTAL AREA - BUSINESS GROUP (B): 2,859SF  
EXISTING BUILDING HEIGHT: 19'-0" FEET (1 STORY)  
CODE CLASSIFICATIONS:  
CONSTRUCTION TYPE: VB  
BUILDING DESIGNED AS A SINGLE STORY, NON-SPRINKLERED BUILDING.  
ESTIMATED OCCUPANCY COUNT: 2,859/150 per SF = 19 OCCUPANTS

CHAPTER 5 - GENERAL BUILDING HEIGHTS AND AREAS  
GROUP B NON-SPRINKLERED: 40' MAX, EXISTING HEIGHT 19'  
ALLOWABLE AREA: 900sf MAX, 2,859sf PROVIDED  
Chapter 6 - Types of Construction  
SECTION 601 GENERAL  
TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)  
CONSTRUCTION TYPE VB; BEARING WALLS = 0; NON-BEARING = 0; FLOOR CONSTRUCTION = 0; ROOF CONSTRUCTION = 0 (NO RATED ASSEMBLIES REQUIRED)  
CHAPTER 10 - MEANS OF EGRESS  
SECTION 1004 OCCUPANT LOAD  
TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCE PER OCCUPANT  
BUSINESS = 150 GROSS/sf; 2,859sf / 150 = 17 OCCUPANTS  
SECTION 1005 MEANS OF EGRESS SIZING  
1005.3.2 OTHER EXITS. CALCULATED BY MULTIPLYING THE OCCUPANT LOAD SERVED BY A FACTOR OF 0.2 INCHES PER PERSON.  
SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS  
1006.2.1. EGRESS BASED ON OCCUPANT LOAD AND COMMON PATH OF EGRESS TRAVEL DISTANCE. TWO EXITS REQUIRED FROM ANY SPACE WHERE EXCEEDING VALUES LISTED IN TABLE 1006.2.1  
TABLE 1006.2.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY  
OCCUPANCY B = 75 FEET - (1) EXIT REQUIRED, (3) PROVIDED  
Per Table 1006.3.3(2)  
(1) Exit required from story below grade for Occupancy S and max occupant load of 29 & egress travel distance max of 75'  
SECTION 1017 EXIT ACCESS TRAVEL DISTANCE  
TABLE 1017.2 EXIT ACCESS TRAVEL DISTANCE  
OCCUPANCY B; WITHOUT SPRINKLER SYSTEM = 200 FEET

ENERGY CODE  
CHAPTER 4 - COMMERCIAL ENERGY EFFICIENCY  
ULSTER COUNTY, CLIMATE ZONE 6A:  
TABLE 5.5-6 BUILDING REQUIREMENTS:  
OPAQUE ELEMENTS:  
ROOFS: ATTIC AND OTHER INSULATION = R-49 MINIMUM  
WALLS (ABOVE GRADE): WOOD-FRAMED AND OTHER = R13 + R-7.5ci MINIMUM  
WALLS, BELOW GRADE: R-7.5ci  
FLOORS: JOIST FRAMING = R-30  
OPAQUE DOORS: SWINGING U-0.37 MAXIMUM  
FENESTRATION:  
FIXED: U-0.36 MAX  
OPERABLE: U-0.43 MAX  
ENTRANCE DOORS: U-0.77 MAX

B6 ENERGY CODE - ADMIN BLDG  
SCALE: NO SCALE

SCHEDULE-TRAVEL DISTANCE PATHS		
PATH	LENGTH	COMMENTS
E-1	73'-3"	MAX 200 FT
E-2	70'-2"	MAX 200 FT
E-3	66'-10"	MAX 200 FT
E-4	33'-10"	MAX 200 FT



A3 BUILDING CODE - ADMIN BLDG  
SCALE: NO SCALE

A6 GRAPHIC KEY  
SCALE: NO SCALE



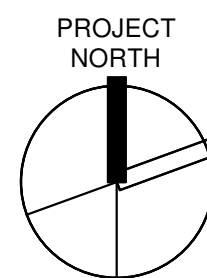
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA  
STORAGE BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
G-CONTRACT



REVISIONS


PROJECT NUMBER  
221101.00

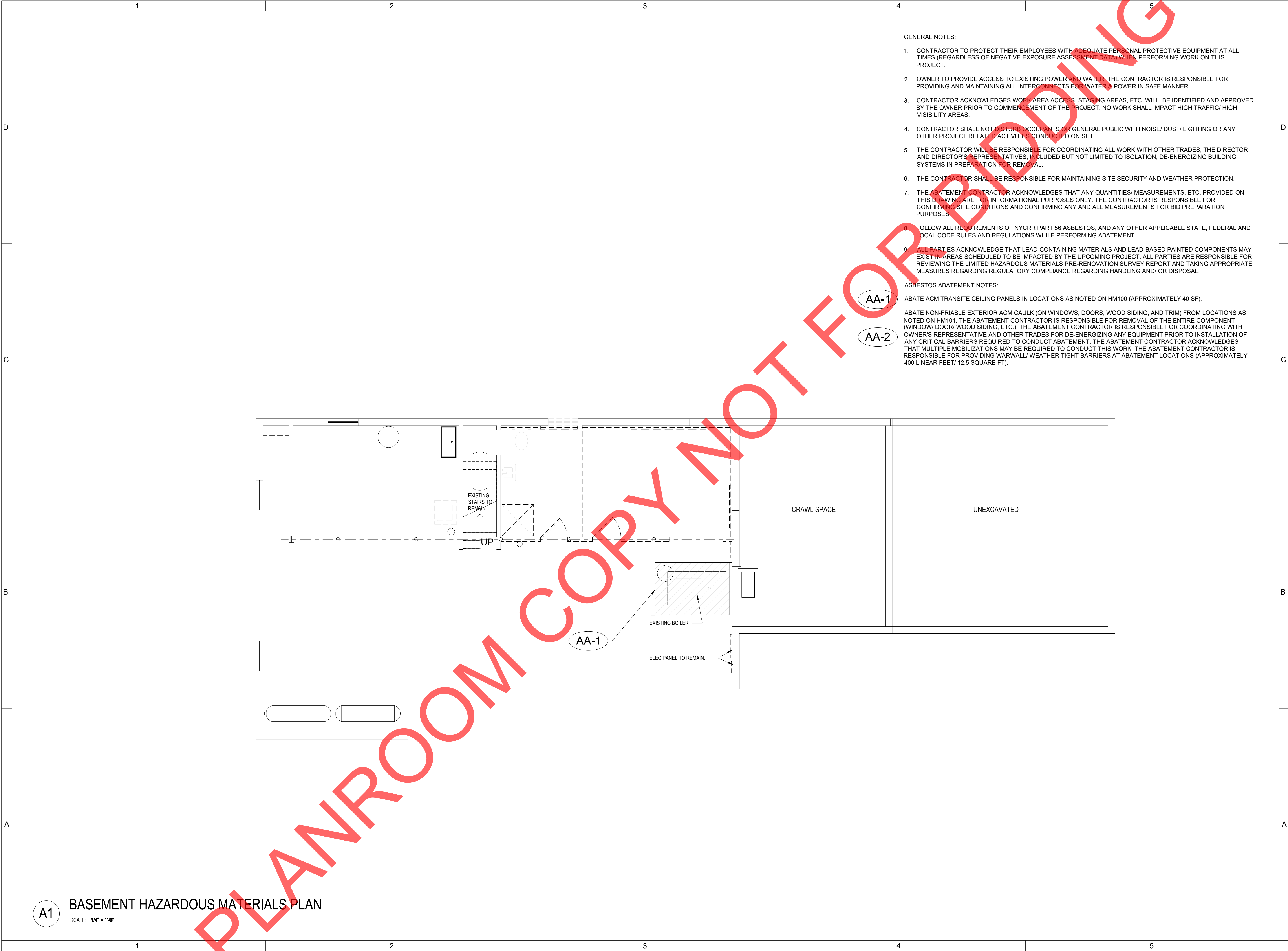
D A T E  
4/17/23

SHEET TITLE  
REGULATORY  
PLAN

G-002








- GENERAL NOTES:
1. CONTRACTOR TO PROTECT THEIR EMPLOYEES WITH ADEQUATE PERSONAL PROTECTIVE EQUIPMENT AT ALL TIMES (REGARDLESS OF NEGATIVE EXPOSURE ASSESSMENT DATA) WHEN PERFORMING WORK ON THIS PROJECT.
  2. OWNER TO PROVIDE ACCESS TO EXISTING POWER AND WATER. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL INTERCONNECTS FOR WATER & POWER IN SAFE MANNER.
  3. CONTRACTOR ACKNOWLEDGES WORK AREA ACCESS, STAGING AREAS, ETC. WILL BE IDENTIFIED AND APPROVED BY THE OWNER PRIOR TO COMMENCEMENT OF THE PROJECT. NO WORK SHALL IMPACT HIGH TRAFFIC/ HIGH VISIBILITY AREAS.
  4. CONTRACTOR SHALL NOT DISTURB OCCUPANTS OR GENERAL PUBLIC WITH NOISE/ DUST/ LIGHTING OR ANY OTHER PROJECT RELATED ACTIVITIES CONDUCTED ON SITE.
  5. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH OTHER TRADES, THE DIRECTOR AND DIRECTOR'S REPRESENTATIVES, INCLUDED BUT NOT LIMITED TO ISOLATION, DE-ENERGIZING BUILDING SYSTEMS IN PREPARATION FOR REMOVAL.
  6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SITE SECURITY AND WEATHER PROTECTION.
  7. THE ABATEMENT CONTRACTOR ACKNOWLEDGES THAT ANY QUANTITIES/ MEASUREMENTS, ETC. PROVIDED ON THIS DRAWING ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING SITE CONDITIONS AND CONFIRMING ANY AND ALL MEASUREMENTS FOR BID PREPARATION PURPOSES.
  8. FOLLOW ALL REQUIREMENTS OF NYCRR PART 56 ASBESTOS, AND ANY OTHER APPLICABLE STATE, FEDERAL AND LOCAL CODE RULES AND REGULATIONS WHILE PERFORMING ABATEMENT.
  9. ALL PARTIES ACKNOWLEDGE THAT LEAD-CONTAINING MATERIALS AND LEAD-BASED PAINTED COMPONENTS MAY EXIST IN AREAS SCHEDULED TO BE IMPACTED BY THE UPCOMING PROJECT. ALL PARTIES ARE RESPONSIBLE FOR REVIEWING THE LIMITED HAZARDOUS MATERIALS PRE-RENOVATION SURVEY REPORT AND TAKING APPROPRIATE MEASURES REGARDING REGULATORY COMPLIANCE REGARDING HANDLING AND/ OR DISPOSAL.

ASBESTOS ABATEMENT NOTES:


AA-1 ABATE ACM TRANSITE CEILING PANELS IN LOCATIONS AS NOTED ON HM100 (APPROXIMATELY 40 SF).

AA-2 ABATE NON-FRIABLE EXTERIOR ACM CAULK (ON WINDOWS, DOORS, WOOD SIDING, AND TRIM) FROM LOCATIONS AS NOTED ON HM101. THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF THE ENTIRE COMPONENT (WINDOW/ DOOR/ WOOD SIDING, ETC.). THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH OWNER'S REPRESENTATIVE AND OTHER TRADES FOR DE-ENERGIZING ANY EQUIPMENT PRIOR TO INSTALLATION OF ANY CRITICAL BARRIERS REQUIRED TO CONDUCT ABATEMENT. THE ABATEMENT CONTRACTOR ACKNOWLEDGES THAT MULTIPLE MOBILIZATIONS MAY BE REQUIRED TO CONDUCT THIS WORK. THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR PROVIDING WALL/ WEATHER TIGHT BARRIERS AT ABATEMENT LOCATIONS (APPROXIMATELY 400 LINEAR FEET/ 12.5 SQUARE FT).




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PHONE: (315) 476-1157  
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EDWARD K. RED, P.E.

NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING,  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
G-CONTRACT

PROJECT NORTH

R E V I S I O N S		

PROJECT NUMBER  
221101.00

D A T E  
4/17/2023

SHEET TITLE  
BASEMENT  
HAZMAT PLAN

HM100



D			
C	A	M	
	AC-FT	ACRE-FEET	MH MANHOLE
	AC	ACRES	MFR MANUFACTURER
	ACC	ASPHALT CEMENT CONCRETE	MATL MATERIAL
	ADDM	ADDENDUM	MAX MAXIMUM
	ALT	ALTERNATE	MECH MECHANICAL
	ALUM	ALUMINUM	MTL METAL
	ADA	AMERICAN WITH DISABILITIES ACT	MIN MINIMUM
	AB	ANCHOR BOLT	MISC MISCELLANEOUS
	ANOD	ANODIZED	
	APPROX	APPROXIMATE	N
	ARCH	ARCHITECT(URAL)	NOM NOMINAL
	AD	AREA DRAIN	N NORTH
	ASPH	ASPHALT	NA NOT APPLICABLE
	B		NIC NOT IN CONTRACT
	BSMT	BASEMENT	NTS NOT TO SCALE
	BM	BEAM, BENCHMARK	NO NUMBER
	BC	BOTTOM OF CURB	O
	BW	BOTTOM OF WALL	OC ON CENTER
	BLDG	BUILDING	OPNG OPENING
	C		OD OUTSIDE DIAMETER
	CIP	CAST IRON / CURB INLET	OH OVERHEAD
	CIP	CAST IRON PIPE / CAST IN PLACE	OHC OVERHEAD COMMUNICATIONS
	CB	CATCH BASIN	OHE OVERHEAD ELECTRIC
	CL	CENTERLINE	P
	CO	CLEANOUT	PL PROPERTY LINE
	CLR	CLEAR	PC POINT OF CURVE
	COL	COLUMN	PCG PORTLAND CEMENT CONCRETE
	COMB	COMBINATION	PERF PERFORATED
	COM	COMMUNICATION	PI PINT OF INTERSECTION
	CONC	CONCRETE	PLBG PLUMBING
	CMU	CONCRETE MASONRY UNIT	PLYWD PLYWOOD
	CONSTR	CONSTRUCTION	PT PRESSURE TREATED
	CJ	CONSTRUCTION JOINT	PT POLYVINYL CHLORIDE (PLASTIC)
	CONT	CONTINUOUS	PSI POUNDS PER SQUARE INCH
	CLL	CONTRACT LIMIT LINE	PSF POUNDS PER SQUARE FOOT
	CONTR	CONTRACTOR	PW PRIVATE WATER / DOMESTIC WATER
	COORD	COORDINATE	
	OMP	CORRUGATED METAL PIPE	Q
	CU FT	CUBIC FEET	QTY QUANTITY
	CFS	CUBIC FEET PER SECOND	R
	CU YD	CUBIC YARD	R RADIUS
	D		REF REINFORCE(D)(J)-ING
	DIA	DIAMETER	RCP REINFORCED CONCRETE PIPE
	DIM	DIMENSION	REQ'D REQUIRED
	DWG	DRAWING	REV REVISION
	DI	DROP INLET	ROW RIGHT OF WAY
	DIP	DUCTILE IRON PIPE	S
B	E		SAN SANITARY
	EA	EACH	SD STORM DRAIN
	E	EAST	SS SANITARY SEWER
	ELEC	ELECTRIC(AL)	SCHED SCHEDULE
	EL	ELEVATION	SJ SCORED JOINT
	EQ	EQUAL	SECT SECTION
	EST	ESTIMATE	SHT SHEET
	EXIST	EXISTING	S SOUTH
	EXIST GR	EXISTING GRADE	SPEC SPECIFICATION
	EXP	EXPANSION	SQ SQUARE
	EJ	EXPANSION JOINT	SF SQUARE FEET
	F		STD STANDARD
	FT/FT	FEET PER FOOT	STM STEAM
	FPS	FEET PER SECOND	STW STORMWATER
	FFE	FINISH FLOOR ELEVATION	STRUCT STRUCTURE / STRUCTURAL
	FF EL	FINISH FLOOR ELEVATION	T
	FIN	FINISHED	TD TRENCH DRAIN
	FIN GR	FINISH GRADE	TEL TELEPHONE
	FH	FIRE HYDRANT	TC TOP OF CURB
	FLR	FLOOR	TOW TOP OF WALL
	FT	FOOT / FEET	TYP TYPICAL
	G		U
	GALV	GALVANIZED	UE UNDERGROUND ELECTRIC
	GA	GAUGE	UNO UNLESS NOTED OTHERWISE
	G	NATURAL GAS	V
	H		VIF VERIFY IN FIELD
	HT	HEIGHT	VERT VERTICAL
	HDPE	HIGH DENSITY POLYETHYLENE PIPE	
	HORIZ	HORIZONTAL	W
	HYD	HYDRANT	WTR WATER
	I		W WEST
	J		W/ WITH
	INCL	INCLUDE(D)-(ING)	W/O WITHOUT
A	ID	INSIDE DIAMETER	WPT WORKPOINT
	INV	INVERT	
	J		Y
	JT	JOINT	YR YEAR
	L		
	LAT	LATTITUDE	
	LB	POUND	
	LP	LIGHT POLE	
	LF	LINEAR FEET	

A1 ABBREVIATION LIST

PROPOSED	
BUILDING WALL/EDGE	
BUILDING DOOR	
BUILDING OVERHANG	
CONTRACT LIMIT LINE (CLL)	
NATURAL GAS LINE	
OVERHEAD POWER/ELECTRICAL	
UNDERGROUND POWER/ELECTRICAL	
SANITARY SEWER	
STORM DRAIN PIPE	
DOMESTIC WATER LINE	
PROPERTY LINE	
EASEMENT LINE	
SETBACK LINE	
CENTERLINE	
FENCE	
TREE LINE	
SWALE CENTER LINE	
UNDERDRAIN	
EDGE OF WATER (POND, LAKE, STREAM)	
SILT FENCE	
INLET PROTECTION (TYPE 1, 2, 3, ETC.)	
CHECK DAM	
ROCK DAM	
TEMPORARY SEDIMENT BASIN & PIPE OUTLET	
CATCH BASIN SEDIMENT TRAP	
RIP/RAP OUTLET SEDIMENT TRAP	
FLARED END SECTION & RIP/RAP	
RIP/RAP	
REMOVALS	
PAVEMENT TO BE REMOVED/SAW-CUT LINE	
STORM DRAIN LINE TO BE REMOVED	
SANITARY SEWER LINE TO BE REMOVED	
MINOR OR INTERVAL CONTOURS	
MAJOR CONTOURS	
SPOT ELEVATIONS	
CURB	
ASPHALT ROAD PAVEMENT	
ASPHALT DRIVE PAVEMENT	
ASPHALT PARKING PAVEMENT	
ASPHALT WALK PAVEMENT	
CONCRETE PAVEMENT	
UNIT PAVERS	
UTILITY POLE	
LIGHT POLE	
COMMUNICATIONS/FIBER OPTIC MANHOLE/BOX	
ELECTRIC MANHOLE/ & VAULT	
UTILITY PULLBOX	
SANITARY SEWER MANHOLE	
STORM DRAIN MANHOLE	
CATCH BASIN/STORM INLET	
CURB INLET	
STEAM MANHOLE & VAULT	
UNDERGROUND UTILITY CLEANOUT	
DOMESTIC WATER MANHOLE	
DOMESTIC WATER VALVE	
WATER HYDRANT	
DECIDUOUS TREE	
CONIFEROUS TREE	
SHRUBS (DECIDUOUS & CONIFEROUS)	

3

PROPOSED (CONTINUED)

PLANT TAG (SEE SCHEDULE ENTRY)	<div>XX</div> <div>#</div>
TREE TO BE REMOVED	
GROUND COVER/PERENNIAL & ANNUAL MASSINGS	
WET MEADOW	
UPLAND MEADOW	
WETLAND PLANTING	
EROSION CONTROL BLANKET	
RIPRAP CHANNEL PROTECTION	
REMOVAL OF EXISTING VEGETATION	
REMOVAL OF EXISTING VEGETATION	

EXISTING

	MULTI-POST SIGN
	SIGN
	DECIDUOUS TREE
	CONIFEROUS TREE
	UNKNOWN MANHOLE
	ELECTRIC BOX
	ELECTRIC MANHOLE
	SNOW MAKER
	WATER SPIGOT
	WATER STANDPIPE
	WATER MANHOLE
	GAS MANHOLE
	GAS VALVE
	SANITARY MANHOLE
	DRAINAGE MANHOLE
	DRAINAGE INVERT
	TELEPHONE RISER
	TELEPHONE MANHOLE
	LIGHT POLE
	UTILITY POLE WITH LIGHT
	BASELINE POINT
	BENCHMARK
	MAJOR CONTOUR
	MINOR CONTOUR
	FIBER OPTIC LINE
	SNOW AIR LINE
	SNOW WATER LINE
	ELECTRIC LINE
	GAS LINE
	WATER LINE
	SANITARY PIPE
	TELEPHONE LINE
	DRAINAGE PIPE

3

4

5

REVISION NUMBER

REVISION NOTE

REVISION CLOUD

SHEET NOTE NUMBER

SHEET KEYNOTE

DETAIL NUMBER

SHEET NUMBER WHERE DETAIL IS LOCATED.

DETAIL POINTER

DETAIL NUMBER

SHEET NUMBER WHERE DETAIL IS LOCATED.

DETAIL SECTION

DETAIL NUMBER

SHEET NUMBER WHERE DETAIL IS LOCATED.

PLAN DETAIL

VIEW NAME

SCALE: 1/8"=1'-0"

DETAIL NUMBER

DETAIL SCALE

D4 VIEW CALLOUT LEGEND

SCALE: NOT TO SCALE

1. DRAWINGS ARE BASED ON SURVEYS PROVIDED BY SHUMAKER CONSULTING ENGINEERING & LAND SURVEYING, D.P.C.

1.1. SURVEY 1: TITLED "BELLEAVERY SKI CENTER ADMINISTRATIVE OFFICE BUILDING" (VERTICAL DATUM NAVD8) DATED NOV. 2021

1.1.1. BENCHMARK #1 (STA.OFF. 11+89.2/41.8' LT.) IS CHISELED SQUARE SET IN CONCRETE BASE OF A FILL CAP LOCATED ±2' WEST OF THE WEST EDGE OF ASPHALT DRIVE AND ±40' WEST OF THE TICKET SALES BUILDING. ELEVATION = 2532.24'

1.1.2. BENCHMARK #2 (STA.OFF. 15+88.3/6.7' RT.) RAILROAD SPIKE SET IN UTIL. POLE WITH NO# LOCATED ±2' EAST OF THE EAST EDGE OF AN ASPHALT DRIVE AND ±200' NORTH OF THE LONGHOUSE LODGE BUILDING. ELEVATION = 2518.65'

1.1.3. BENCHMARK #3 (STA.OFF. 19+80.1/5.7' RT) RAILROAD SPIKE SET INTO UTIL. POLE WITH NO # LOCATED ±5' EAST OF THE EAST EDGE OF AN ASPHALT DRIVE AND ±800' NORTH OF THE LONGHOUSE LODGE BUILDING. ELEVATION = 2503.91'

1.2. SURVEY 2: TITLED "BELLEAVERY SKI CENTER GONDOLA AREA" (VERTICAL DATUM NAVD88) DATED NOV. 2021

1.2.1. BENCHMARK #5 (STA.OFF. A 10+38.8/49.2' LT.) RAILROAD SPIKE IN 18" MAPLE LOCATED ±150' SOUTH OF GONDOLA AND ±175' SOUTH OF "TOMAHAWK" CHAIR LIFT. ELEVATION = 3423.11'.

1.2.2. BENCHMARK #6 (STA.OFF. A 10+31.1' FTPB/81.1' LT) RAILROAD SPIKE IN 12" TWIN MAPLE LOCATED ±100' WEST OF GONDOLA AND ±75' WEST OF "TOMAHAWK" CHAIR LIFT. ELEVATION = 3424.20'.

2. LOCATIONS OF THE UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WERE OBTAINED BY FIELD MEASUREMENTS WHERE POSSIBLE. OTHERWISE, THEY WERE OBTAINED FROM OTHER SOURCES AND MAY BE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES AND STRUCTURES MAY EXIST, BUT THEIR LOCATIONS ARE PRESENTLY UNKNOWN. FIELD LOCATE PRIOR TO EXCAVATION AND REPAIR ANY DAMAGE FROM CONSTRUCTION ACTIVITIES.

3. NOTIFY UDIG (811) AND THE OWNER'S REPRESENTATIVE 72 HOURS PRIOR TO EXCAVATION.

4. OBTAIN LANDSCAPE ARCHITECT'S / DIRECTOR'S REPRESENTATIVE REVIEW OF LAYOUT AND GRADING BEFORE PROCEEDING WITH CONSTRUCTION.

5. COMPLY WITH ALL REQUIREMENTS OF GOVERNMENT AGENCIES HAVING JURISDICTION OF ADJOINING ROADWAYS RELATIVE TO MAINTENANCE AND PROTECTION OF TRAFFIC. ALL WORK WITHIN ROAD RIGHT-OF-WAYS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. OBTAIN ALL PERMITS REQUIRED FROM AUTHORITIES HAVING JURISDICTION INCLUDING PAYMENT OF FEES AND PERFORMANCE BONDS.

6. TREES TO BE PROTECTED SHALL BE IDENTIFIED PRIOR TO THE START OF CONSTRUCTION. UTILIZE CONSTRUCTION FENCING AS SHOWN AND/OR OTHERWISE NECESSARY TO PROTECT TREE ROOTS. AVOID HEAVY CONSTRUCTION VEHICLE TRAFFIC OVER TREE ROOTS WITHIN THE DRIP LINES.

7. ADJUST ALL EXISTING MANHOLES AND CATCH BASIN RIMS, WATER VALVE COVERS, AND OTHER UTILITIES WHERE ENCOUNTERED, TO MEET NEW LINE AND GRADE OF FINISHED LAWN OR PAVEMENTS.

8. SAW-CUT ALL EXISTING PAVEMENTS AT LIMITS OF REMOVAL TO FORM A CLEAN STRAIGHT EDGE TO WHICH NEW PAVEMENTS, LAWN OR PLANT BEDS WILL ABUT.

9. SAW-CUT EXISTING CONCRETE PAVEMENTS AT NEAREST CONTROL JOINT TO LIMITS OF REMOVAL AND REPLACE CONCRETE PAVEMENTS IN FULL FLAGS.

10. REPAIR ALL EXISTING PAVEMENT WHERE DAMAGED AND/OR DISTURBED BY THE WORK OF THE CONTRACT AT NO COST TO THE OWNER. REPAIRS SHALL BE MADE WITH LIKE MATERIALS OF EQUAL QUALITY AND TO THE EXISTING PAVEMENT SECTION DEPTH WITH LIKE MATERIALS UNLESS OTHERWISE NOTED. THE AREA OF REPAIR SHALL BE NOT LESS THAN 10' BY 10' UNLESS APPROVED BY THE LANDSCAPE ARCHITECT.

11. REPAIR ALL EXISTING LAWN AREAS DAMAGED AND/OR DISTURBED BY WORK OF THIS CONTRACT. REPAIRS SHALL BE MADE IN ACCORDANCE WITH THE MATERIALS AND METHODS DESCRIBED IN DIVISION 32 TURF AND GRASSES OF THE CONTRACT SPECIFICATIONS OR AS INDICATED ON THE PLANS AND DETAILS.

12. INSTALL 6" (SETTLED DEPTH) TOPSOIL AND ESTABLISH LAWN IN ALL AREAS WITHIN THE CONTRACT LIMITS NOT DESIGNATED FOR OTHER SURFACES. REPAIR ALL OTHER AREAS DISTURBED BY CONSTRUCTION.

13. CONTRACTOR SHALL VERIFY THAT EXISTING ELEVATION DATA IS CORRECT AND ON THE SAME DATUM AS THE REFERENCED SURVEY OR EXISTING CONDITIONS DRAWING PROVIDED IN THE CONTRACT DOCUMENTS. RECORD A MINIMUM OF (5) FIVE ELEVATIONS OF EXISTING PERMANENT LANDMARKS TO REMAIN AND SUBMIT TO THE ARCHITECT FOR RECORDS. THE CONTRACTOR SHALL FIELD VERIFY ALL CHECK DIMENSIONS INDICATED AND SUBMIT THEIR FINDINGS TO THE ARCHITECT BEFORE PROCEEDING WITH CONSTRUCTION.

14. NO SITE STRUCTURE OR UTILITY IS TO BE INSTALLED CLOSER TO THE BUILDING OR RETAINING WALL FOOTING SUCH THAT THE EXCAVATION FOR THEM IS CLOSER THAN 1.5H TO 1V TO THE BOTTOM OF THE FOOTING. FIELD VERIFY AND COORDINATE SHOP DRAWING DESIGN TO COMPLY.

15. SOIL RESTORATION: CONTRACTOR TO INSTALL FULL DEPTH SOIL RESTORATION IN ALL LAWN AND/OR PLANTED AREAS WITHIN THE LIMITS OF WORK MEETING THE NEW YORK STATE DEC REGULATIONS INCLUDING THE STANDARDS AND SPECIFICATIONS FOR EROSION & SEDIMENTATION CONTROLS MANUAL (THE BLUE BOOK, NOVEMBER 2016 OR LATEST VERSION). IN AREAS WHERE TOPSOIL IS ONLY STRIPPED WITH NO GRADE CHANGE, SOIL SHALL BE AERATED AND 6" OF TOPSOIL APPLIED. AREAS OF CUT/FILL AND AREAS WITH HEAVY TRAFFIC INCLUDING BUT NOT LIMITED TO WITHIN 5:25 OF THE BUILDING BUT NOT WITHIN A FIVE FOOT PERIMETER AROUND FOUNDATION WALLS), SHALL RECEIVE FULL SOIL RESTORATION (DECOMPACTION AND COMPOST ENHANCEMENT).

B4 GENERAL NOTES

1. EMPLOY EROSION CONTROL MEASURES AS SHOWN ON THE CONTRACT DOCUMENTS AND OTHERWISE NECESSARY TO PREVENT DAMAGE TO ON-SITE FACILITIES AND ADJOINING PROPERTY. ALL MEASURES SHALL BE INSTALLED AND MAINTAINED IN CONFORMANCE WITH THE NEW YORK STATE DEC REGULATIONS INCLUDING THE STANDARDS AND SPECIFICATIONS FOR EROSION & SEDIMENTATION CONTROLS MANUAL. (THE BLUE BOOK, NOVEMBER 2016 OR LATEST VERSION).

2. INSPECT AND MAINTAIN ALL EROSION CONTROL FACILITIES ON A DAILY BASIS AND IMMEDIATELY AFTER EVERY STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO:

A) REPLACEMENT OR REPAIR OF DAMAGED SILT FENCE

B) REMOVAL OF SEDIMENT FROM ALL MEASURES SUCH THAT THEY REMAIN IN COMPLIANCE WITH THE LATEST EDITION OF THE NYSDEC BLUE BOOK.

C) INLET PROTECTION DEVICES & MEASURES

D) ASSURANCE OF GOOD GRASS GROWTH.

E) CONSTRUCTION ACCESS ROADS

3. GRADE THE SITE AND EMPLOY MEASURES TO DIRECT ALL STORM WATER RUNOFF TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.

4. CLEAN PAVED ROADWAYS DAILY DURING CONSTRUCTION TO PREVENT SEDIMENT TRACKING ONTO PUBLIC ROADS.

5. STABILIZE ALL DRAINAGE OUTLETS AS SHOWN BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.


6. APPLY WATER OR A DUST PALLIATIVE TO MINIMIZE DUST AND EMPLOY MEASURES TO MINIMIZE OTHER CONSTRUCTION NUISANCES THROUGHOUT THE COURSE OF THE PROJECT PER THE CONTRACT SPECIFICATIONS.

7. REMOVE NO MORE VEGETATIVE COVER THAN IS NECESSARY FOR IMMEDIATE GRADING ACTIVITIES. ALL NEWLY DISTURBED AREAS NOT ACTIVELY UNDER CONSTRUCTION MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN ONE WEEK (7 CALENDAR DAYS) USING THE SPECIFIED SEED MIX AT SPECIFIED RATE.

A4 EROSION CONTROL NOTES


4

5



**PK  
DESIGN**

450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



*Michael P. O'Shea*

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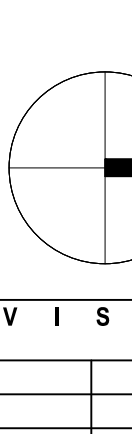
**NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY**

**BELLEAYRE SKI CENTER ADMIN  
OFFICE BLDG**

**HIGHMOUNT, NEW YORK  
12241**

C O N T R A C T

**G-CONTRACT**



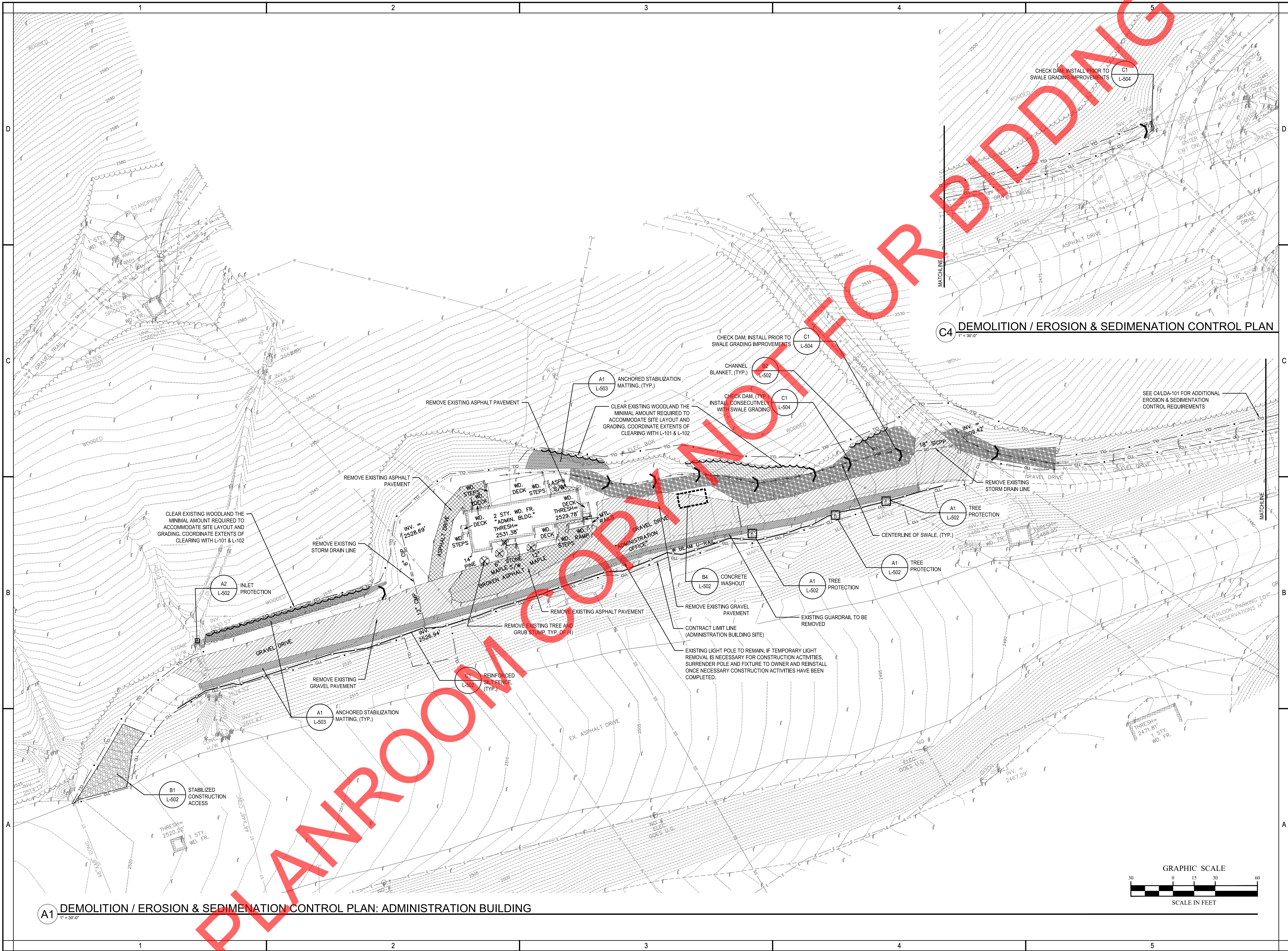
NORTH

R E V I S I O N S		

MARK	DATE	DESCRIPTION
<b>P R O J E C T N U M</b>		
221101.00		
<b>D A T E</b>		
04/17/2023		
<b>S H E E T T I T L E</b>		
SITE GENERAL INFORMATION		

L-001





450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



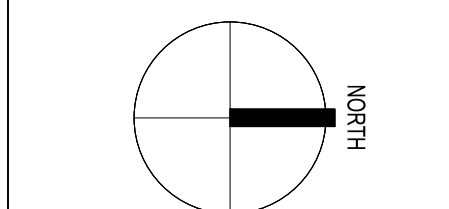
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CONTRACT  
G-CONTRACT



REVISIONS

MARK	DATE	DESCRIPTION

PROJECT NUM

221101.00

DATE

04/17/2023

SHEET TITLE

DEMOLITION /  
EROSION &  
SEDIMENTATION  
CONTROL PLAN:  
ADMINISTRATION  
BUILDING

LDA-101



1. AN ELECTRONIC .dwg FILE WILL BE PROVIDED TO THE CONTRACTOR FOR THE GENERAL LAYOUT OF THE SITE IMPROVEMENTS.
2. DETAILED LAYOUT OF THE SITE IMPROVEMENTS SHALL BE PER THE PLAN AND DETAIL DIMENSIONS. DIMENSIONS AND ELEVATIONS INDICATED ON THE PLANS AND DETAILS SUPERCEDE THE ELECTRONIC LAYOUT IN THE CASE OF A DISCREPANCY.
3. BUILDING LAYOUT SHALL BE DONE PER THE DIMENSIONS INDICATED ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FROM THE WORK POINTS INDICATED. (SEE A-SERIES DRAWINGS & S-SERIES DRAWINGS.)
4. REPORT ANY DISCREPANCIES OR CONFLICTS TO THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.
5. SEE SHEET L-001 GENERAL NOTE 15 FOR SOIL RESTORATION REQUIREMENTS.



Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A&B Apply 6 inches of topsoil	HSG C&D Aerate* and apply 6 inches of topsoil	Protect area from any ongoing construction activities.
Areas of cut or fill	HSG A&B Aerate* and apply 6 inches of topsoil	HSG C&D Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

\* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

\*\* Per "Deep Ripping and De-compaction, DEC 2008".

\* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.  
 \*\* Per "Deep Ripping and De-compaction, DEC 2008".



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



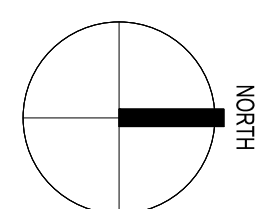
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**BELLEAYRE SKI CENTER ADMIN  
OFFICE BLDG**

HIGHMOUNT, NEW YORK  
12241

C O N T R A C T  
**G-CONTRACT**



R E V I S I O N S

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MARK	DATE	DESCRIPTION
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221101.00
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2-1117/2000

04/17/2023

S H E E T     T I T L E	
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### LAYOUT PLAN:

## ADMINISTRATION

## ADMINISTRATION

BUILDING

[illegible]

1000

[illegible]

1000

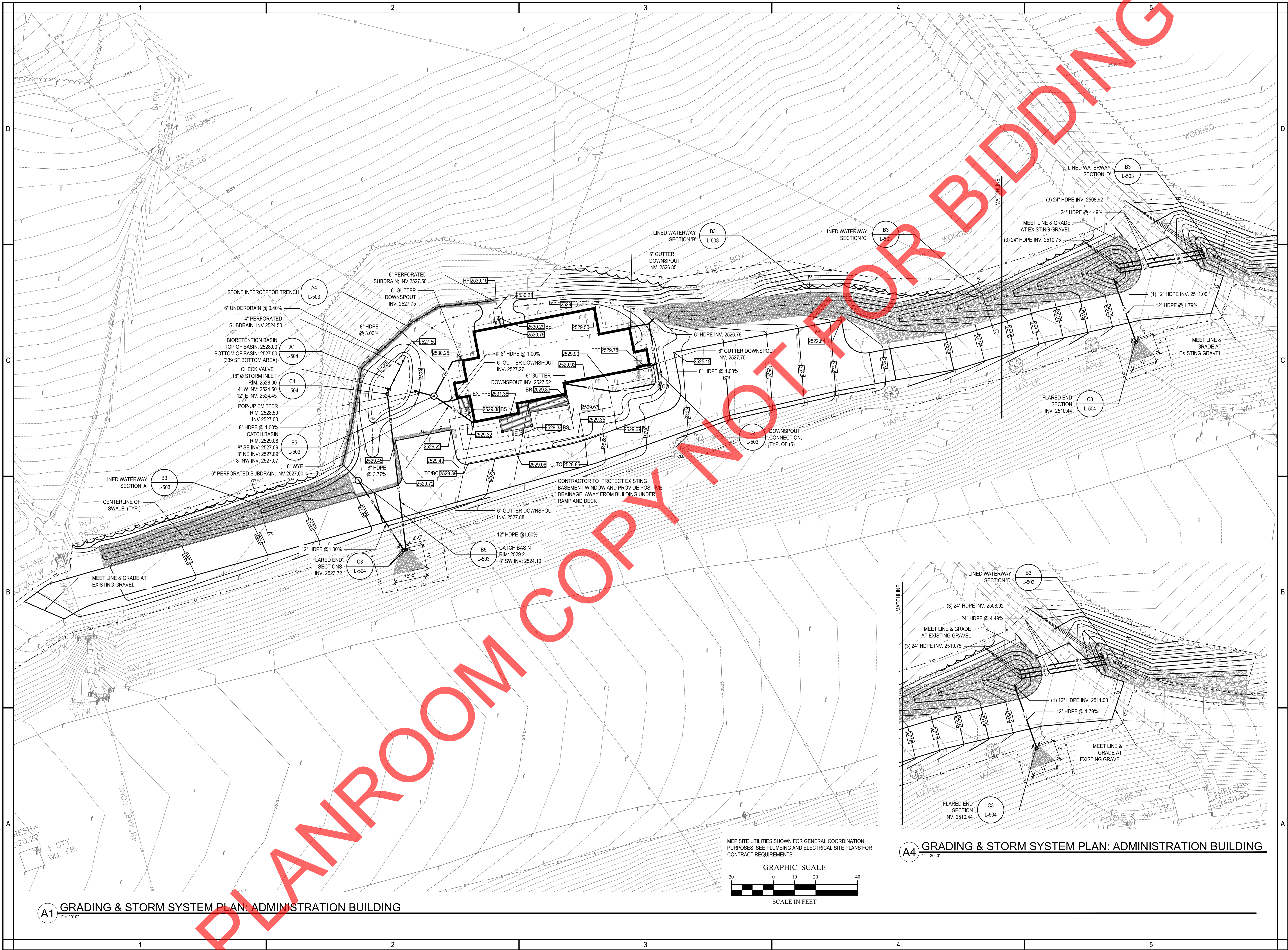

1404

LA-101

LA-101

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**A1 GRADING & STORM SYSTEM PLAN: ADMINISTRATION BUILDING**  
1" = 20'-0"

**A4 GRADING & STORM SYSTEM PLAN: ADMINISTRATION BUILDING**  
1" = 20'-0"



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



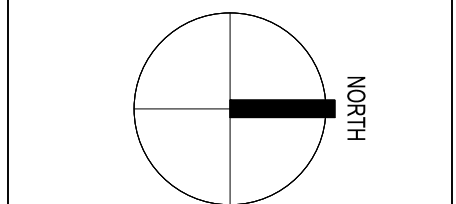
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CONTRACT  
**G-CONTRACT**



REVISIONS

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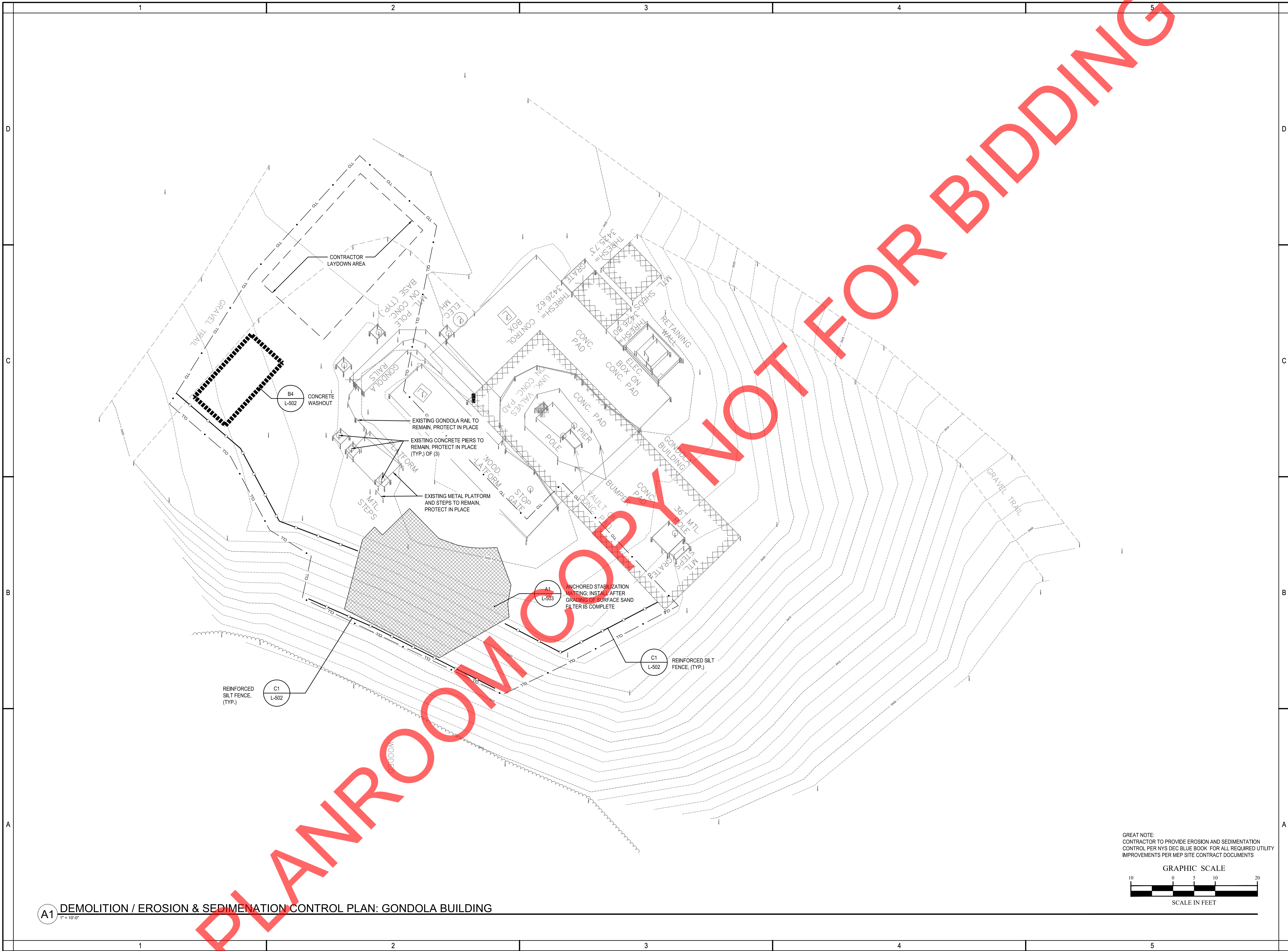
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**221101.00**

D A T E  
**04/17/2023**

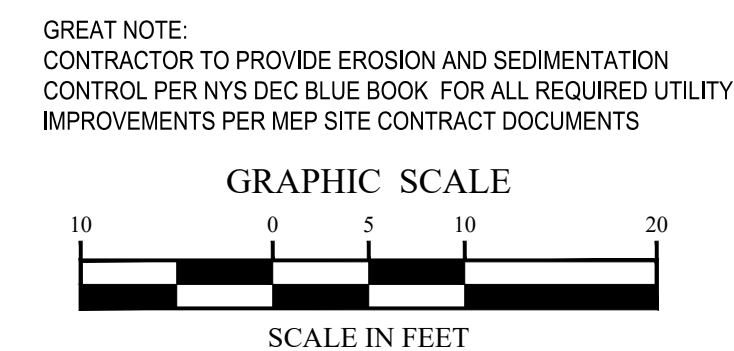
SHEET TITLE  
**GRADING & STORM  
SYSTEM PLAN:  
ADMINISTRATION  
BUILDING**

**LA-102**





A1 DEMOLITION / EROSION & SEDIMENTATION CONTROL PLAN: GONDOLA BUILDING  
1" = 10'-0"



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

Michael P. O'Shea

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CONTRACT  
G-CONTRACT

PROJECT  
NORTH

REVISIONS		
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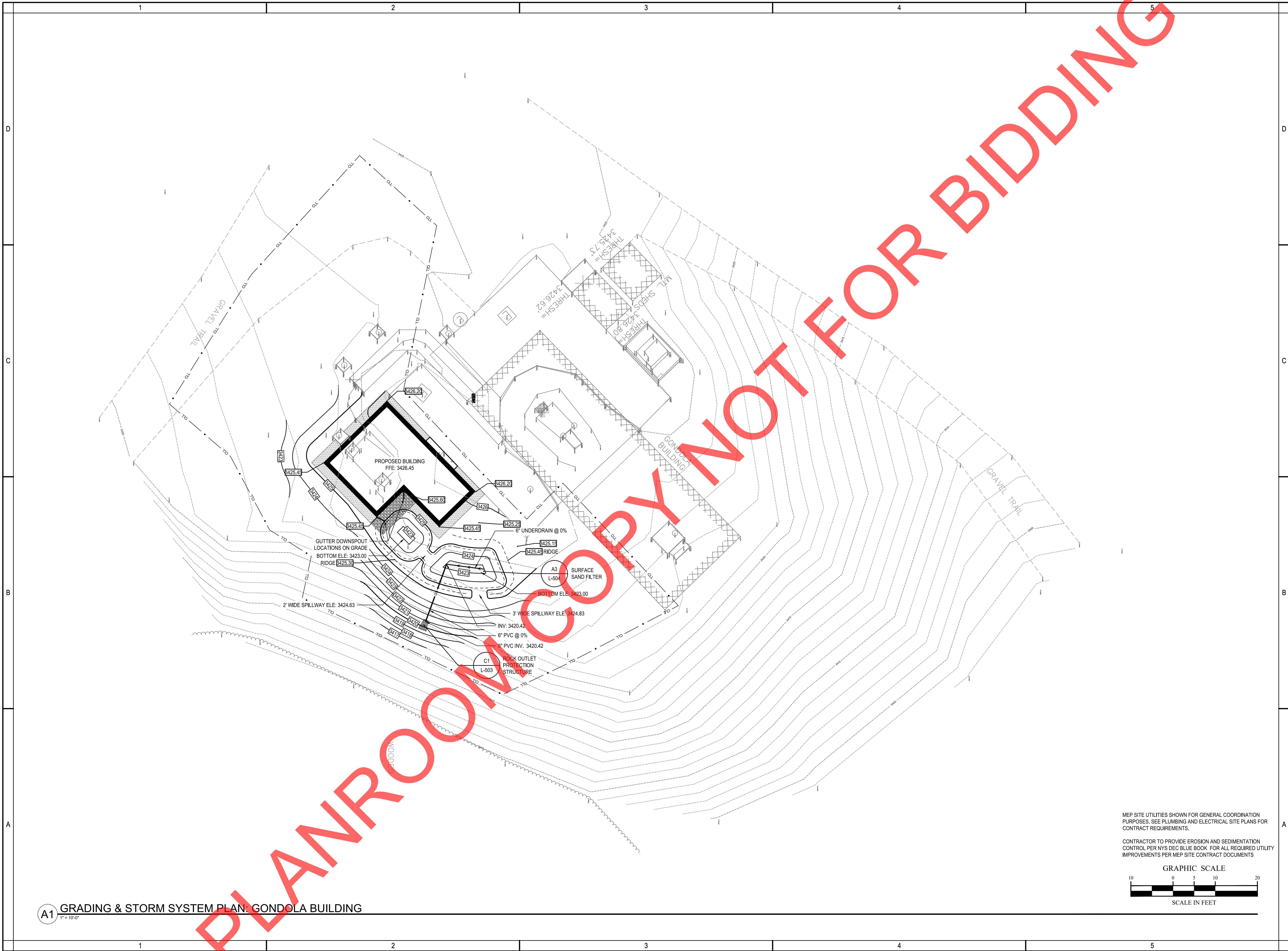
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221101.00	
DATE	
04/17/2023	
SHEET TITLE	
DEMOLITION /	
EROSION &	
SEDIMENTATION	
CONTROL PLAN:	
GONDOLA BUILDING	


LDG-101












450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
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PROJECT  
NORTH

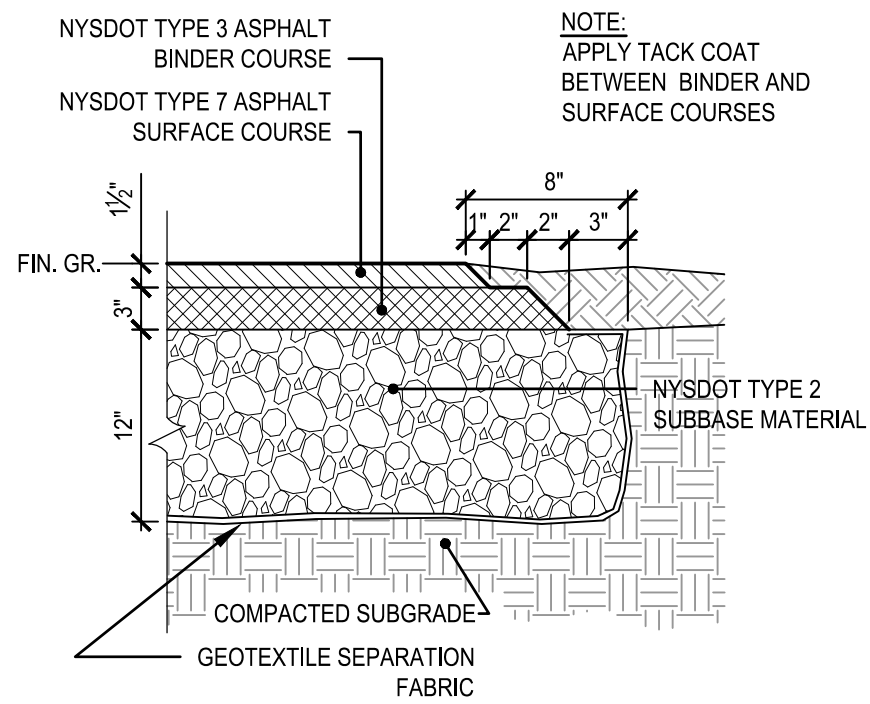
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NORTH

REVISIONS

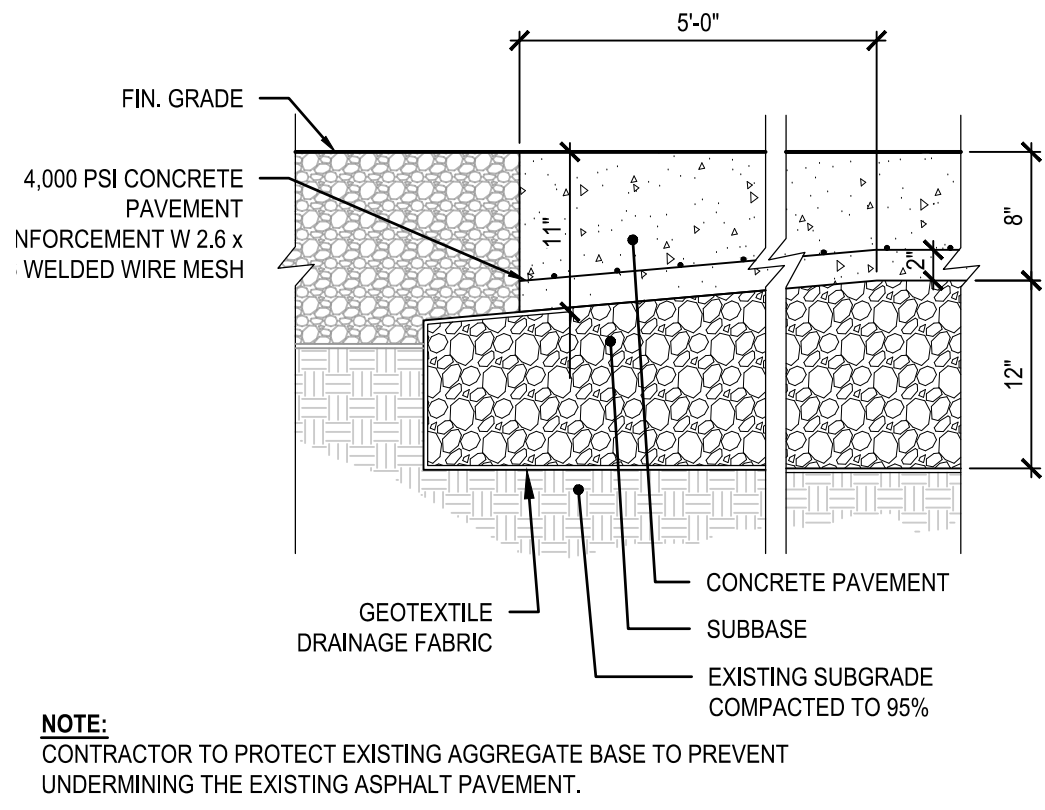
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PROJECT NUM 221101.00		
DATE 04/17/2023		
SHEET TITLE GRADING & STORM SYSTEM PLAN: GONDOLA BUILDING		

LG-102

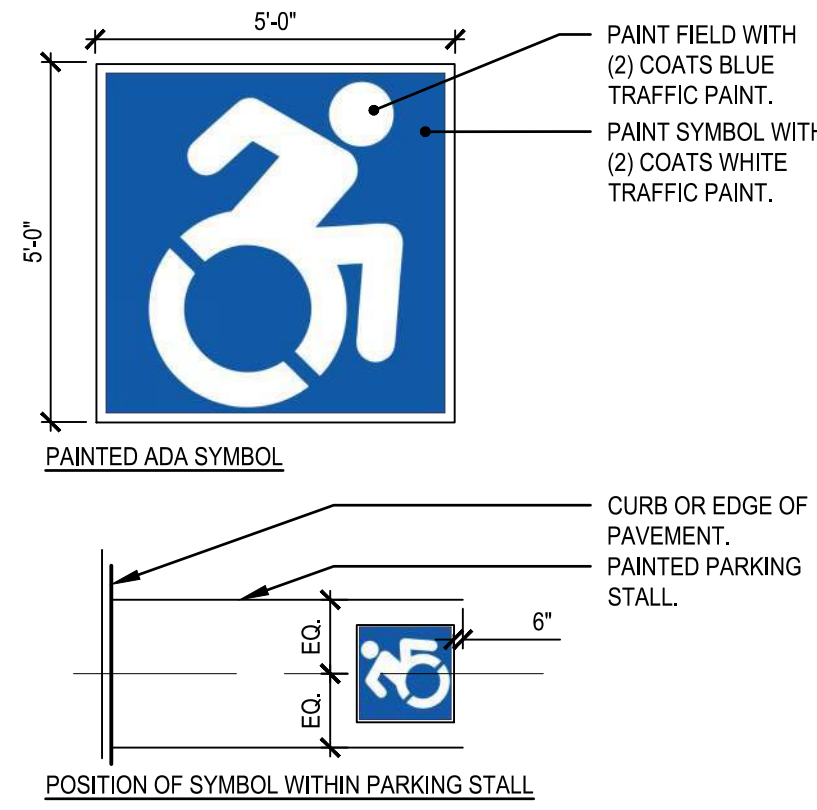




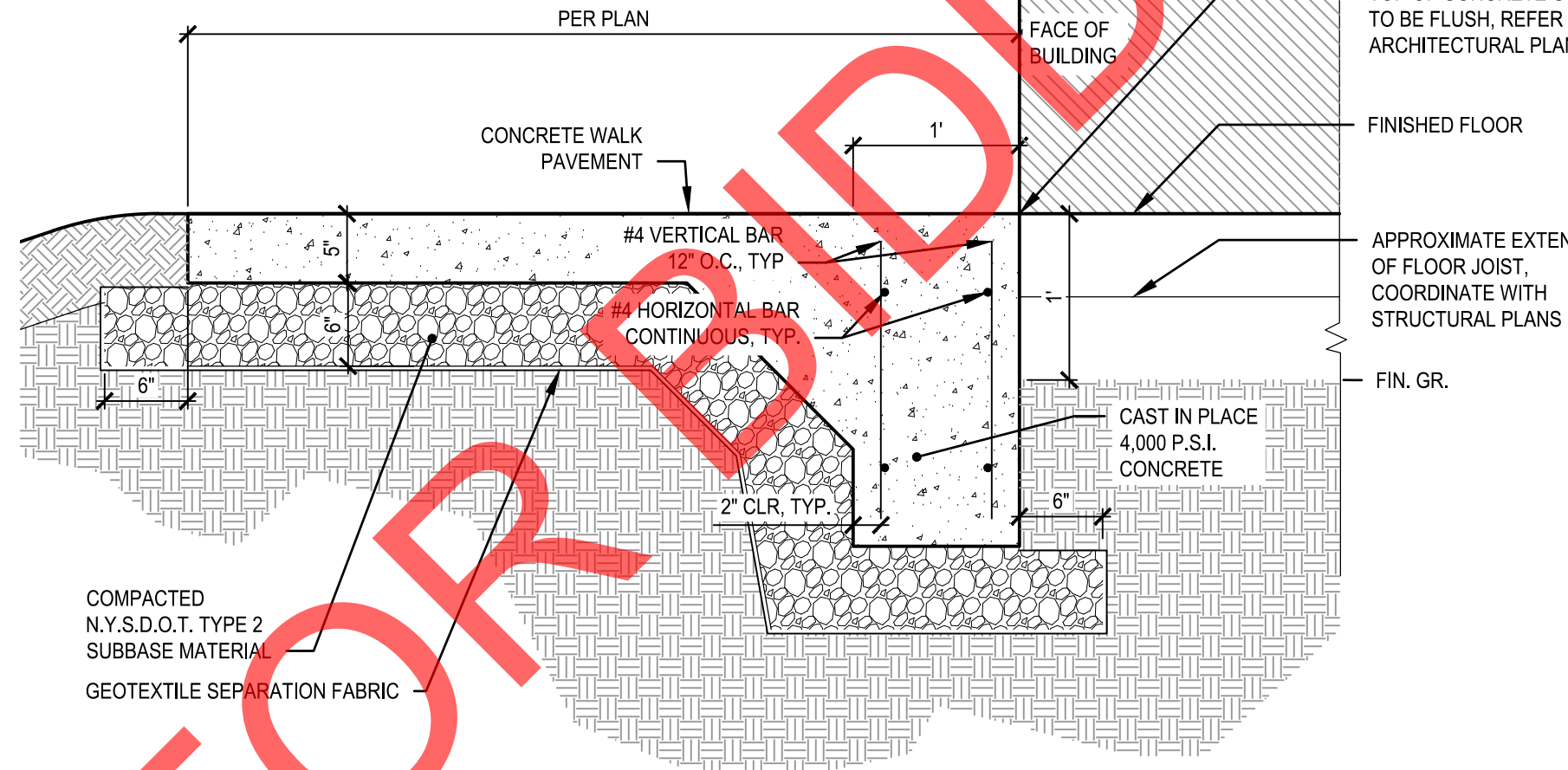
D1 ASPHALT PAVEMENT  
N.T.S.



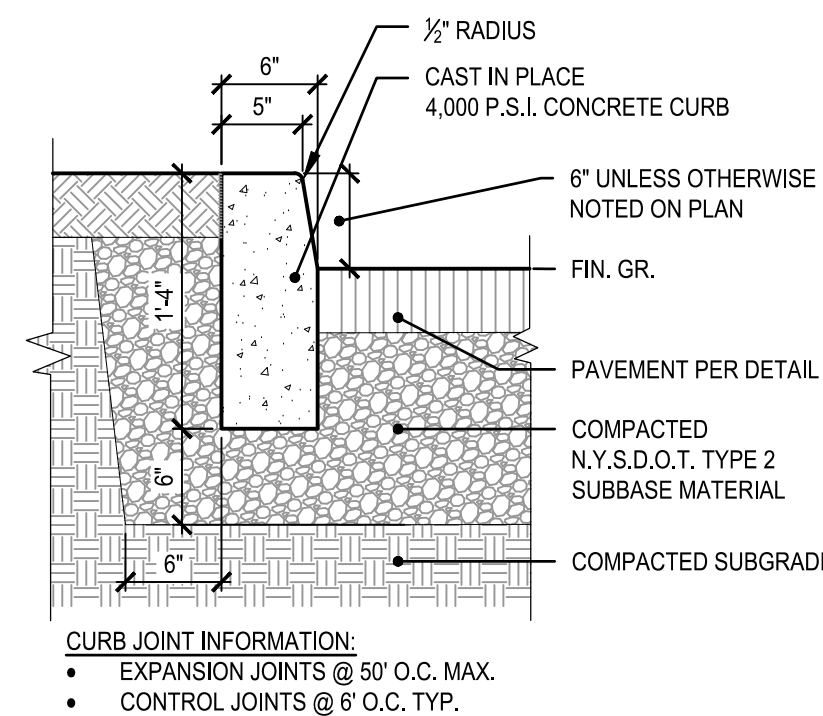
D2 CONCRETE PAVEMENT - THICKENED EDGE  
N.T.S.



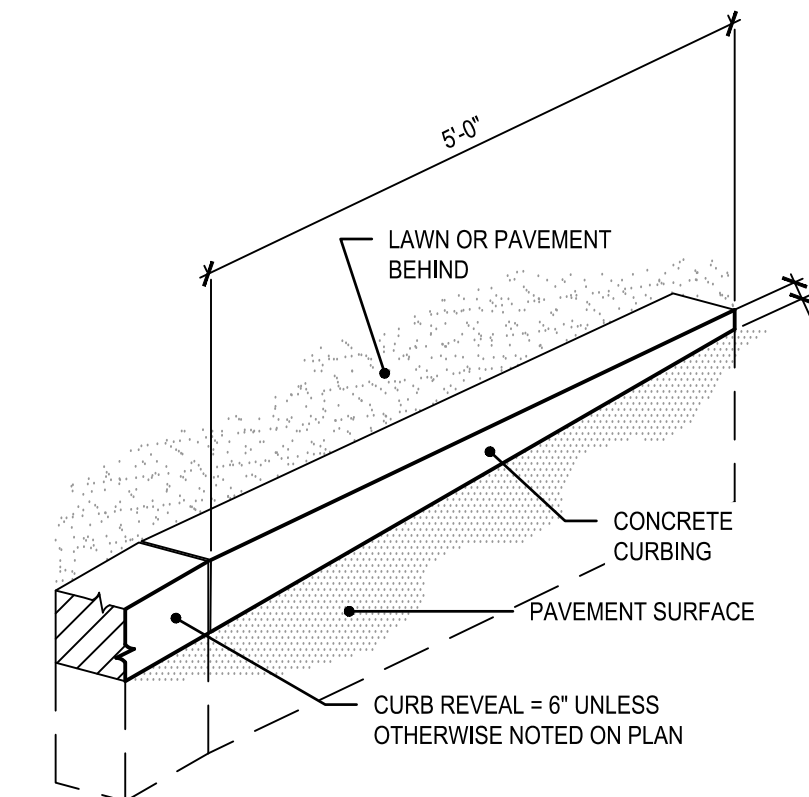
D3 PAVEMENT MARKINGS  
N.T.S.



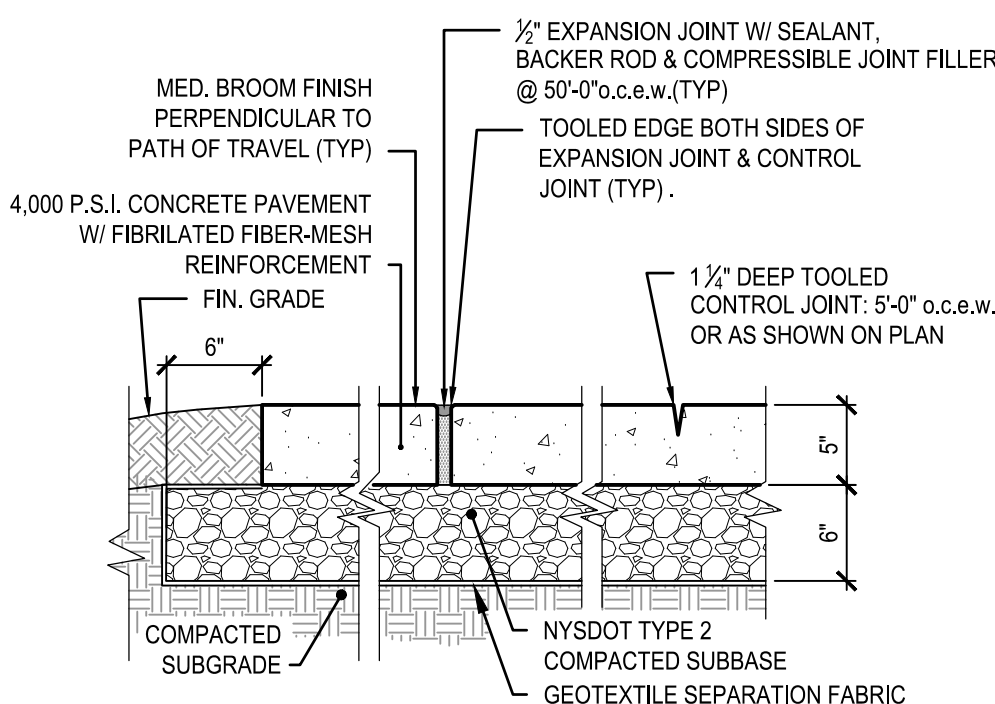
C4 CONCRETE CHEEK WALL



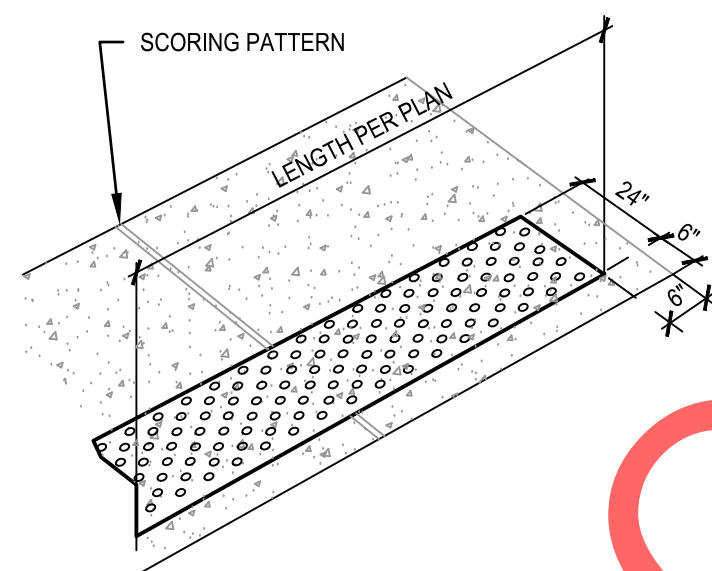
B4 CONCRETE CURB  
N.T.S.



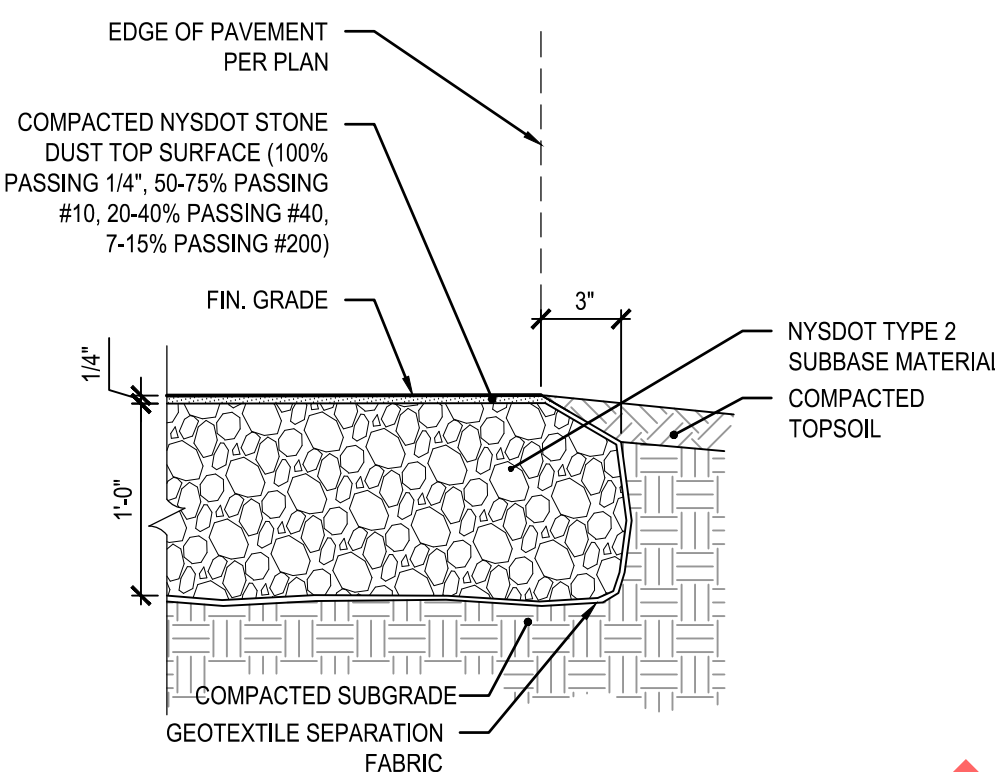
B5 CONCRETE CURB ENDING  
N.T.S.



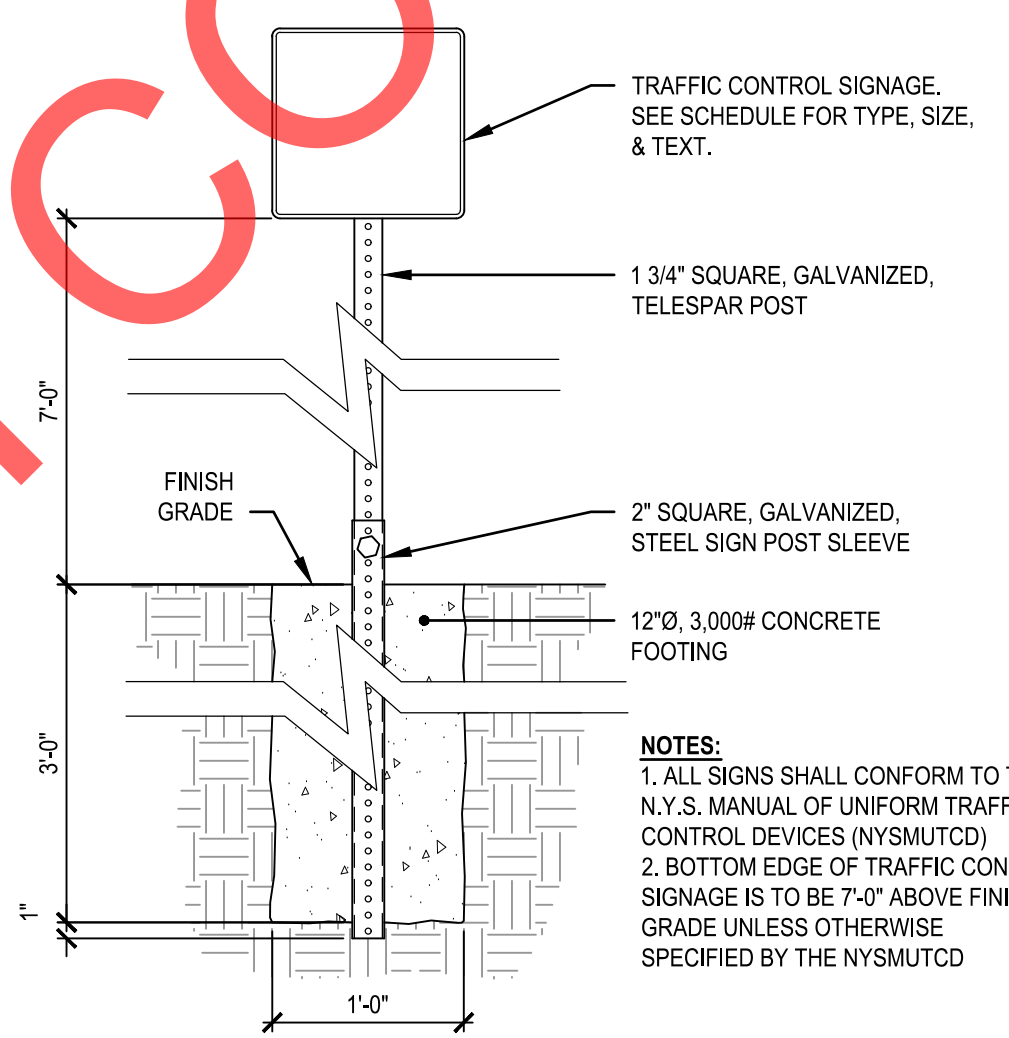
B1 CONCRETE WALK PAVEMENT  
N.T.S.



A2 TACTILE WARNING  
N.T.S.

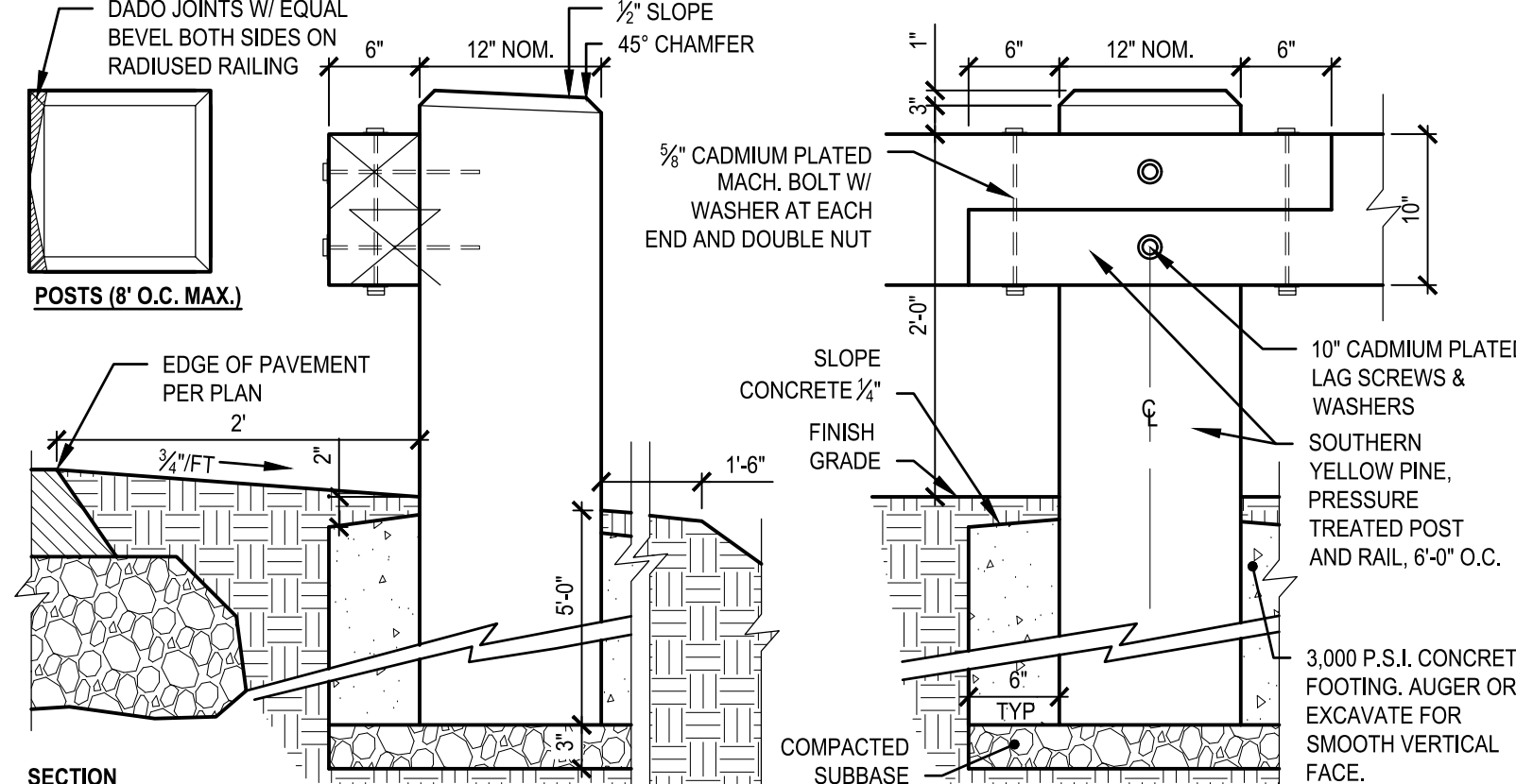


A1 STONE DRIVE PAVEMENT  
N.T.S.



A3 TRAFFIC CONTROL SIGNAGE  
N.T.S.

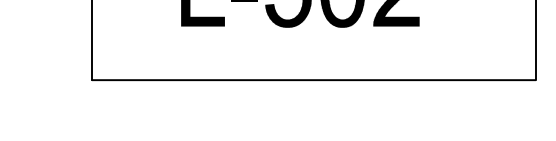
TRAFFIC CONTROL SIGN SCHEDULE	
TYPE	DESCRIPTION
A	"NO PARKING" SIGN - 12"x18"
B	A.D.A. PARKING SIGN - 12"x18"



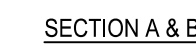
A4 GUIDERAIL  
N.T.S.

MARK	DATE	DESCRIPTION









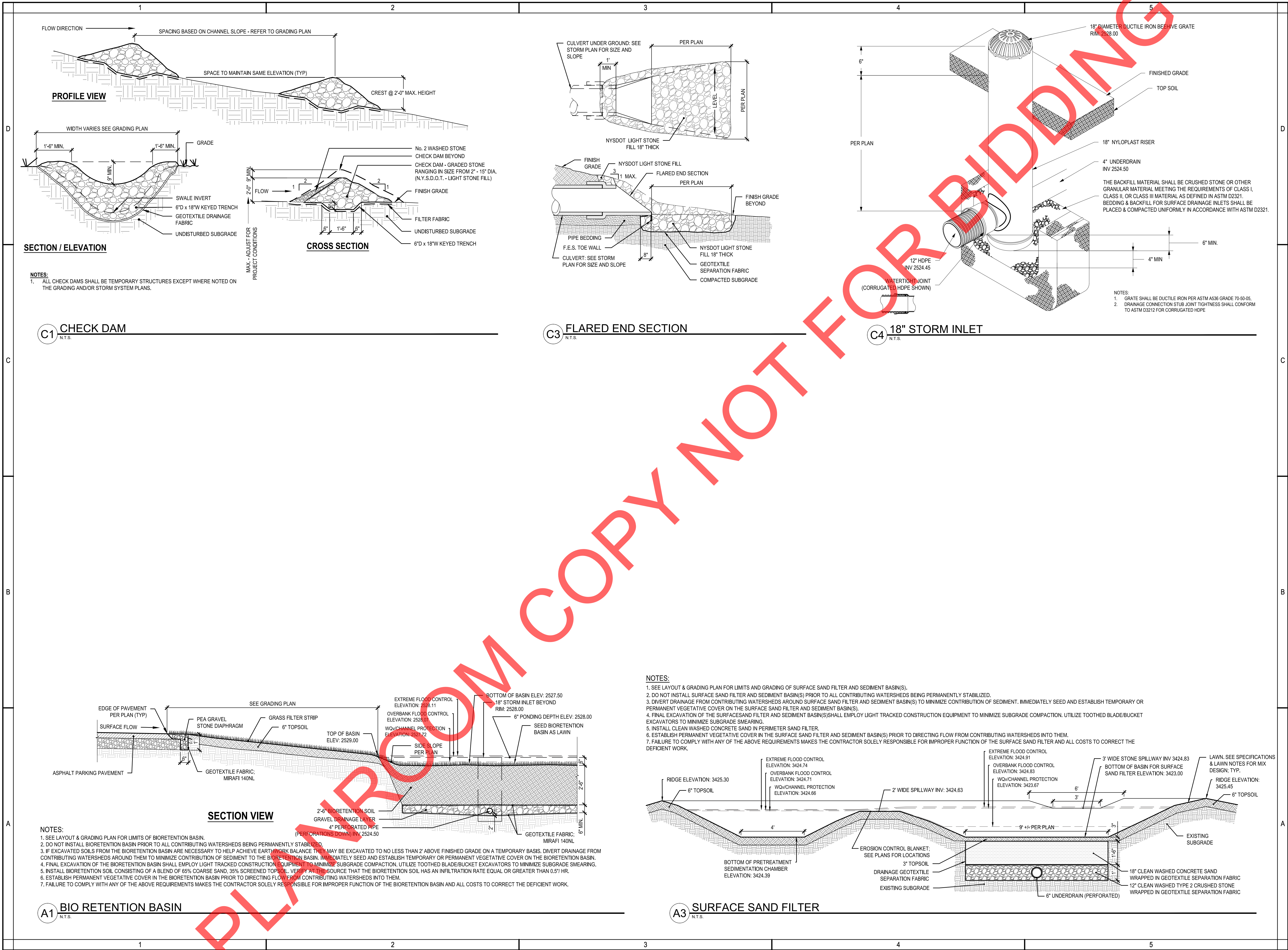
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

PH: 800-722-2040  
www.nagreen.com

Drawn on: 3-16-11

\*NOTE:  
In loose soil conditions, the use of  
staple or stake lengths greater than  
6"(15cm) may be necessary to  
properly secure the RECP's.





450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
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REVISIONS

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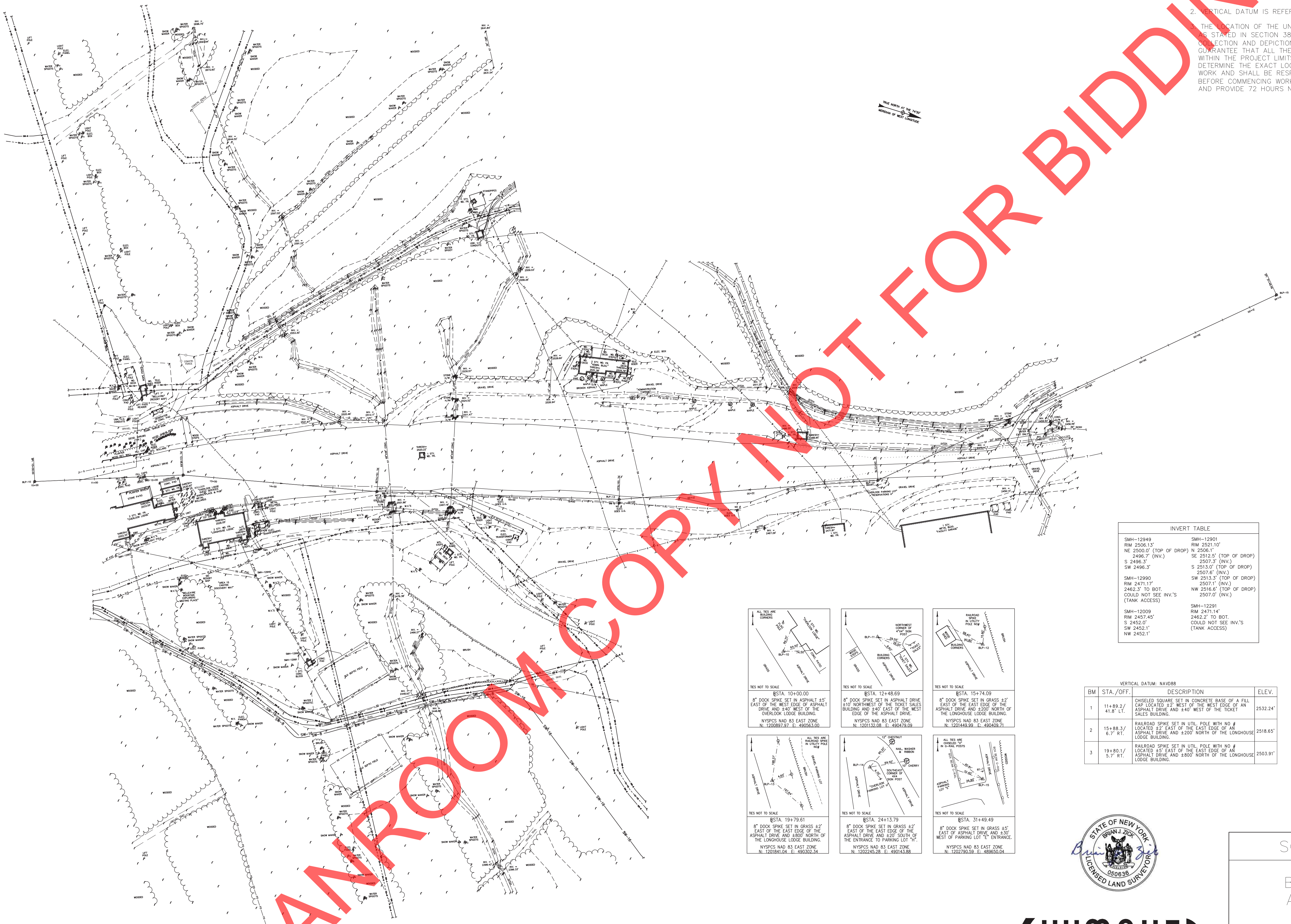
PROJECT NUMBER  
221101.00

DATE  
04/17/2023

SHEET TITLE  
DETAILS

L-504





- NOTES
1. HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM NAD 83 EAST ZONE.
  2. VERTICAL DATUM IS REFERENCED TO NAVD88.
  3. THE LOCATION OF THE UNDERGROUND UTILITY LINES SHOWN ARE TO QUALITY LEVEL C AS STATED IN SECTION 38-02 PAGE 6 OF THE ASCE "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". THERE IS NO GUARANTEE THAT ALL THE EXISTING UTILITIES, WHETHER FUNCTIONAL OR ABANDONED WITHIN THE PROJECT LIMITS ARE SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE STARTING WORK AND SHALL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM THIS WORK, BEFORE COMMENCING WORK CONTACT "DIG SAFELY NEW YORK" AT 1-800-962-7962 AND PROVIDE 72 HOURS NOTICE.

LEGEND

- MULTI-POST SIGN
- SIGN
- DECIDUOUS TREE
- CONIFEROUS TREE
- UNKNOWN MANHOLE
- ELECTRIC BOX
- ELECTRIC MANHOLE
- SNOW MAKER
- WATER SPIGOT
- WATER STANDPIPE
- WATER MANHOLE
- GAS MANHOLE
- GAS VALVE
- SANITARY MANHOLE
- DRAINAGE MANHOLE
- DRAINAGE INVERT
- TELEPHONE RISER
- TELEPHONE MANHOLE
- LIGHT POLE
- UTILITY POLE WITH LIGHT
- BASELINE POINT
- BENCHMARK
- MAJOR CONTOUR
- MINOR CONTOUR
- FIBER OPTIC LINE
- SNOW AIR LINE
- SNOW WATER LINE
- ELECTRIC LINE
- GAS LINE
- WATER LINE
- SANITARY PIPE
- TELEPHONE LINE
- DRAINAGE PIPE

INVERT TABLE

SMH-12949 RIM 2506.13' NE 2500.0' (TOP OF DROP) S 2496.3' (INV.) SW 2496.3'	SMH-12901 RIM 2521.10' NE 2506.1' (TOP OF DROP) SE 2512.5' (TOP OF DROP) S 2507.3' (INV.) SW 2513.0' (TOP OF DROP) SW 2507.6' (INV.)
SMH-12990 RIM 2471.17' 2462.3' TO BOT. 2452.0' TO BOT. COULD NOT SEE INV.'S (TANK ACCESS)	SMH-12291 RIM 2471.14' 2462.2' TO BOT. COULD NOT SEE INV.'S (TANK ACCESS)

VERTICAL DATUM: NAVD88

BM	STA./OFF.	DESCRIPTION	ELEV.
1	11+89.2/ 41.8' LT.	CHISELED SQUARE SET IN CONCRETE BASE OF A FILL CAP LOCATED 22' WEST OF THE WEST EDGE OF AN ASPHALT DRIVE AND 140' WEST OF THE TICKET SALES BUILDING.	2532.24'
2	15+88.3/ 6.7' RT.	RAILROAD SPIKE SET IN UTIL. POLE WITH NO # LOCATED 42' EAST OF THE EAST EDGE OF AN ASPHALT DRIVE AND 1200' NORTH OF THE LONGHOUSE LODGE BUILDING.	2518.65'
3	19+80.1/ 5.7' RT.	RAILROAD SPIKE SET IN UTIL. POLE WITH NO # LOCATED 65' EAST OF THE EAST EDGE OF AN ASPHALT DRIVE AND 1800' NORTH OF THE LONGHOUSE LODGE BUILDING.	2503.91'

ALL TIES ARE BENCHMARK CORNERS

YES NOT TO SCALE

ESTA. 10+00.00

8" DOCK SPIKE SET IN ASPHALT 15' EAST OF THE WEST EDGE OF ASPHALT DRIVE AND 140' WEST OF THE OVERLOOK LODGE BUILDING.

NYSPOS NAD 83 EAST ZONE  
N: 1200897.97 E: 490563.00

ALL TIES ARE BENCHMARK CORNERS

YES NOT TO SCALE

ESTA. 121+48.69

8" DOCK SPIKE SET IN ASPHALT DRIVE 110' NORTHWEST OF THE TICKET SALES BUILDING AND 140' EAST OF THE WEST EDGE OF THE ASPHALT DRIVE.

NYSPOS NAD 83 EAST ZONE  
N: 1201132.08 E: 490479.09

ALL TIES ARE BENCHMARK CORNERS

YES NOT TO SCALE

ESTA. 15+74.09

8" DOCK SPIKE SET IN GRASS 22' EAST OF THE EAST EDGE OF THE ASPHALT DRIVE AND 1200' NORTH OF THE LONGHOUSE LODGE BUILDING.

NYSPOS NAD 83 EAST ZONE  
N: 1201449.99 E: 490409.71

ALL TIES ARE BENCHMARK CORNERS

YES NOT TO SCALE

ESTA. 19+79.61

8" DOCK SPIKE SET IN GRASS 12' EAST OF THE EAST EDGE OF THE ASPHALT DRIVE AND 1800' NORTH OF THE LONGHOUSE LODGE BUILDING.

NYSPOS NAD 83 EAST ZONE  
N: 1201841.04 E: 490502.34

ALL TIES ARE BENCHMARK CORNERS

YES NOT TO SCALE

ESTA. 24+13.79

8" DOCK SPIKE SET IN GRASS 12' EAST OF THE EAST EDGE OF THE ASPHALT DRIVE AND 1200' SOUTH OF THE ENTRANCE TO PARKING LOT 14.

NYSPOS NAD 83 EAST ZONE  
N: 1202245.28 E: 490143.88

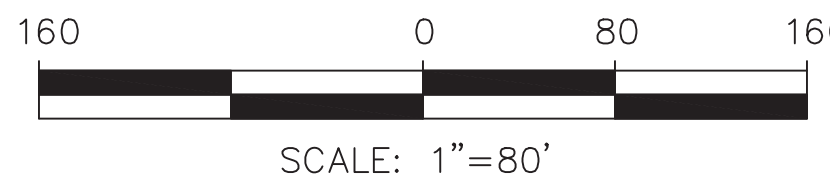
ALL TIES ARE BENCHMARK CORNERS

YES NOT TO SCALE

ESTA. 31+49.49

8" DOCK SPIKE SET IN GRASS 15' EAST OF ASPHALT DRIVE AND 130' WEST OF PARKING LOT 14 ENTRANCE.

NYSPOS NAD 83 EAST ZONE  
N: 1202750.59 E: 489650.04



**SHUMAKER**  
Consulting Engineering & Land Surveying, D.P.C.  
143 Court St. Binghamton, NY 13901

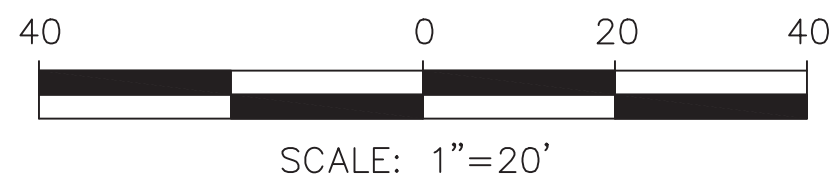
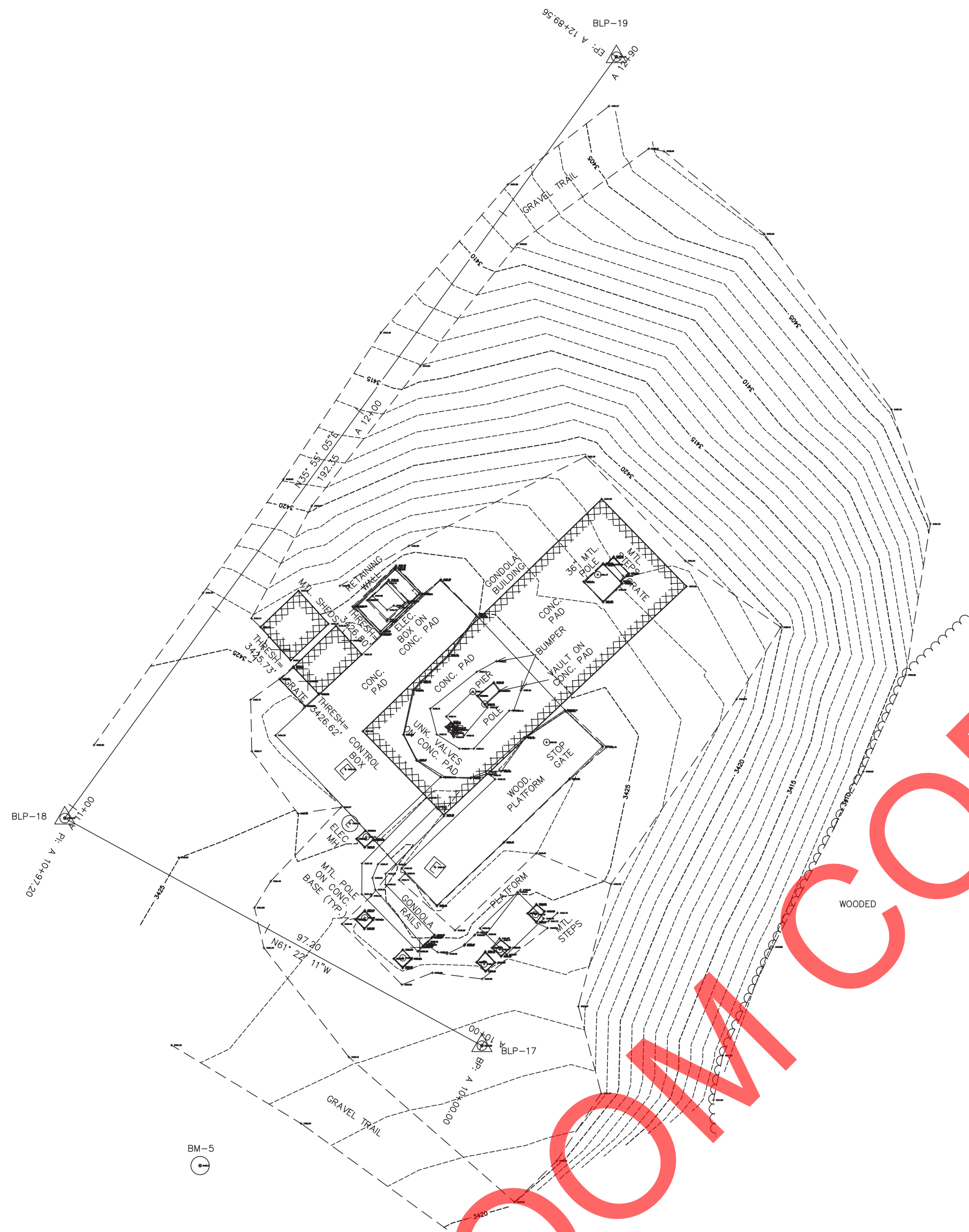
SCE PROJECT NO. 21245

BELLEAYRE SKI CENTER  
ADMINISTRATIVE OFFICE  
BUILDING  
TOPOGRAPHIC SURVEY

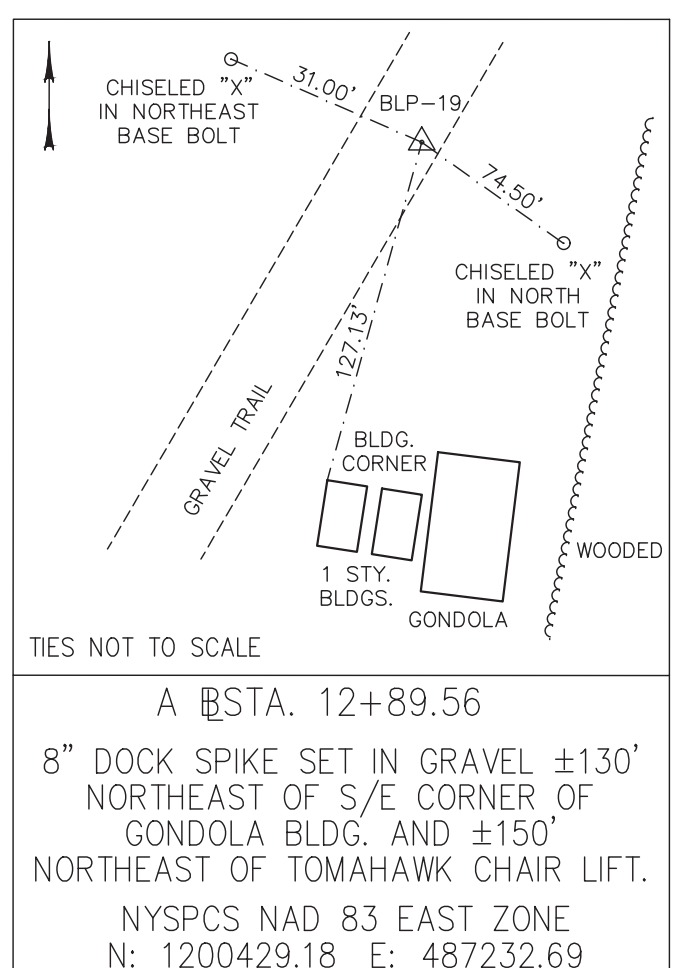
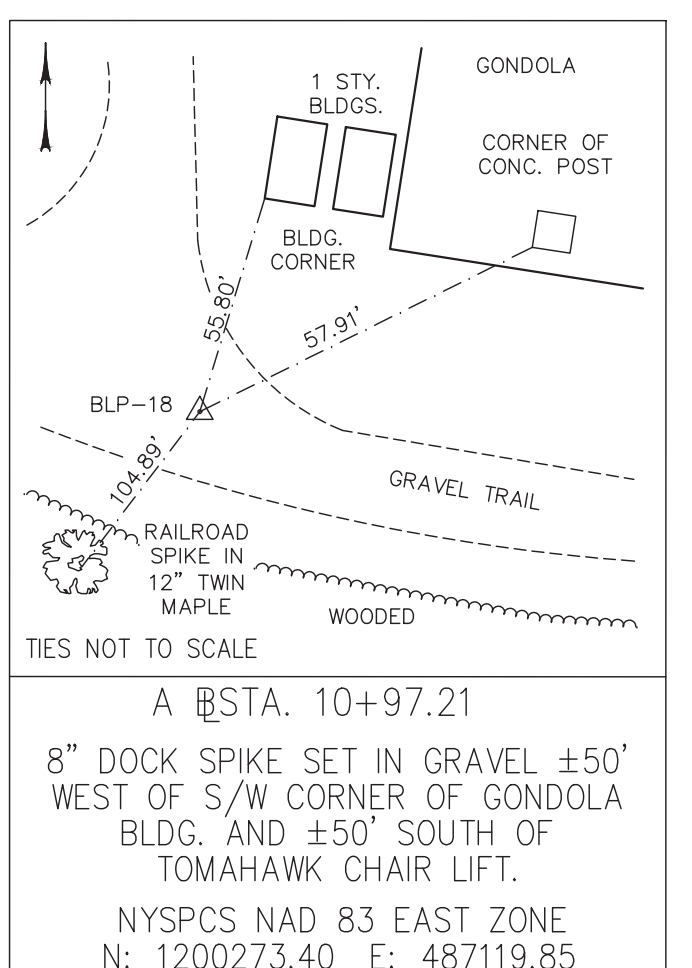
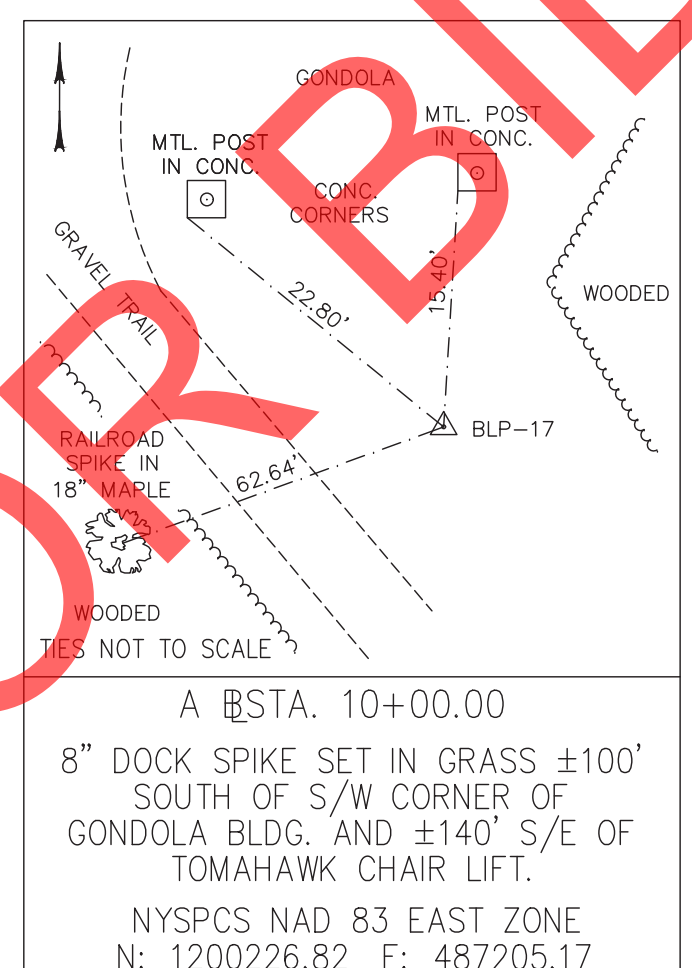
TOWN OF SHANDAKEN ULSTER CO., NY

DRAWN BY	SLS	DATE	NOV. 2021	DRAWING NO.	
CHECKED BY	SEG	SCALE	As Shown		21245_map_sur_3dh_Admin Bldg.dwg





- NOTES
1. HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM NAD 83 EAST ZONE.
  2. VERTICAL DATUM IS REFERENCED TO NAVD88.
  3. THE LOCATION OF THE UNDERGROUND UTILITY LINES SHOWN ARE TO QUALITY LEVEL C AS STATED IN SECTION 38-02 PAGE 6 OF THE ASCE "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". THERE IS NO GUARANTEE THAT ALL THE EXISTING UTILITIES, WHETHER FUNCTIONAL OR ABANDONED WITHIN THE PROJECT LIMITS ARE SHOWN ON THIS DRAWING. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE STARTING WORK AND SHALL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM THIS WORK. BEFORE COMMENCING WORK CONTACT "DIG SAFELY NEW YORK" AT 1-800-962-7962 AND PROVIDE 72 HOURS NOTICE.



VERTICAL DATUM: NAVD88

BM	STA./OFF.	DESCRIPTION	ELEV.
5	A 10+38.8/ 49.2' LT.	RAILROAD SPIKE IN 18" MAPLE LOCATED ±150' SOUTH OF GONDOLA AND ±175' SOUTH OF "TOMAHAWK" CHAIR LIFT.	3423.11'
6	A 10+31.1 FTP/B/ 81.1' LT.	RAILROAD SPIKE IN 12" TWIN MAPLE LOCATED ±100' WEST OF GONDOLA AND ±75' WEST OF "TOMAHAWK" CHAIR LIFT.	3424.20'

LEGEND

- POST
- METAL POLE W/ CONC. BASE
- ⊞ ELECTRIC CONTROL BOX
- ⊞ ELECTRIC MANHOLE
- ⊞ UNKNOWN VALVE
- △ BASELINE POINT
- ⊙ BENCHMARK
- 945 ----- MAJOR CONTOUR
- MINOR CONTOUR



**SHUMAKER**  
Consulting Engineering & Land Surveying, D.P.C.  
143 Court St. Binghamton, NY 13901

SCE PROJECT NO. 21245			
BELLEAYRE SKI CENTER GONDOLA AREA			
TOPOGRAPHIC SURVEY			
TOWN OF SHANDAKEN		ULSTER CO., NY	
DRAWN BY NCP	DATE NOV. 2021	DRAWING NO.	
CHECKED BY SEG	SCALE As Shown	21245_map_sur_3dh_Gondola.dwg	





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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G-CONTRACT

REVISIONS

NO.	DESCRIPTION	DATE

ORDA PROJECT NUM

QPK PROJECT NUM

221101.00

D A T E

04/17/2023

SHEET TITLE

GENERAL NOTES

S-001

1. NOT ALL WORK IS NOTED OR DETAILED ON THE STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL WORK REQUIRED. BOTH ARCHITECTURAL AND STRUCTURAL DRAWINGS ARE INTENDED TO WORK TOGETHER AND DEFINE THE COMPLETE SCOPE OF WORK REQUIRED. IF DISCREPANCIES ARE FOUND, NOTIFY THE ARCHITECT IMMEDIATELY.

2. STRUCTURAL ASSEMBLY SHOWN HEREIN WAS DESIGNED TO BE SELF SUPPORTING IN ITS FINAL STATE ONLY. TEMPORARY BRACING TO SUPPORT LATERAL LOADS DURING CONSTRUCTION IS THE CONTRACTOR'S RESPONSIBILITY.

LEGEND OF ABBREVIATIONS:

ADD. or ADD'L.....	ADDITIONAL
ALT.....	ALTERNATE
ANCH.....	ANCHOR
APPROX.....	APPROXIMATE
ARCH.....	ARCHITECT(URAL)
B.....	BOTTOM
B.....	BOTTOM OF
BFE.....	BOTTOM FOOTING ELEVATION
BM.....	BEAM
BS.....	BOTH SIDES
COL.....	COLUMN
CONC.....	CONCRETE
CONT.....	CONTINUOUS
C.J.....	CONTROL JOINT
CLR.....	CLEAR
DIA.....	DIAMETER
DTL.....	DETAIL
DWG or DWGS.....	DRAWINGS
DWLS.....	DOWELS
EA.....	EACH
E.F.....	EACH FACE
E.J.....	EXPANSION JOINT
ELEV.....	ELEVATION
ELEV.....	ELEVATOR
EOC.....	EDGE OF CONCRETE
EOD.....	EDGE OF DECK
EOS.....	EDGE OF SLAB
EQ.....	EQUAL
E.W.....	EACH WAY
EXG or EX.....	EXISTING
EXP.....	EXPANSION
EXT.....	EXTERIOR
F.....	FACE OF
FDN.....	FOUNDATION
F.F.....	FACE FACE
FFE.....	FINISHED FLOOR ELEVATION
FIN.....	FINISHED
FRMG.....	FRAMING
FS.....	FOOTING STEP
FTG.....	FOOTING
GA.....	GAUGE
GALV.....	GALVANIZED
INSUL.....	INSULATION
INT.....	INTERIOR
INV.....	INVERT
JT.....	JOINT
L.....	LENGTH
Ld.....	DEVELOPMENT LENGTH
LG.....	LONG
LL.....	LIVE LOAD
LLH.....	LONG LEG HORIZONTAL
LLV.....	LONG LEG VERTICAL
MAX.....	MAXIMUM
MIN.....	MINIMUM
MISC.....	MISCELLANEOUS
M.O.....	MASONRY OPENING
MTL.....	METAL
N.F.....	NEAR FACE
NA.....	NOT APPLICABLE
NTS.....	NOT TO SCALE
O.C.....	ON CENTER
OPNG.....	OPENING
O.H.....	OPPOSITE HAND
PSF.....	POUNDS PER SQUARE FOOT
PSI.....	POUNDS PER SQUARE INCH
R.....	RADIUS/RISER
R.D.....	ROOF DRAIN
REINF.....	REINFORCING
REQ'D.....	REQUIRED
SCHED.....	SCHEDULE
SECT.....	SECTION
SF.....	SQUARE FOOT
SHT.....	SHEET
SIM.....	SIMILAR
S.O.G.....	SLAB-ON-GRADE
SP.....	SPACING
SPEC.....	SPECIFICATION
S.S.....	STAINLESS STEEL
STD.....	STANDARD
STL.....	STEEL
STRUCT.....	STRUCTURE or STRUCTURAL
SYM.....	SYMMETRICAL
SW.....	SHEAR WALL
T.....	TOP
T/CONC.....	TOP OF
T/CONC.....	TOP OF CONCRETE
T & B.....	TOP AND BOTTOM
TEMP.....	TEMPERATURE or TEMPORARY
TFC.....	TOP OF FOOTING
TH.....	THICK (NESS)
TPE.....	TOP OF PIER
T.O.S.....	TOP OF STEEL ELEVATION
TYP.....	TYPICAL
TVE.....	TOP OF WALL ELEVATION
VB.....	VAPOR BARRIER
VERT.....	VERTICAL
V.E.J.....	VERTICAL EXPANSION JOINT
V.I.F.....	VERIFY IN FIELD
V.S.C.....	VERTICAL SLIDE CLIP
W.....	WIDTH
W.P.....	WORK POINT
W.W.F.....	WELDED WIRE FABRIC
W.....	WITH

MISCELLANEOUS NOTES & ABBREVIATIONS

SCALE: NO SCALE

1. CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS.  
a. ACI 117 "STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"  
b. ACI 304 "GUIDE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE"  
c. ACI 347 "GUIDE TO FORMWORK FOR CONCRETE"  
d. ACI DETAILING MANUAL  
e. CONCRETE REINFORCING STEEL INSTITUTE (CRSI), "MANUAL OF STANDARD PRACTICE"

2. CONCRETE SHALL BE READY MIXED PER ASTM C94.

3. PREPARE DESIGN MIXES FOR EACH TYPE, AND STRENGTH OF CONCRETE BY EITHER LABORATORY TRIAL BATCH OR FIELD EXPERIENCE METHODS AS SPECIFIED IN ACI 318.

4. PORTLAND CEMENT - ASTM C150, TYPE I / II.

5. AGGREGATES - ASTM C33, CRUSHED LIMESTONE.

6. AIR ENTRAINING ADMIXTURE - ASTM C260, CERTIFIED BY MANUFACTURER TO BE COMPATIBLE WITH OTHER REQUIRED ADMIXTURES.

7. PROHIBITED ADMIXTURES - CALCIUM CHLORIDE THYOCYANATES OR ADMIXTURES CONTAINING MORE THAN 0.1 PERCENT CHLORIDE IONS ARE NOT PERMITTED.

8. MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS (NORMAL WEIGHT):  
a. FOOTINGS.....  $F_c = 3,000$  PSI  
b. FOUNDATION WALLS & PIERS.....  $F_c = 4,500$  PSI

9. UNLESS OTHERWISE NOTED, REINFORCING SHALL HAVE THE FOLLOWING CONCRETE COVER:  
a. CONCRETE CAST AGAINST AND EXPOSED TO EARTH 3"  
b. CONCRETE EXPOSED TO EARTH OR WEATHER 2"  
c. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:  
1. ELEVATED SLABS AND WALLS..... 3/4"  
2. PIERS..... 1 1/2"

10. REINFORCING BARS - ASTM A615, LATEST EDITION, GRADE 60, DEFORMED.

11. PROVIDE MINIMUM BAR SUPPORT SYSTEMS AS FOLLOWS:  
a. USE PLASTIC SPACERS IN WALLS  
b. SUPPORT BARS AND CHAIRS FOR DECK REINFORCING SYSTEM AT MAXIMUM 36" SPACING. SUPPORT BARS SHALL BE NO LESS THAN SIZE #4.

12. UNLESS OTHERWISE SHOWN, REINFORCING BAR SPLICES ARE TO BE CLASS 'B' SPLICES.

13. PROTECT CONCRETE WORK FROM THE DETRIMENTAL EFFECTS OF COLD TEMPERATURES IN COMPLIANCE WITH ACI 304, LATEST EDITION AND OF HOT WEATHER OR WINDY CONDITIONS IN COMPLIANCE WITH ACI 305, LATEST EDITION.

14. CONSTRUCTION JOINTS PERMITTED ONLY AS APPROVED BY THE STRUCTURAL ENGINEER.

15. THE OWNER WILL EMPLOY A TESTING AGENCY TO PERFORM SAMPLING AND TESTING SUBMIT TEST REPORTS.

16. SUBMIT CONCRETE MIX PROPORTIONS w/ SUPPORTING TEST DATA, MATERIAL CERTIFICATIONS AND PRODUCT DATA, TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS ABOVE.

CAST-IN-PLACE CONCRETE NOTES

SCALE: NO SCALE

1. TRUSSES TO BE CONSTRUCTED FROM DIMENSIONED FRAMING LUMBER OF SIZE, GRADE AND SPECIES REQUIRED TO SUPPORT SUPERIMPOSED DESIGN LOADS IN ADDITION TO SELF WEIGHT.

2. TRUSS DESIGN LOADS TO BE BASED ON 2020 BUILDING CODE OF NEW YORK STATE. REFER TO DESIGN CRITERIA ON DRAWING B4/S-001. EVERY TRUSS ELEMENT CONNECTION SHALL BE ANALYZED FOR EACH LOAD COMBINATION. THE COMBINATION THAT PRODUCES THE MAXIMUM MEMBER STRESS SHALL BE UTILIZED FOR MEMBER DESIGN. NO INCREASE IN ALLOWABLE STRESS DUE TO WIND LOAD EXCEPT DURATION OF LOAD INCREASE SHALL BE PERMITTED. ANY DEVIATION FROM LOAD DEVELOPMENT CASES/COMBINATIONS DEFINED WILL BE REJECTED.

3. SEE PROJECT SPECIFICATIONS FOR TRUSS DEFLECTION LIMITATIONS.

4. TRUSSES SPACED 24 INCHES O.C. UNLESS NOTED OTHERWISE.

5. DESIGN ALL WEB AND BOTTOM CHORD ELEMENTS AS UNBRACED FOR FULL LENGTH. IF DESIRED, TRUSS DESIGNER MAY BRACE THESE ELEMENTS AGAINST BUCKLING, PROVIDED THAT THIS BRACING SYSTEM IS DESIGNED AND SPECIFIED IN ITS ENTIRETY BY THE TRUSS DESIGNER. OVERALL BRACING OF THE BUILDING REMAINS THE RESPONSIBILITY OF THE BUILDING DESIGNER.

6. TRUSS MEMBER TO MEMBER, TRUSS TO TRUSS, AND TRUSS TO FRAMING MEMBER CONNECTION REQUIREMENTS ARE TO BE DESIGNED BY TRUSS DESIGNER.

7. COORDINATION OF MECHANICAL AND ARCHITECTURAL REQUIREMENTS WITHIN THE TRUSS PROFILE IS THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO MECHANICAL AND ARCHITECTURAL DESIGN DRAWINGS FOR SIZE AND LOCATION OF MECHANICAL/ARCHITECTURAL REQUIREMENTS.

8. TRUSS ELEMENTS, BUCKLING BRACING, AND CONNECTIONS DEFINED IN ITEMS 2, 5 & 6 ARE TO BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK, IN ACCORDANCE WITH TP1-2014 "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION".

9. SEE ARCHITECTURAL DRAWINGS AND ROOF TRUSS ELEVATIONS FOR TRUSS PROFILE AND ROOF CONTROL ELEVATIONS.

10. PROVIDE MULTIPLE STUDS FULL HEIGHT OF WALL UNDER FULL BEARING WIDTH OF GIRDER AND MULTIPLE-PLY TRUSSES. SEE WOOD POST FRAMING SCHEDULE B1/S311 FOR ATTACHMENT OF MULTIPLE STUDS.

11. COMPLY WITH APPLICABLE REQUIREMENTS AND RECOMMENDATIONS OF THE FOLLOWING PUBLICATIONS:  
1. TP1-1, "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION."  
2. TPI DSB, "RECOMMENDED DESIGN SPECIFICATION FOR TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES."  
3. TPI BCS, "BUILDING COMPONENT SAFETY INFORMATION: GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING, RESTRAINING, AND BRACING METAL PLATE CONNECTED WOOD TRUSSES."

WOOD TRUSS NOTES

SCALE: NO SCALE

AN INSPECTION, TESTING AND QUALITY CONTROL PROGRAM FOR THE CONSTRUCTION PHASE OF THE PROJECT SHALL BE IMPLEMENTED AS OUTLINED IN THE DOCUMENT ENTITLED SPECIAL INSPECTIONS AND TESTING. THE OWNER WILL ENGAGE AN APPROVED TESTING/INSPECTION AGENCY TO PROVIDE SPECIAL INSPECTION AND TESTING AS REQUIRED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE SCHEDULE WITH THE TESTING/INSPECTION AGENCY. DEFINITIONS AND REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 1701 OF THE 2020 BUILDING CODE OF NEW YORK STATE. FAILURE TO COMPLY WILL RESULT IN REMOVAL AND RECONSTRUCTION OF ANY STRUCTURAL ELEMENTS NOT VERIFIED, TESTED OR INSPECTED.

STRUCTURAL TESTING NOTES

SCALE: NO SCALE

1. STRUCTURE WAS DESIGNED IN ACCORDANCE WITH THE 2020 BUILDING CODE OF NEW YORK STATE.

2. CONTRACTOR SHALL VERIFY IN THE FIELD ALL EXISTING CONDITIONS AT THE SITE PRIOR TO BEGINNING ANY WORK. IF EXISTING FIELD CONDITIONS DO NOT PERMIT THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE DETAILS AS SHOWN, NOTIFY ENGINEER IMMEDIATELY.

DESIGN LOADS:

a. DEAD LOADS:  
1. ROOF TRUSS TOP CHORD..... 10 PSF  
2. ROOF TRUSS BOTTOM CHORD..... 10 PSF

OCCUPANCY OR USE	UNIFORM (PSF)	CONCENTRATED (POUNDS)	LIVE LOAD REDUCTION
OFFICES	50	2,000	YES
DECKS	75	N.A.	YES

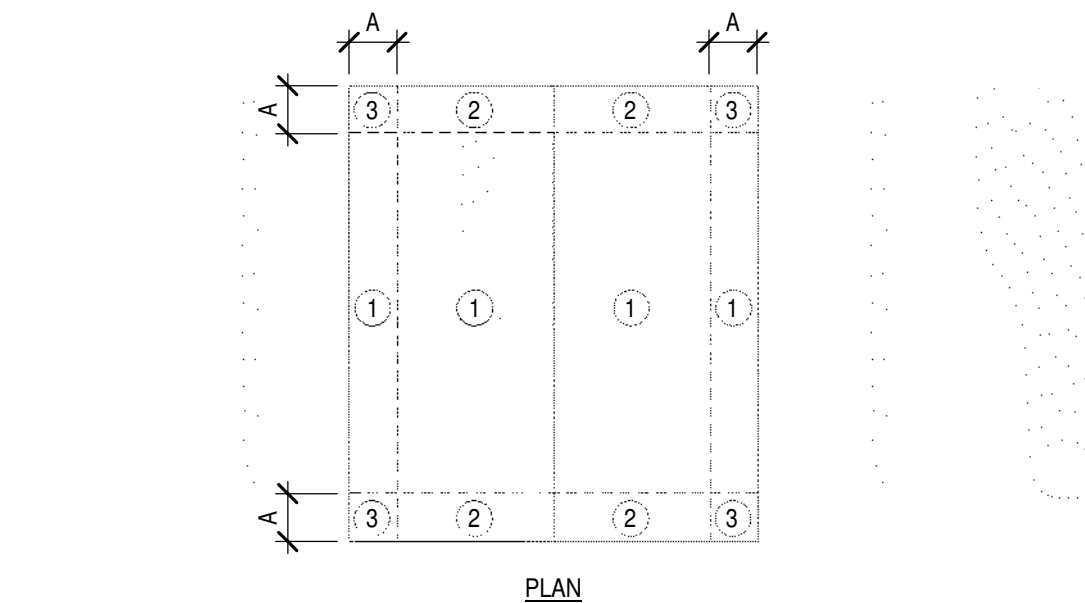
NOTE: LIVE LOAD REDUCTION IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS.

b. FLOOR LIVE LOADS:  
1. GROUND SNOW LOAD.....  $P_g = 79$  PSF  
2. FLAT ROOF SNOW LOAD.....  $P_f = 55$  PSF  
3. SNOW EXPOSURE FACTOR.....  $C_e = 1.0$   
4. SNOW LOAD IMPORTANCE FACTOR.....  $I_s = 1.0$   
5. THERMAL FACTOR.....  $C_t = 1.0$   
6. SNOW DRIFT LOADING DETERMINED IN ACCORDANCE WITH ASCE 7-16.

d. WIND LOAD:  
1. ULTIMATE DESIGN WIND SPEED (3 SEC GUST)..... 115 MPH  
2. NOMINAL DESIGN WIND SPEED..... 85 MPH  
3. WIND EXPOSURE CATEGORY..... B  
4. RISK CATEGORY..... II  
5. WIND IMPORTANCE FACTOR..... 1.0  
6. INTERNAL PRESSURE COEFFICIENT..... +/- 0.18  
7. COMPONENT AND CLADDING NOT SPECIFICALLY DESIGNED HEREIN SHALL BE DESIGNED FOR THE FOLLOWING ULTIMATE STRENGTH DESIGN WIND PRESSURES, BASED ON TRIBUTARY AREA. TO CONVERT INTO ASD SERVICE LOAD WIND PRESSURES, MULTIPLY TABULATED VALUES (SHOWN IN TABLE) BY 0.60.

Effective Wind Area	WALL				ROOF				OVERHANG ZONE 3	OVERHANG ZONE 2
	Zone 5	Zone 4	Zone 3	Zone 2	Zone 5	Zone 4	Zone 3	Zone 2		
10 SF	-35.30	26.30	-28.79	26.30	-59.80	24.10	-48.70	24.10	-44.20	24.10
20 SF	-33.00	25.20	-27.60	25.20	-53.10	22.30	-44.20	22.30	-37.50	22.30
50 SF	-30.10	23.40	-26.02	23.40	-44.20	17.90	-36.80	17.90	-28.60	17.90
100 SF	-27.50	22.30	-24.82	22.30	-37.50	15.20	-31.20	15.20	-21.90	15.20
200 SF	-21.90	19.60	-23.62	19.60	-26.30	15.20	-26.30	15.20	-15.20	15.20

NOTES:  
- ZONE DEFINED IN BUILDING CODE USING  $A = 4$  ft.  
- PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE SURFACES, RESPECTIVELY.



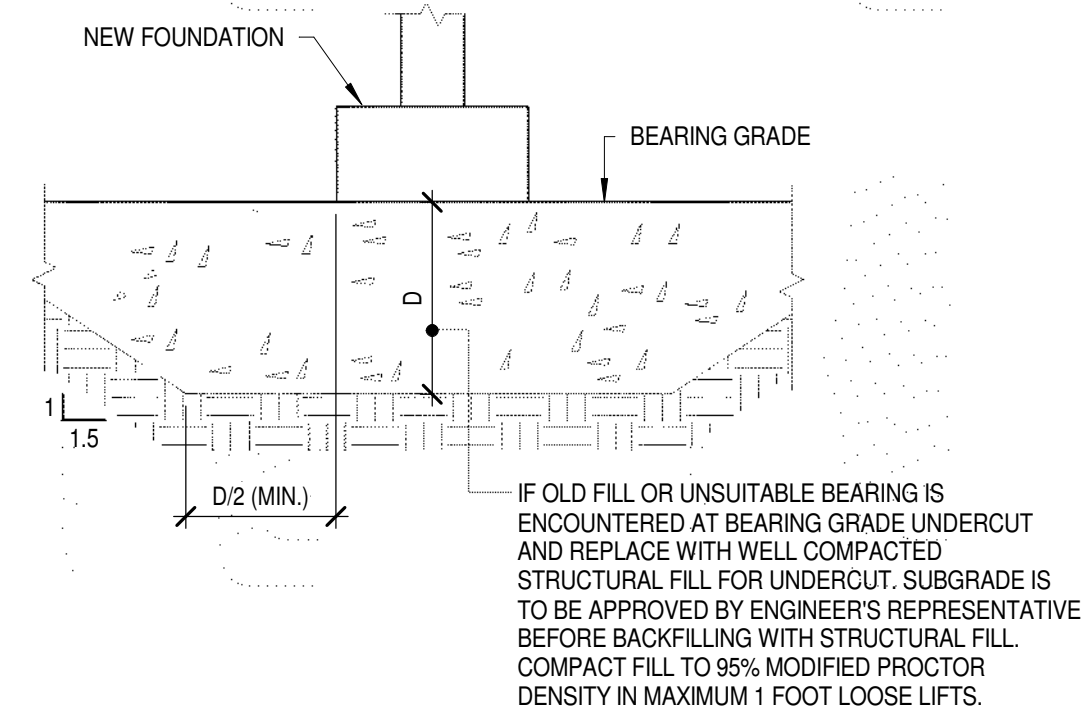
GENERAL DESIGN NOTES

SCALE: NO SCALE

- USE SPRUCE PINE FIR #2 or BETTER, KILN DRIED  $w_c < 19\%$
- SHEATHING DEFINED ON THIS DRAWING TO BE APA RATED PLYWOOD.
- ALL METAL CONNECTORS TO BE GALVANIZED.
- PROVIDE H CLIP SPACERS AT ROOF SHEATHING.
- PT = PRESSURE TREATED, ACO, KILN DRY AFTER TREATMENT. 19% MAXIMUM MOISTURE CONTENT. PROVIDE SOUTHERN PINE #2 OR BETTER.
- UNLESS NOTED OTHERWISE, FASTEN ALL MEMBERS PER TABLE 2304.10.1 "FASTENING SCHEDULE" IN 2020 BUILDING CODE OF NEW YORK STATE.
- ALL NAILS TO BE COMMON TYPE GALVANIZED NAILS.

WOOD FRAMING NOTES

SCALE: NO SCALE



FOUNDATION PREPARATION DETAIL

SCALE: NO SCALE

FOUNDATION CONSTRUCTION

FOOTINGS HAVE BEEN PROPORTIONED BASED ON PRESUMPTIVE ALLOWABLE NET BEARING STRESS OF 2 ksf PER 2020 BUILDING CODE OF NEW YORK STATE.

1. ALL FOUNDATIONS TO BEAR ON STABLE NATURAL SUBGRADE OR WELL-COMPACTED STRUCTURAL FILL PLACED DURING EARTHWORK.

2. ENGINEER'S REPRESENTATIVE MUST APPROVE SUBGRADE / SUBBASE PRIOR TO PLACING CONCRETE.

3. FOOTINGS REQUIRING PROTECTION FROM FROST HEAVE TO BEAR AT LEAST 5 FEET BELOW FINAL ADJACENT FINISHED GRADE.

4. FOOTING SUBGRADE TO BE UNDERCUT BY 4 INCHES TO ALLOW PLACEMENT OF A LEVELING COURSE OF STRUCTURAL FILL. IF REQUIRED BY ENGINEER'S REPRESENTATIVE, STRUCTURAL FILL FOR LEVELING COURSE TO CONSIST OF MATERIAL CONFORMING TO REQUIREMENTS FOR NYSDOT SELECT GRANULAR FILL ITEM 733-11 AND HAVING 100 PERCENT PASSING A 2 INCH SIEVE. GRANULAR FILL TO BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM MODIFIED PROCTOR DENSITY AS DETERMINED BY ASTM D1557 PROCEDURES. SUBGRADE TO BE APPROVED BY ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF LEVELING COURSE.

5. IF UNSTABLE, OR UNSUITABLE MATERIAL IS ENCOUNTERED AT SUBGRADE, UNDERCUT TO STABLE SUBGRADE PER DETAIL C1/S-100 AS DIRECTED BY ENGINEER'S REPRESENTATIVE AND BACKFILL WITH WELL-COMPACTED BACKFILL MATERIAL.

6. BACKFILL TO CONSIST OF IMPORTED OR APPROVED ON-SITE GRANULAR MATERIAL CONFORMING TO REQUIREMENTS FOR NYSDOT SELECT GRANULAR FILL ITEM 733-11, AND HAVING LESS THAN 10% PASSING #200 SIEVE, COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM MODIFIED PROCTOR DENSITY AS DETERMINED BY ASTM D1557 PROCEDURES.

CONCRETE SLAB-ON-GRADE FLOOR

1. CONSTRUCT SLAB-ON-GRADE FLOORS OVER MINIMUM 12 INCH THICK WELL-COMPACTED SUBBASE COURSE.

2. ENGINEER'S REPRESENTATIVE MUST APPROVE SUBGRADE BEFORE PLACING SUBBASE.

3. ENGINEER'S REPRESENTATIVE MUST APPROVE SUBBASE BEFORE PLACING CONCRETE.

FOUNDATION NOTES

SCALE: NO SCALE

BAR LAP LENGTH SCHEDULE - GRADE 60 REINFORCING

BAR SIZE	TYPE	NORMAL WEIGHT CONCRETE $F_c =$ (PSI)	
		3,000 PSI	4,500 PSI
#6 OR SMALLER	LAP CLASS A	44 DIA.	36 DIA.
	LAP CLASS B	57 DIA.	47 DIA.
#6 OR SMALLER	LAP CLASS A	55 DIA.	45 DIA.
	LAP CLASS B	71 DIA.	58 DIA.
#11 OR SMALLER	HOOK	18 DIA.	16 DIA.

TABLE APPLIES TO BARS WITH CLEAR SPACING AT LEAST 2 BAR DIAMETERS AND CLEAR COVER AT LEAST 1 BAR DIAMETER.

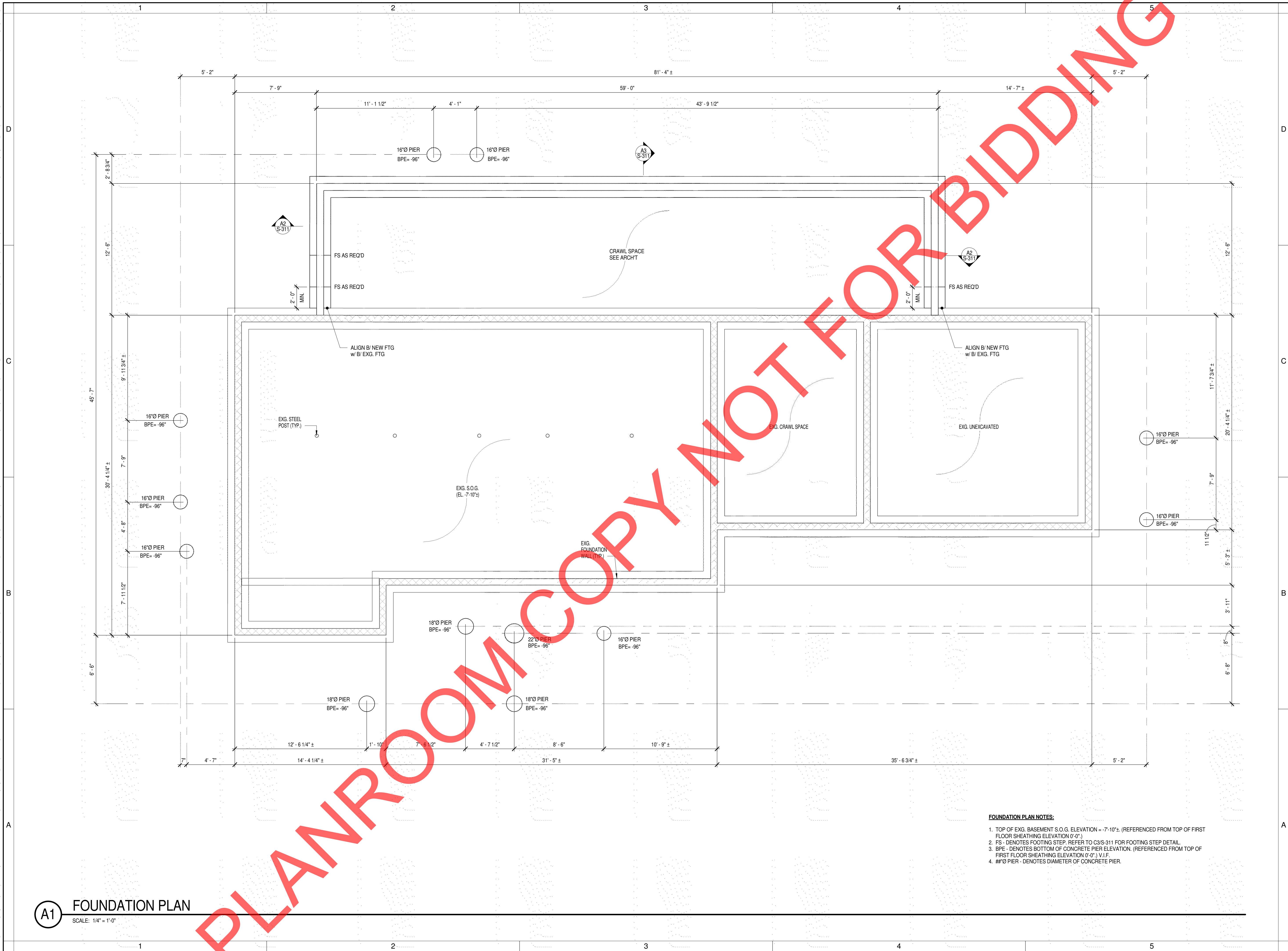
NOTES:

- MULTIPLY LAP SPLICE BY 1.3 FOR TOP BARS (WHERE MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW THE SPLICE).
- MULTIPLY LAP SPLICE BY 1.5 FOR EPOXY COATED REINFORCING.
- MULTIPLY HOOK BY 1.2 FOR EPOXY COATED REINFORCING.
- THE FACTORS FROM NOTES 1 & 2, WHEN MULTIPLIED, NEED NOT BE GREATER THAN 1.7.
- MULTIPLY VALUES BY 1.3 FOR LIGHTWEIGHT CONCRETE.
- IN THE CASE OF SPLICES BETWEEN TWO DIFFERENT SIZE BARS, PROVIDE SPLICE BASED ON THE SMALLER BAR SIZE, OR CLASS A OF THE LARGER BAR SIZE, WHICHEVER IS GREATER.

BAR LAP LENGTH SCHEDULE

SCALE: NO SCALE





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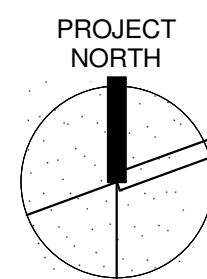
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G-CONTRACT



REVISIONS

NO.	DESCRIPTION	DATE

ORDA PROJECT NUM

QPK PROJECT NUM  
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D A T E  
04/17/2023

SHEET TITLE  
FOUNDATION PLAN

S-101



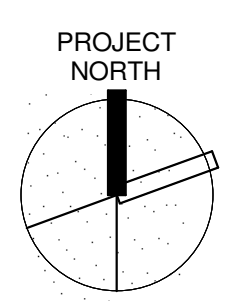
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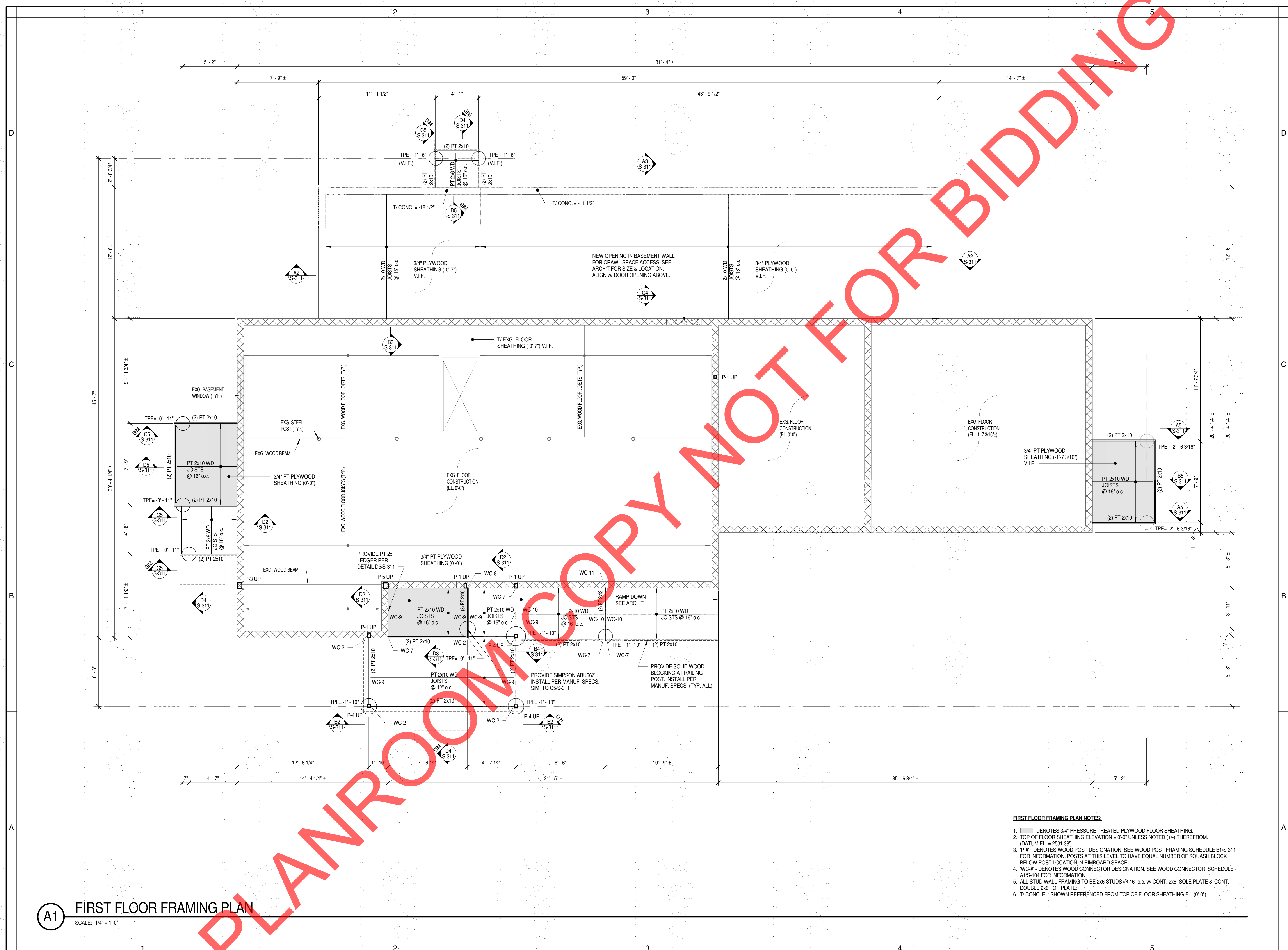
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D A T E  
04/17/2023

SHEET TITLE

FIRST FLOOR  
FRAMING PLAN

S-102



**A1** FIRST FLOOR FRAMING PLAN  
SCALE: 1/4" = 1'-0"

- FIRST FLOOR FRAMING PLAN NOTES:**
1. [Symbol] DENOTES 3/4" PRESSURE TREATED PLYWOOD FLOOR SHEATHING.
  2. TOP OF FLOOR SHEATHING ELEVATION = 0'-0" UNLESS NOTED (+/-) THEREFROM.  
(DATUM EL. = 2531.38)
  3. "P-#" DENOTES WOOD POST DESIGNATION. SEE WOOD POST FRAMING SCHEDULE B1/S-311 FOR INFORMATION. POSTS AT THIS LEVEL TO HAVE EQUAL NUMBER OF SQUASH BLOCK BELOW POST LOCATION IN RIMBOARD SPACE.
  4. "WC-#" DENOTES WOOD CONNECTOR DESIGNATION. SEE WOOD CONNECTOR SCHEDULE A1/S-104 FOR INFORMATION.
  5. ALL STUD WALL FRAMING TO BE 2x6 STUDS @ 16" o.c. w/ CONT. 2x6 SOLE PLATE & CONT. DOUBLE 2x6 TOP PLATE.
  6. T/ CONC. EL. SHOWN REFERENCED FROM TOP OF FLOOR SHEATHING EL. (0'-0").





EXP. 06/30/2025

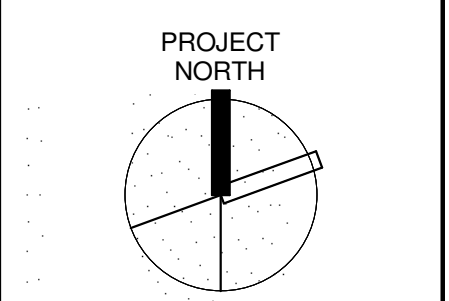
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G-CONTRACT



REVISIONS

NO.	DESCRIPTION	DATE

ORDA PROJECT NUM

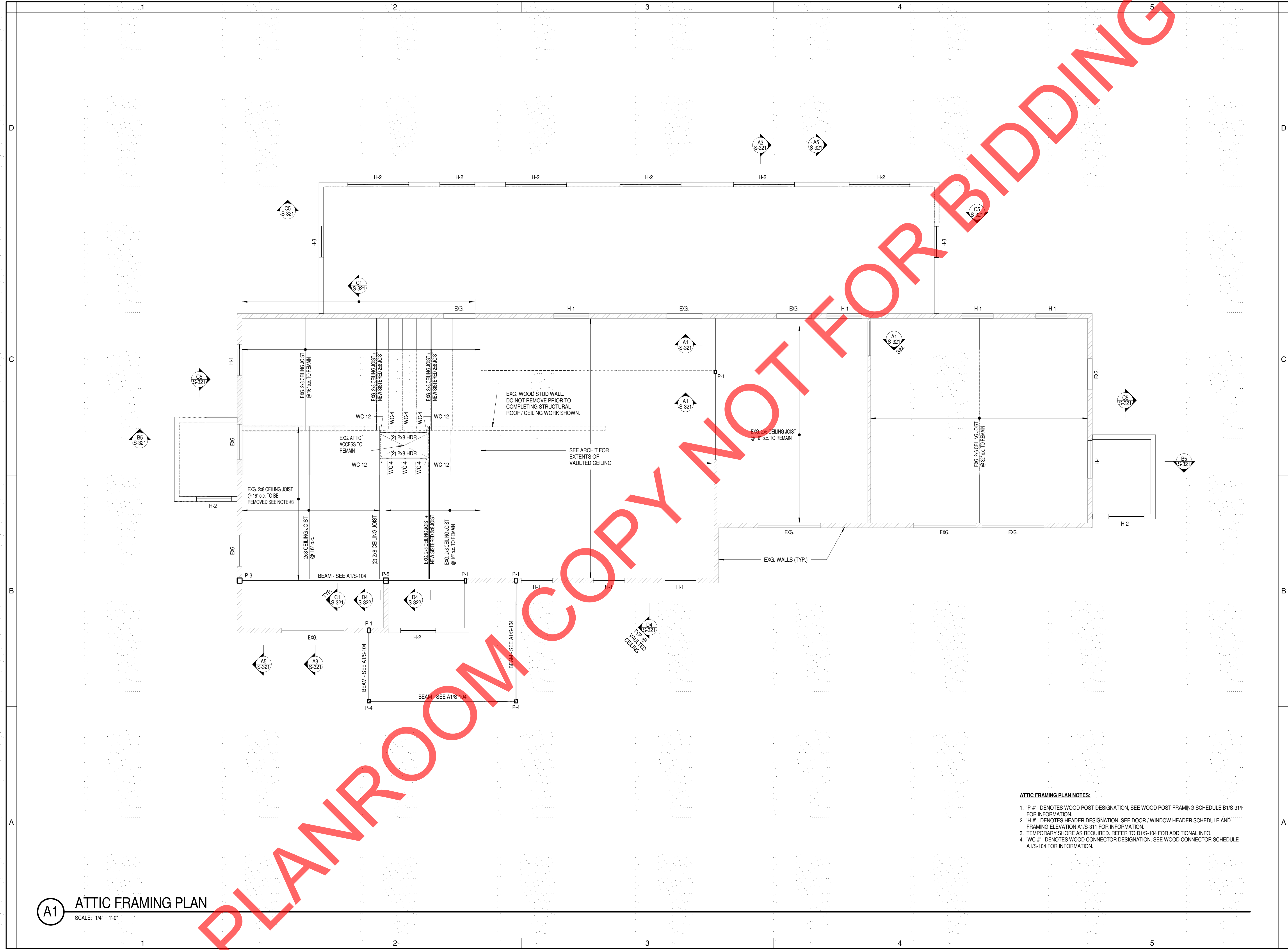
QPK PROJECT NUM  
221101.00

D A T E  
04/17/2023

SHEET TITLE

ATTIC FRAMING  
PLAN

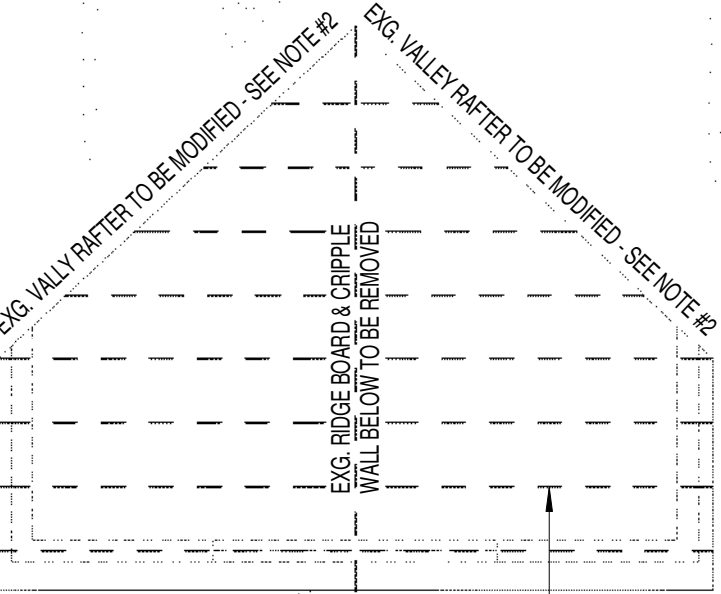
S-103



- ATTIC FRAMING PLAN NOTES:**
1. "P-#" - DENOTES WOOD POST DESIGNATION. SEE WOOD POST FRAMING SCHEDULE B1/S-311 FOR INFORMATION.
  2. "H-#" - DENOTES HEADER DESIGNATION. SEE DOOR / WINDOW HEADER SCHEDULE AND FRAMING ELEVATION A1/S-311 FOR INFORMATION.
  3. TEMPORARY SHORE AS REQUIRED. REFER TO D1/S-104 FOR ADDITIONAL INFO.
  4. "WC-#" - DENOTES WOOD CONNECTOR DESIGNATION. SEE WOOD CONNECTOR SCHEDULE A1/S-104 FOR INFORMATION.

**A1** ATTIC FRAMING PLAN  
SCALE: 1/4" = 1'-0"

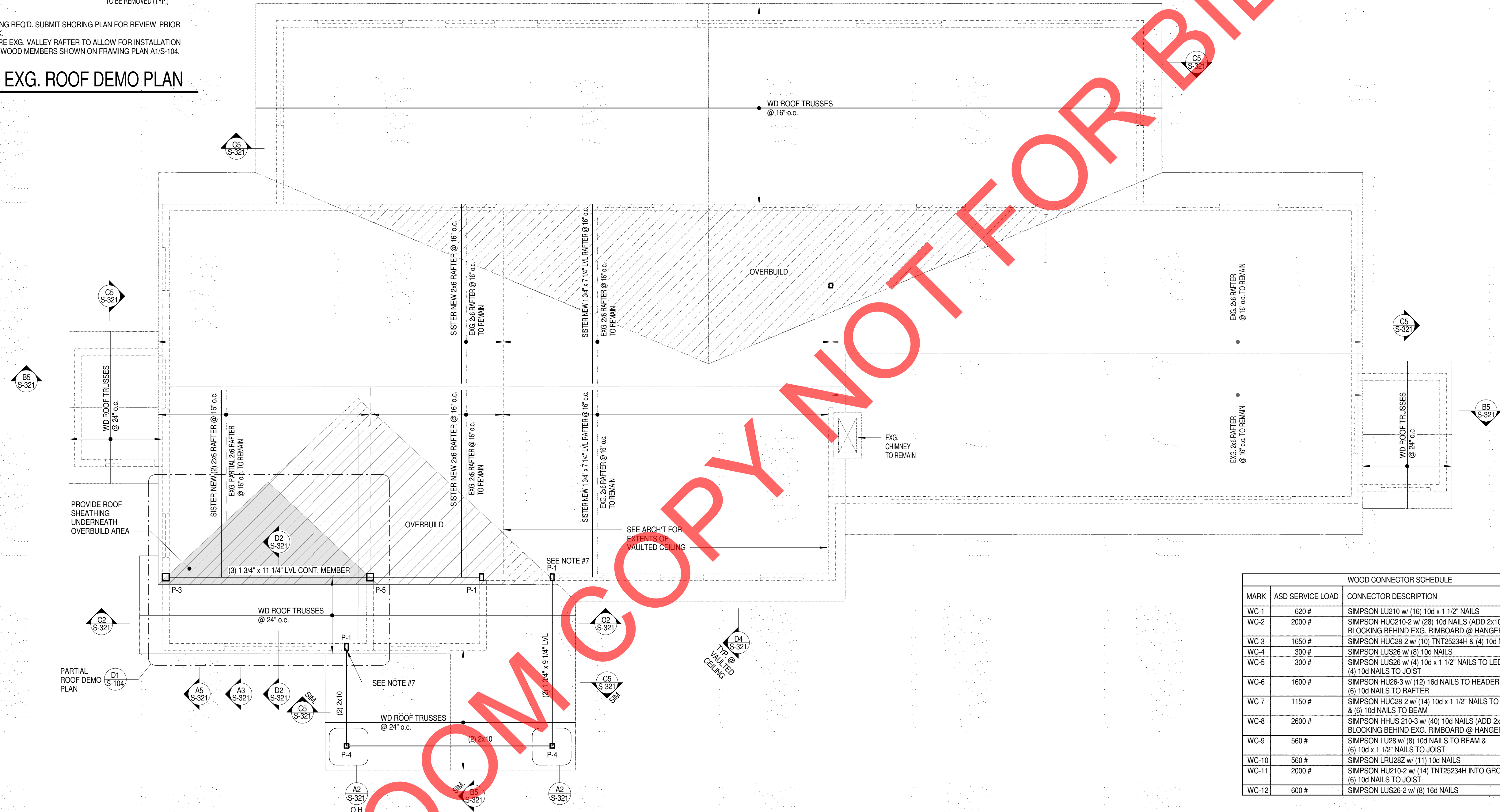




- NOTES:
1. TEMPORARY SHORING REQ'D. SUBMIT SHORING PLAN FOR REVIEW PRIOR TO STARTING WORK.
  2. TEMPORARILY SHORE EXG. VALLEY RAFTER TO ALLOW FOR INSTALLATION OF NEW SISTERING WOOD MEMBERS SHOWN ON FRAMING PLAN A1/S-104.

**D1** PARTIAL EXG. ROOF DEMO PLAN

SCALE: 1/4" = 1'-0"



WOOD CONNECTOR SCHEDULE		
MARK	ASD SERVICE LOAD	CONNECTOR DESCRIPTION
WC-1	620 #	SIMPSON LU210 w/ (16) 10d x 1 1/2" NAILS
WC-2	2000 #	SIMPSON HUC210-2 w/ (28) 10d NAILS (ADD 2x10 WOOD BLOCKING BEHIND EXG. RIMBOARD @ HANGER LOCATION)
WC-3	1650 #	SIMPSON HUC28-2 w/ (10) TNT25234H & (4) 10d NAILS
WC-4	300 #	SIMPSON LUS26 w/ (8) 10d NAILS
WC-5	300 #	SIMPSON LUS26 w/ (4) 10d x 1 1/2" NAILS TO LEDGER & (4) 10d NAILS TO JOIST
WC-6	1600 #	SIMPSON HU26-3 w/ (12) 16d NAILS TO HEADER & (6) 10d NAILS TO RAFTER
WC-7	1150 #	SIMPSON HUC28-2 w/ (14) 10d x 1 1/2" NAILS TO RIM BOARD & (6) 10d NAILS TO BEAM
WC-8	2600 #	SIMPSON HHUS 210-3 w/ (40) 10d NAILS (ADD 2x10 WOOD BLOCKING BEHIND EXG. RIMBOARD @ HANGER LOCATION)
WC-9	560 #	SIMPSON LU28 w/ (8) 10d NAILS TO BEAM & (6) 10d x 1 1/2" NAILS TO JOIST
WC-10	560 #	SIMPSON LRU28Z w/ (11) 10d NAILS
WC-11	2000 #	SIMPSON HU210-2 w/ (14) TNT25234H INTO GROUTED CMU
WC-12	600 #	SIMPSON LUS26-2 w/ (8) 16d NAILS

- ROOF FRAMING PLAN NOTES:**
1. BOTTOM OF ROOF TRUSS ELEVATION = +8'-0" (V.I.F.) UNLESS NOTED (+/-) THEREFROM. (REFERENCED FROM TOP OF FIRST FLOOR SHEATHING)
  2. ROOF CONSTRUCTION:  
TYPICAL - 5/8" ROOF SHEATHING OVER WOOD ROOF TRUSSES (U.N.O.)
  3. ROOF SHEATHING ATTACHMENT:  
a. FIELD..... 10d @ 12" o.c.  
b. ALL SUPPORT PANEL EDGES..... 10d @ 6" o.c.  
c. COORDINATE WITH ROOF MANUFACTURER MINIMUM NAIL OR SCREW FASTENERS REQUIRED. NOTIFY PROJECT ARCHITECT OF ANY CHANGES AND ADJUST SIZE AND SPACING AS DIRECTED.
  4. "P.#" - DENOTES WOOD POST DESIGNATION. SEE WOOD POST FRAMING SCHEDULE B1/S-311 FOR INFORMATION.
  5. "H.#" - DENOTES HEADER DESIGNATION. SEE DOOR / WINDOW HEADER SCHEDULE AND FRAMING ELEVATION A1/S-311 FOR INFORMATION.
  6. "OVERBUILD" - DENOTES OVERBUILT ROOF AREA. FRAME WITH WOOD TRUSSES @ 16" o.c. U.N.O.) ATTACH OVERBUILD TO MAIN BUILDING FRAMING USING SIMPSON VTCR CONNECTORS AT EACH EXG. ROOF RAFTER.
  7. PROVIDE (2) SIMPSON H2.5A HURRICANE TIES. INSTALL PER MANUF. SPECS.

**A1** ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"



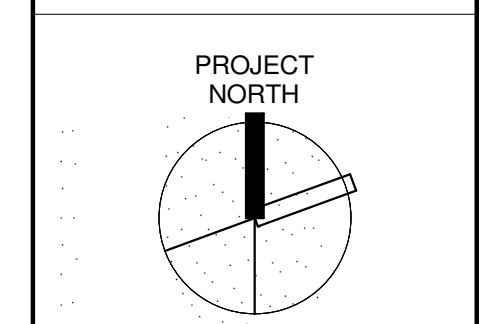
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**NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY**

**BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING**

**HIGHMOUNT, NEW YORK  
12441**

**CONTRACT  
G-CONTRACT**



REVISIONS		

**ORDA PROJECT NUM**

**QPK PROJECT NUM**  
**221101.00**

**D A T E**  
**04/17/2023**

**SHEET TITLE**  
**ROOF FRAMING  
PLAN**

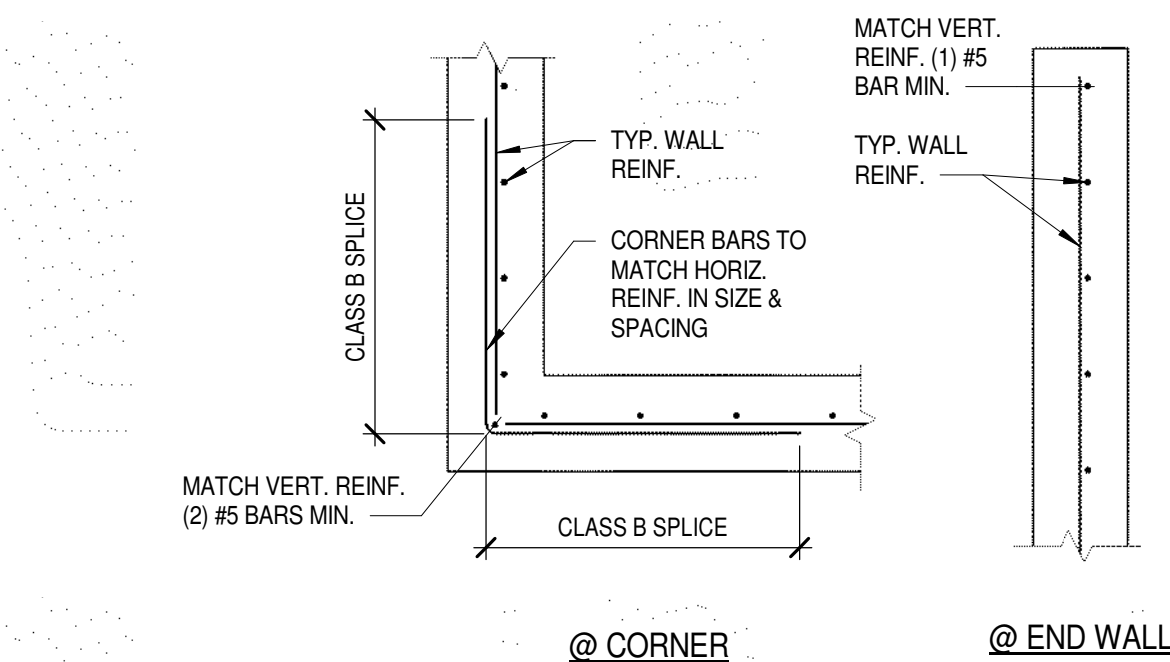
**S-104**



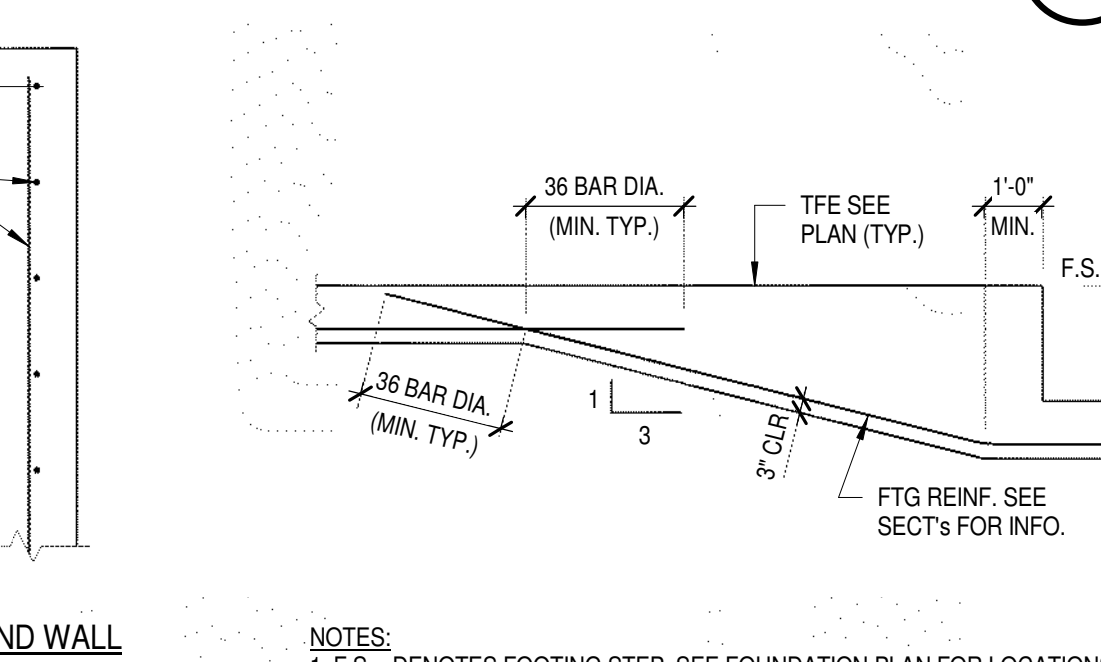
WOOD POST FRAMING SCHEDULE			
MARK	n-PLY	PLY SIZE	FASTENERS
P-1	2	2x4 or 2x6 *	
P-2	3	2x4 or 2x6 *	
P-3	4	2x4 or 2x6 *	
P-4	N/A	4x4 PT WOOD POST	
P-5	3	(3) 2x6 IF 2x6 WALL or (1) 3 1/2" x 7" PSL IF 2x4 WALL	

\* TO MATCH STUD WALL DIMENSION.

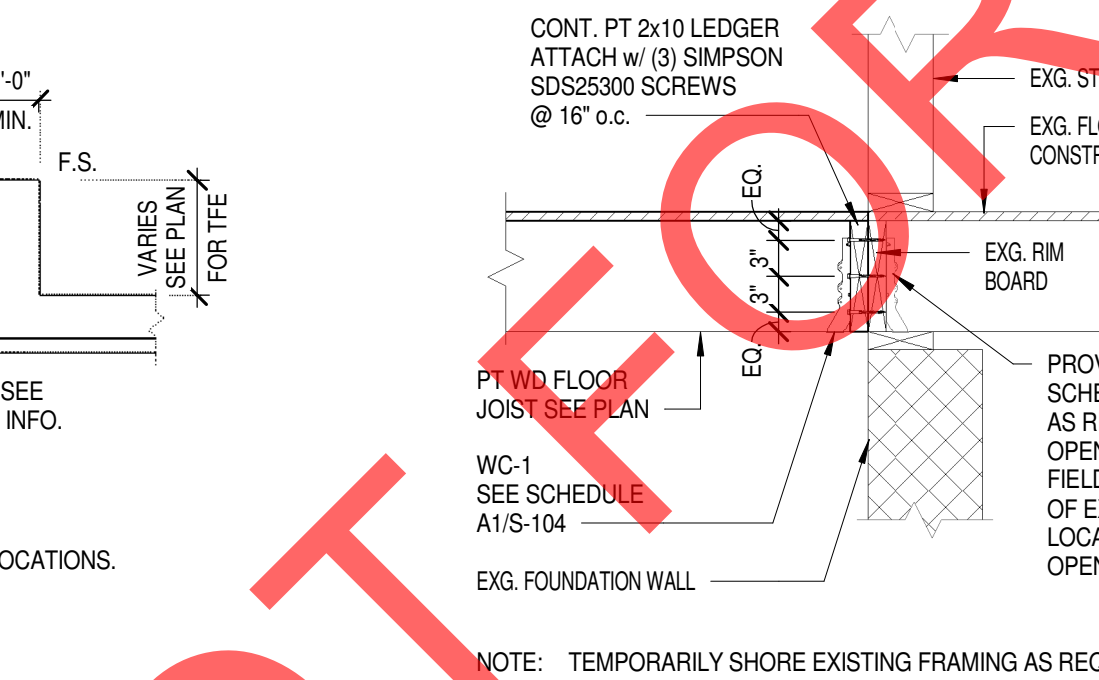
**D2** FRAMING SECTION  
SCALE: NO SCALE



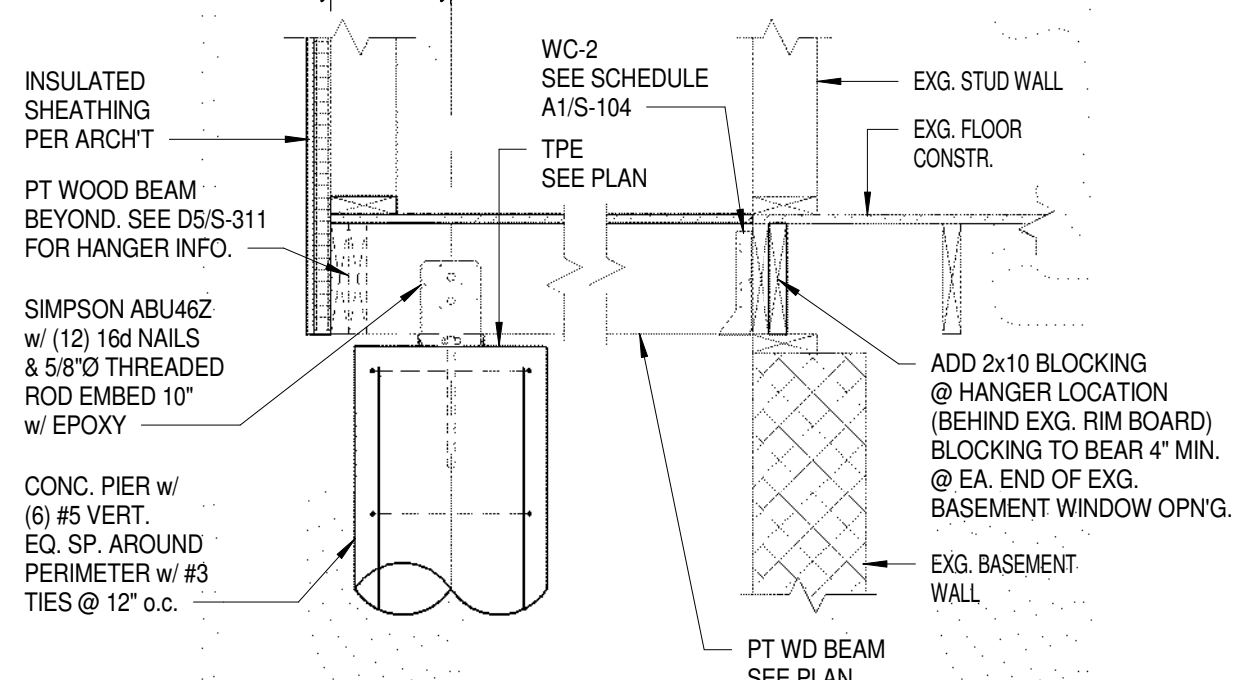
**D3** FRAMING SECTION  
SCALE: NO SCALE



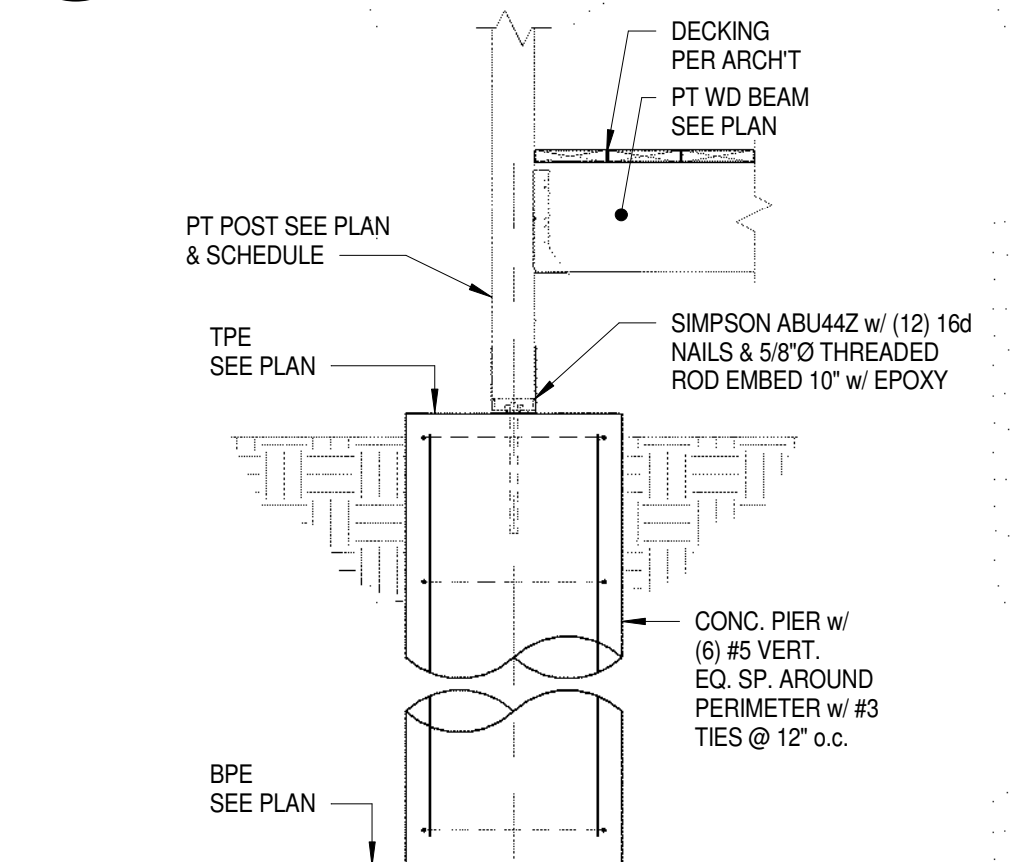
**D4** FRAMING SECTION  
SCALE: NO SCALE



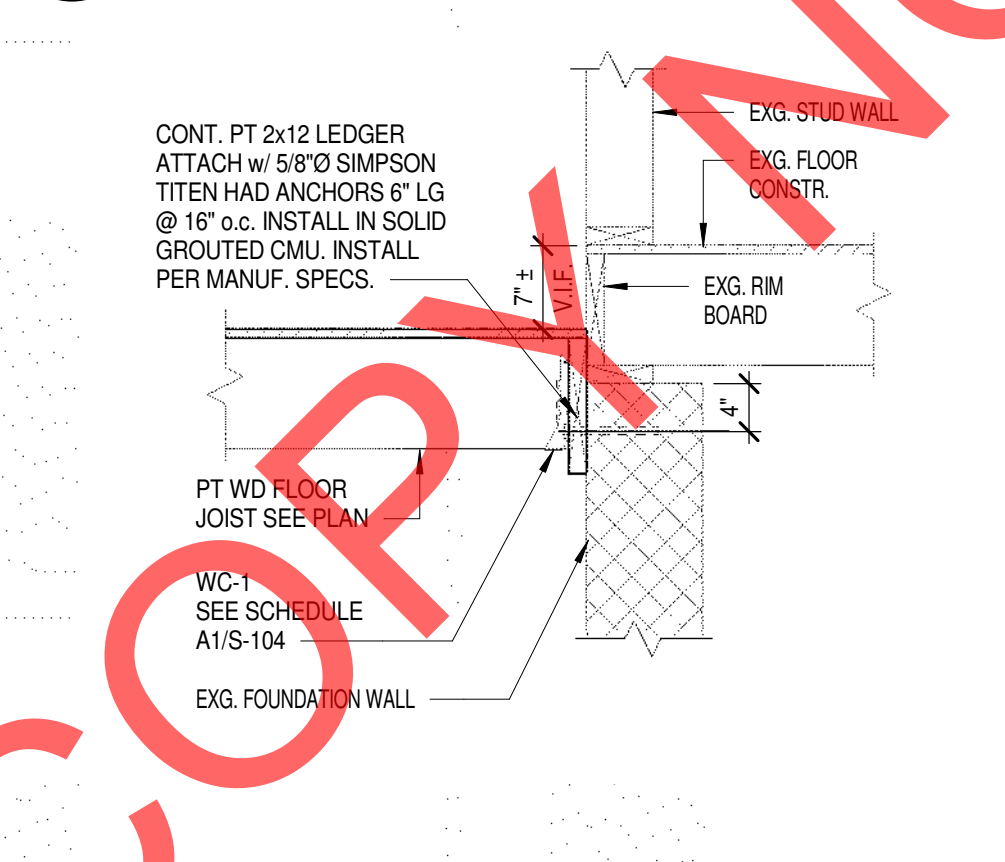
**D5** FRAMING SECTION  
SCALE: NO SCALE



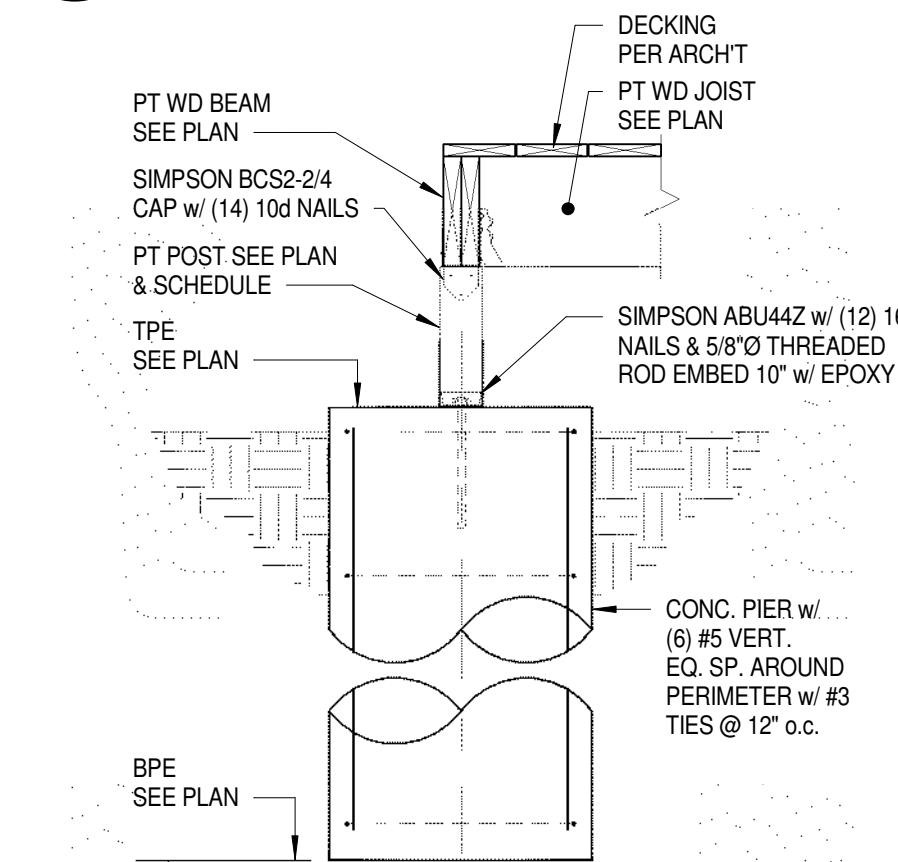
**C2** TYP. CORNER & END REINF. PLAN DETAIL  
SCALE: NO SCALE



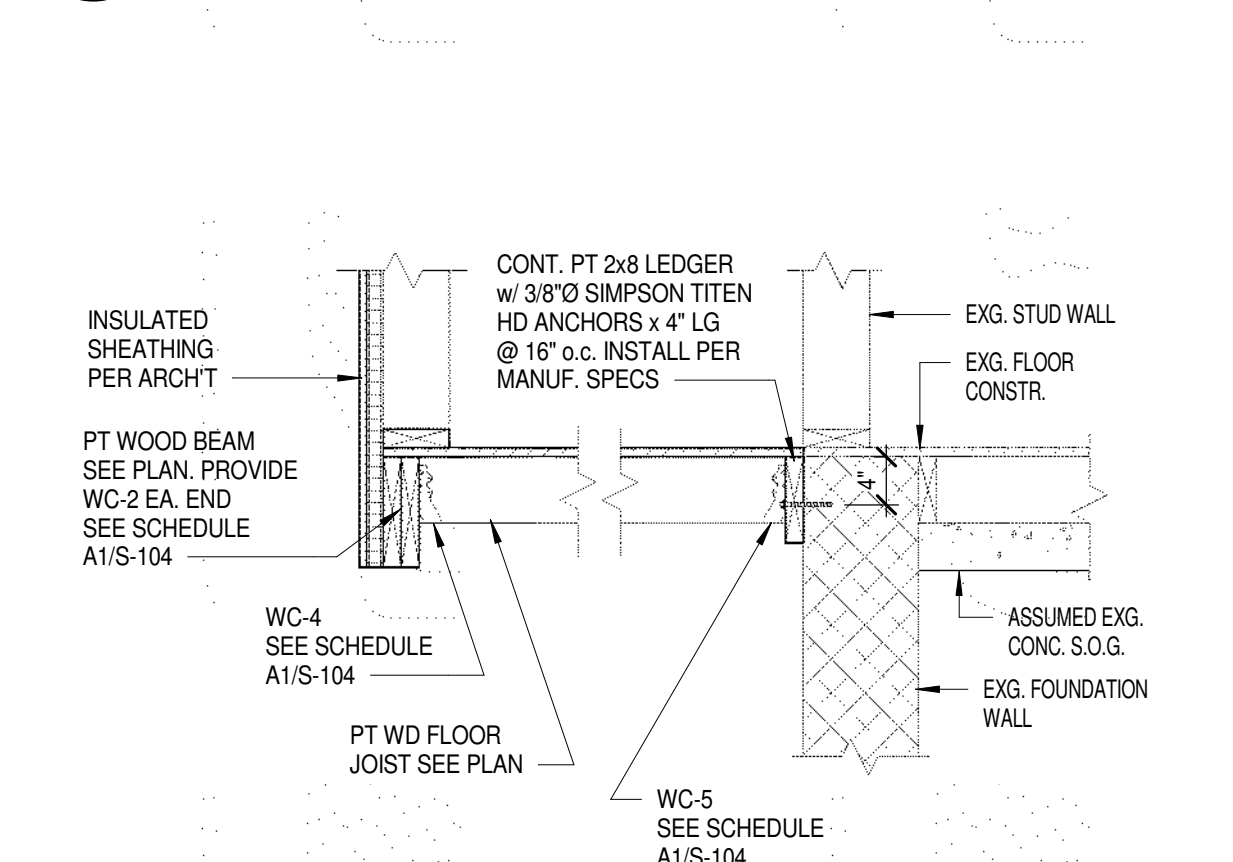
**C3** TYPICAL FOOTING STEP DETAIL  
SCALE: NO SCALE



**C4** FRAMING SECTION  
SCALE: NO SCALE

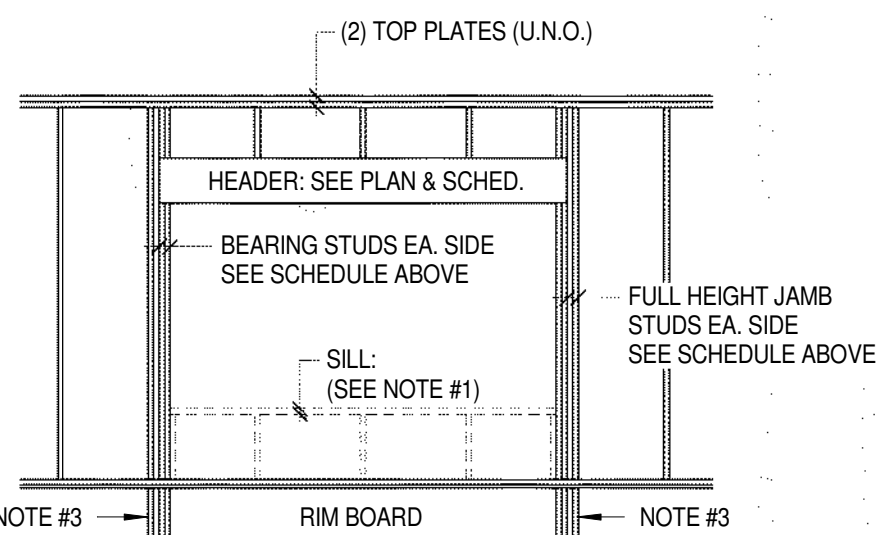


**C5** FRAMING SECTION  
SCALE: NO SCALE



**B1** POST SCHEDULE  
SCALE: NO SCALE

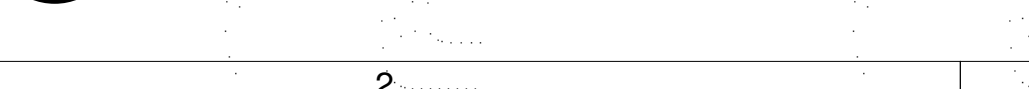
HEADER SCHEDULE				
MARK	WALL STUD	SIZE	# OF BEARING STUDS	# OF FULL HEIGHT JAMB STUDS
H-1	2x4	(2) 2x8	1	1
H-2	2x6	(3) 2x6	1	1
H-3	2x6	(3) 2x8	2	1



- NOTES:**
- SILL MEMBER:  
FOR OPENINGS  $\leq 5'-0"$  PROVIDE (1) 2x TO MATCH STUD WIDTH  
FOR OPENINGS  $5'-0" < \text{ROUGH OPENING} \leq 8'-0"$  PROVIDE (2) 2x TO MATCH STUD WIDTH  
FOR OPENINGS  $> 8'-0"$  PROVIDE (3) 2x TO MATCH STUD WIDTH
  - SEE ARCH. DWGS FOR DOOR & WINDOW SIZES AND LOCATIONS.
  - AT RIM BOARD LOCATIONS, PROVIDE 2x4 SQUASH BLOCK & MATCH QUANTITY OF JAMB STUDS FROM OPENING ABOVE.
  - FOR HEADERS IN EXISTING BEARING WALLS, SHORE EXISTING FLOOR / CEILING / ROOF CONSTRUCTION.

**A1** HEADER SCHEDULE AND FRAMING ELEVATION  
SCALE: NO SCALE

**A2** FRAMING SECTION  
SCALE: NO SCALE



**A3** FRAMING SECTION  
SCALE: NO SCALE



**A5** FRAMING SECTION  
SCALE: NO SCALE



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

EXP. 06/30/2025

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NYS OLYMPIC REGIONAL DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE BUILDING & GONDOLA STORAGE BUILDING

HIGHMOUNT, NEW YORK 12441

CONTRACT  
**G-CONTRACT**

REVISIONS

NO.	DESCRIPTION	DATE

ORDA PROJECT NUM

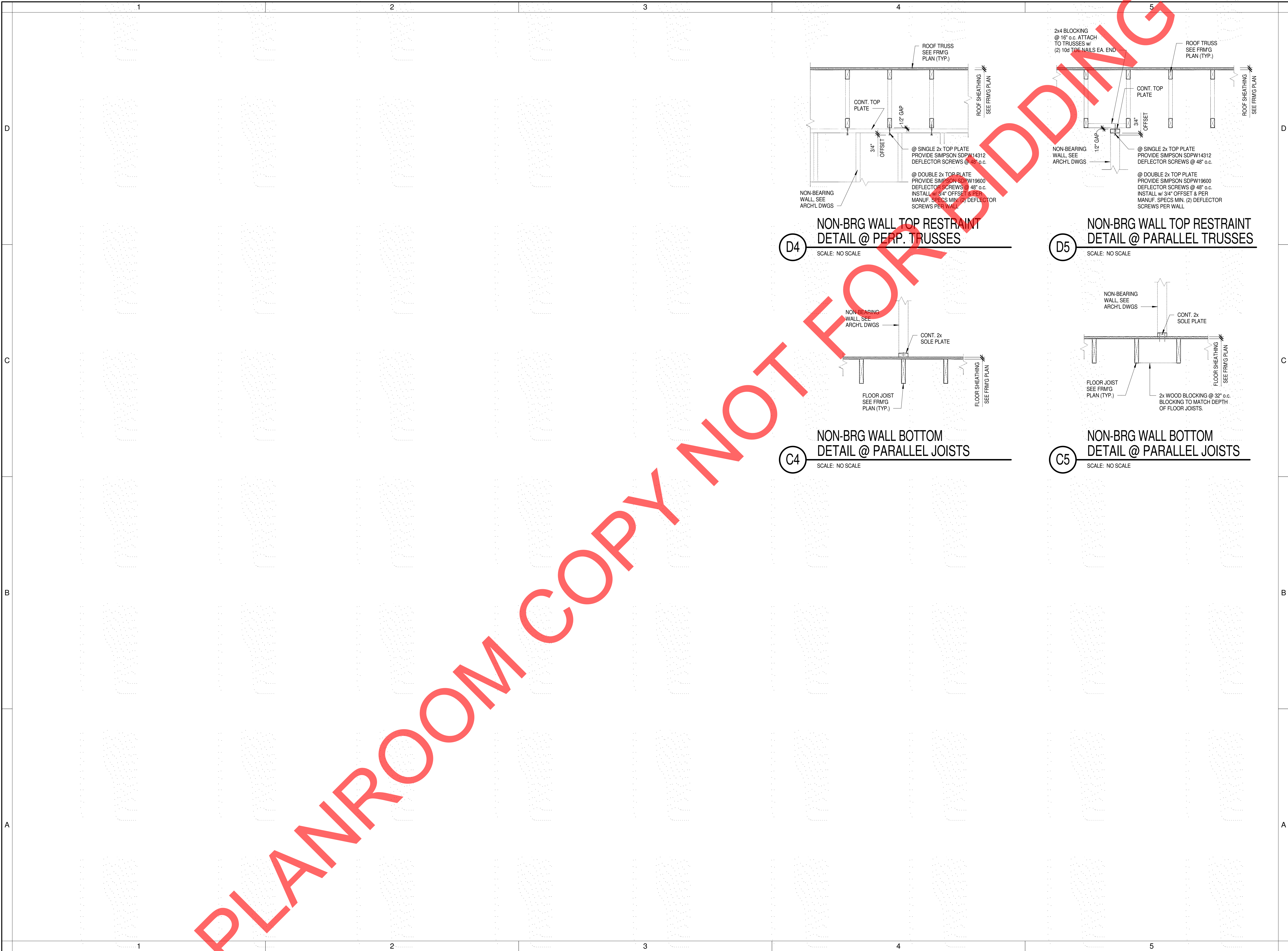
QPK PROJECT NUM  
221101.00

D A T E  
04/17/2023

SHEET TITLE  
**FLOOR FRAMING SECTIONS & DETAILS**

**S-311**





450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

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BELLEAYRE  
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& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G-CONTRACT

REVISIONS		

ORDA PROJECT NUM

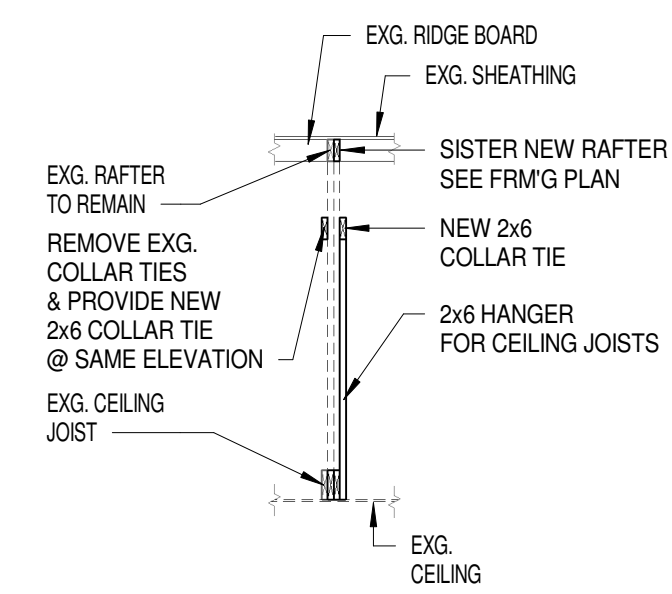
QPK PROJECT NUM  
221101.00

D A T E  
04/17/2023

SHEET TITLE  
FLOOR FRAMING  
SECTIONS &  
DETAILS

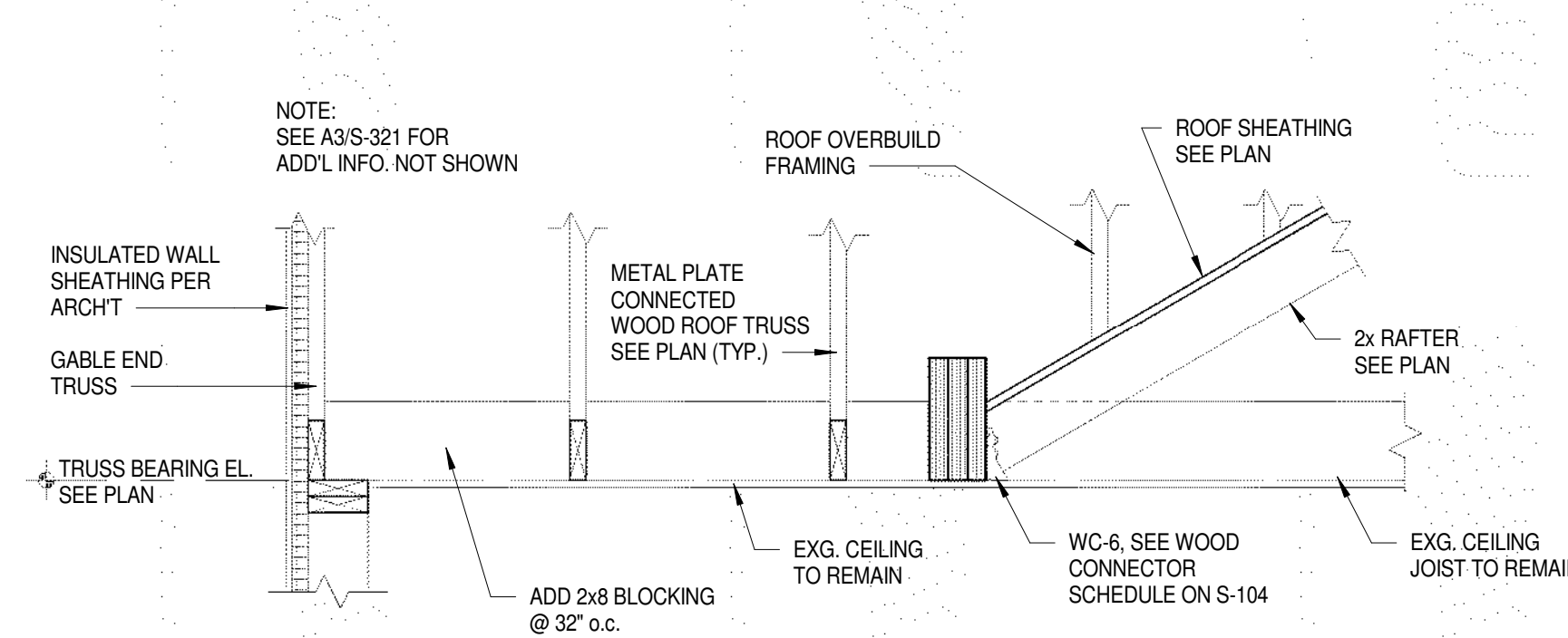
S-312



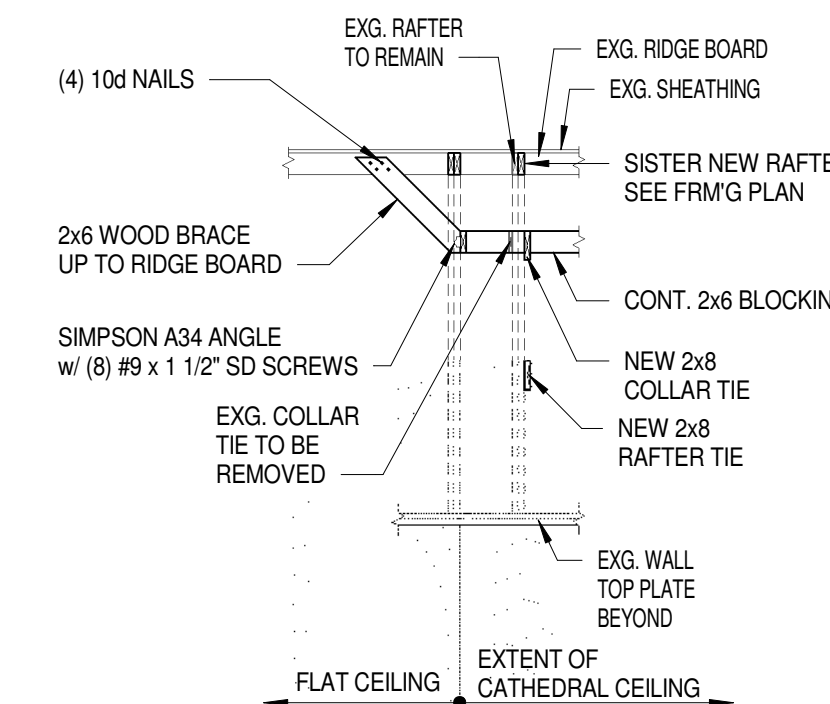


NOTES:  
1. BLOCKING TO BE PROVIDED WHERE REQUIRED.  
2. ATTACH BLOCKING w/ (6) 10d NAILS

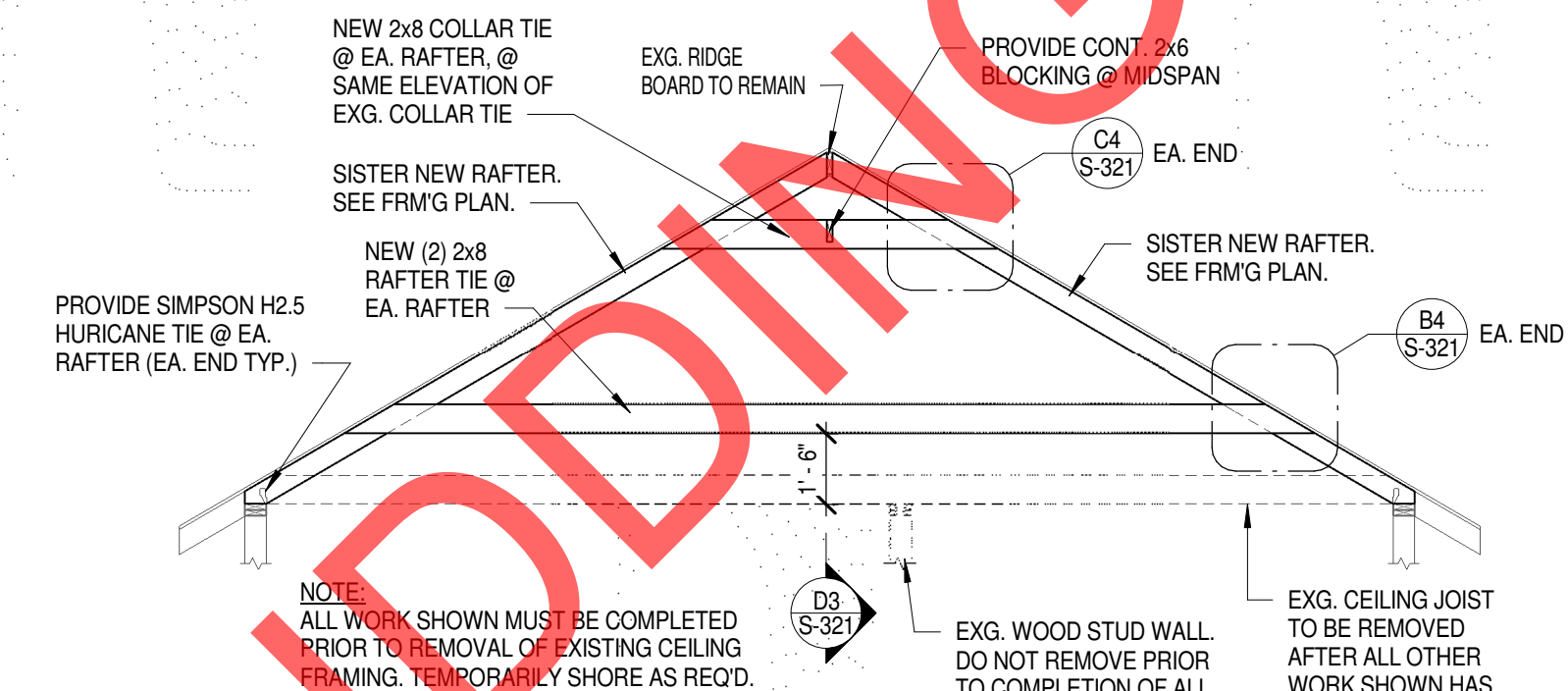
D1 SECTION  
SCALE: NO SCALE



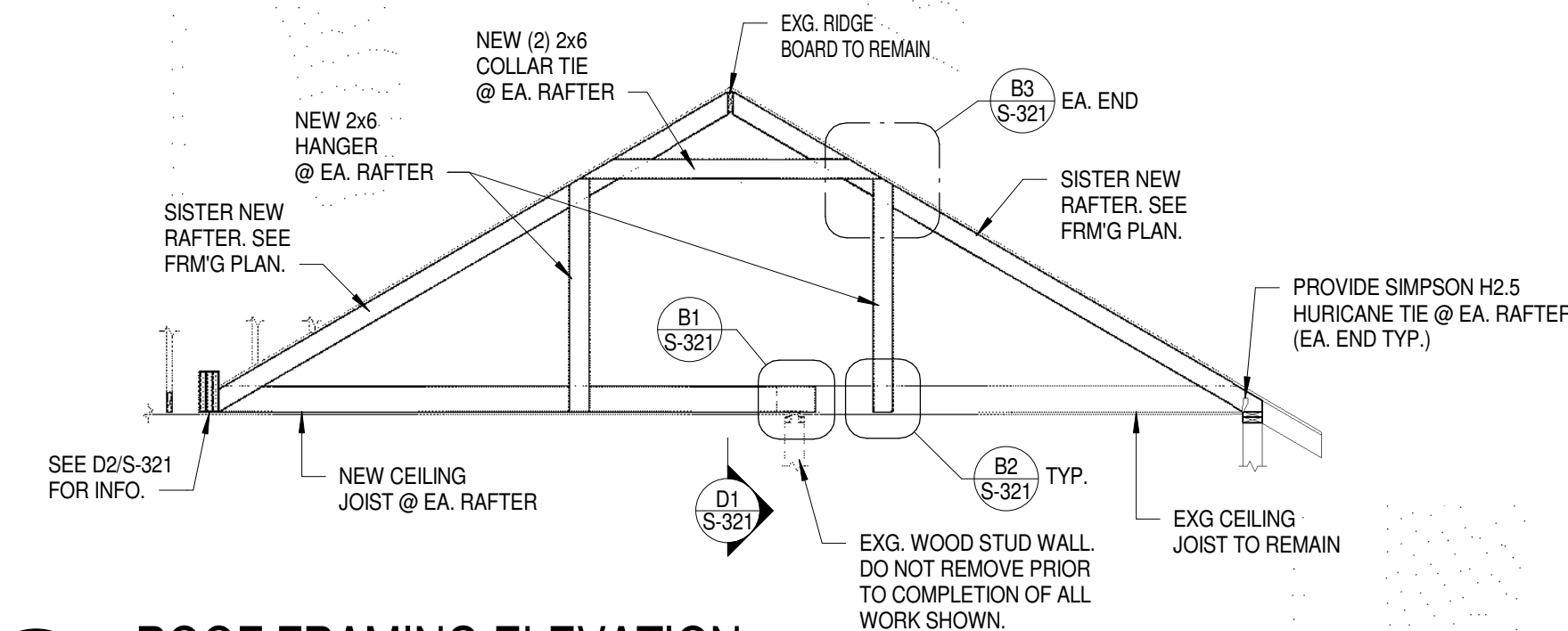
D2 ROOF FRAMING SECTION  
SCALE: NO SCALE



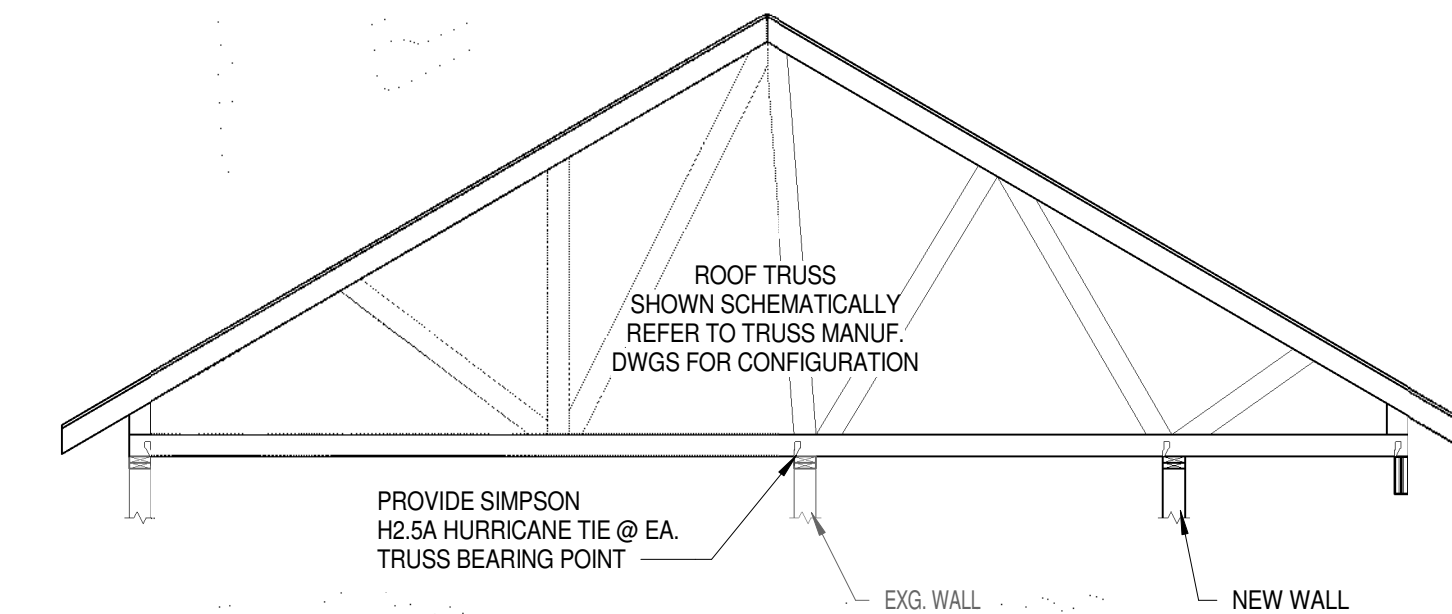
D3 SECTION  
SCALE: NO SCALE



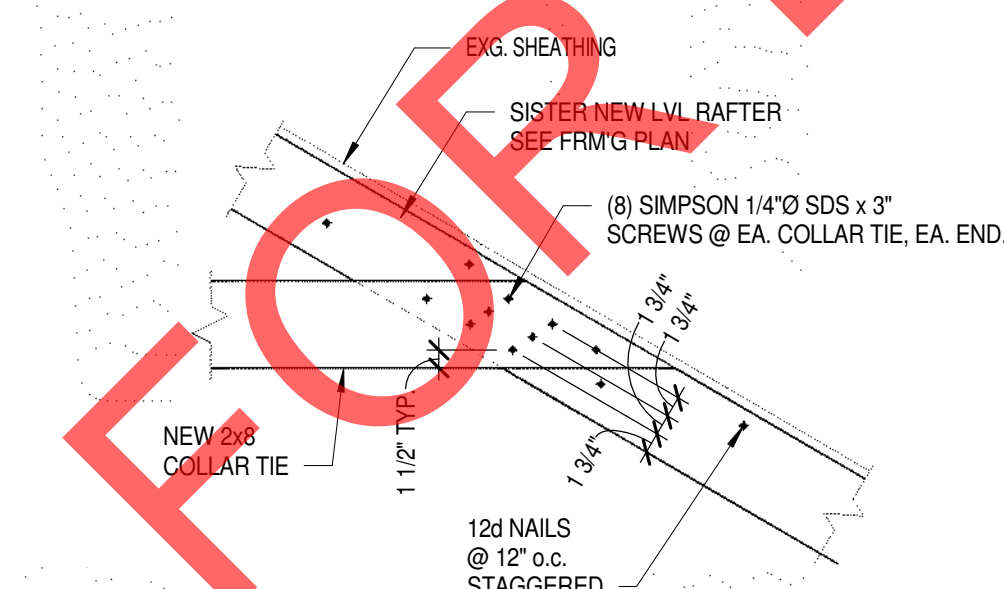
D4 ROOF FRAMING ELEVATION  
SCALE: NO SCALE



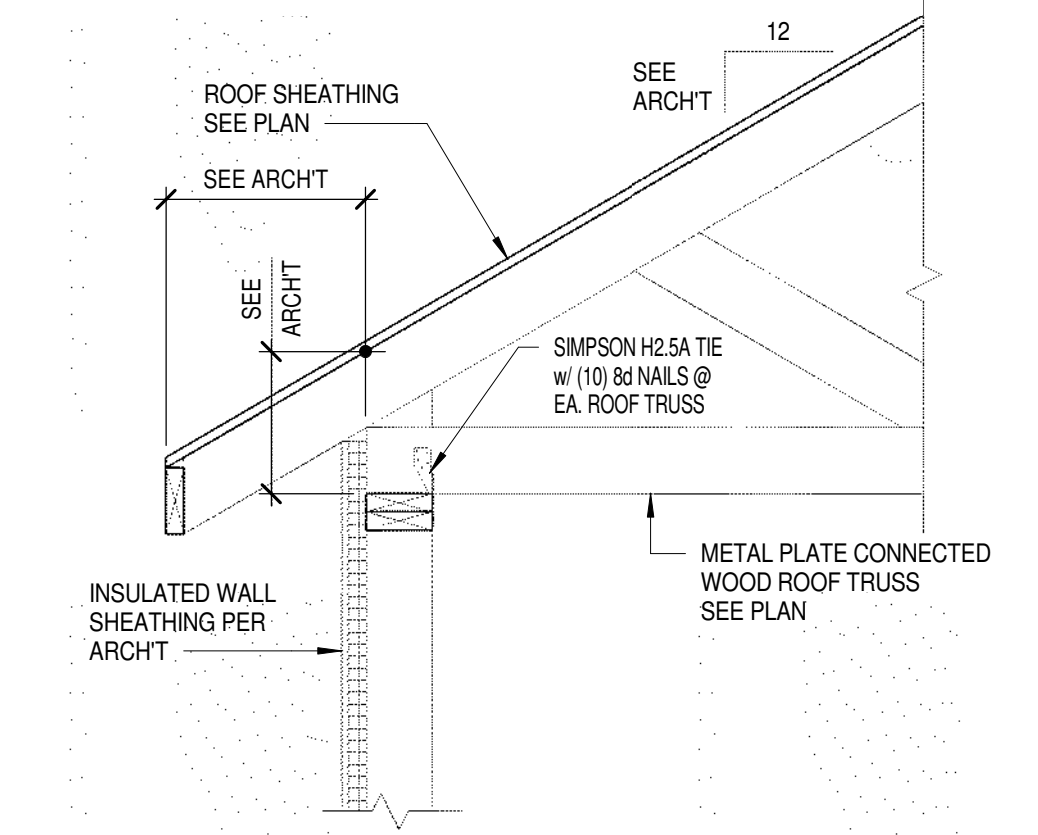
C1 ROOF FRAMING ELEVATION  
SCALE: NO SCALE



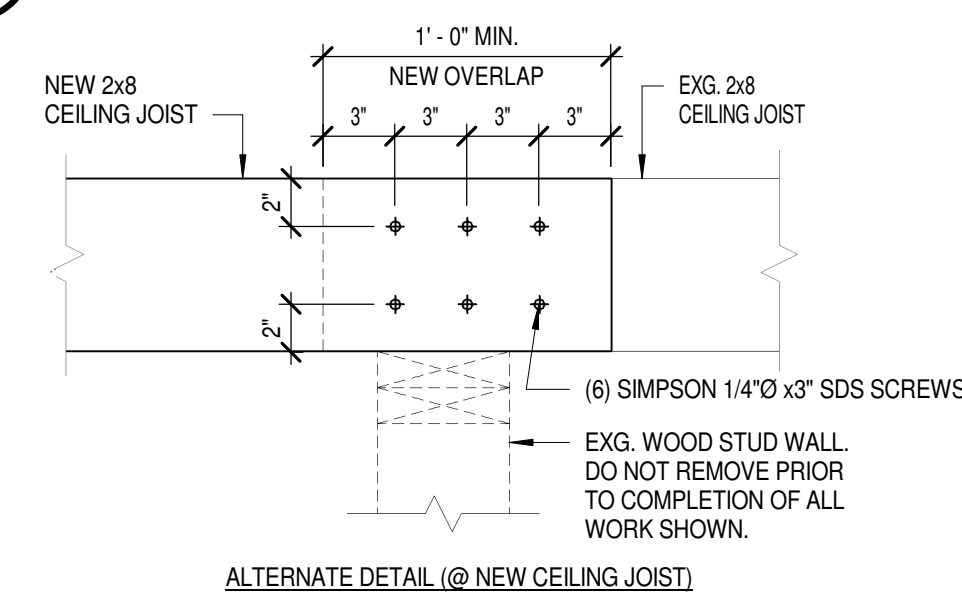
C2 ROOF FRAMING ELEVATION  
SCALE: NO SCALE



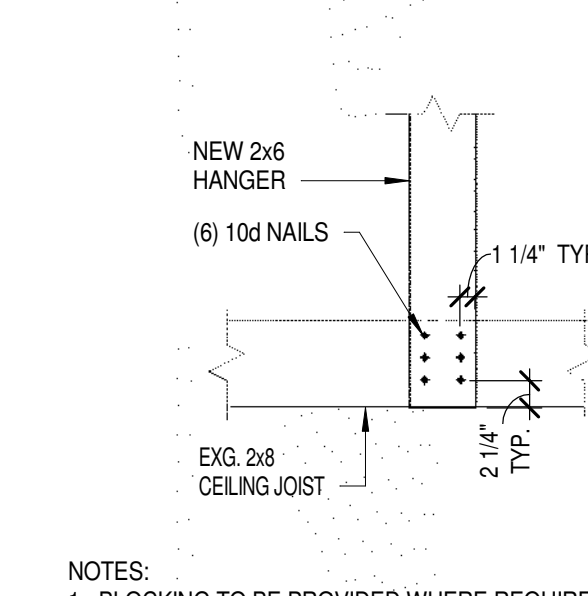
C4 ROOF FRAMING SECTION  
SCALE: NO SCALE



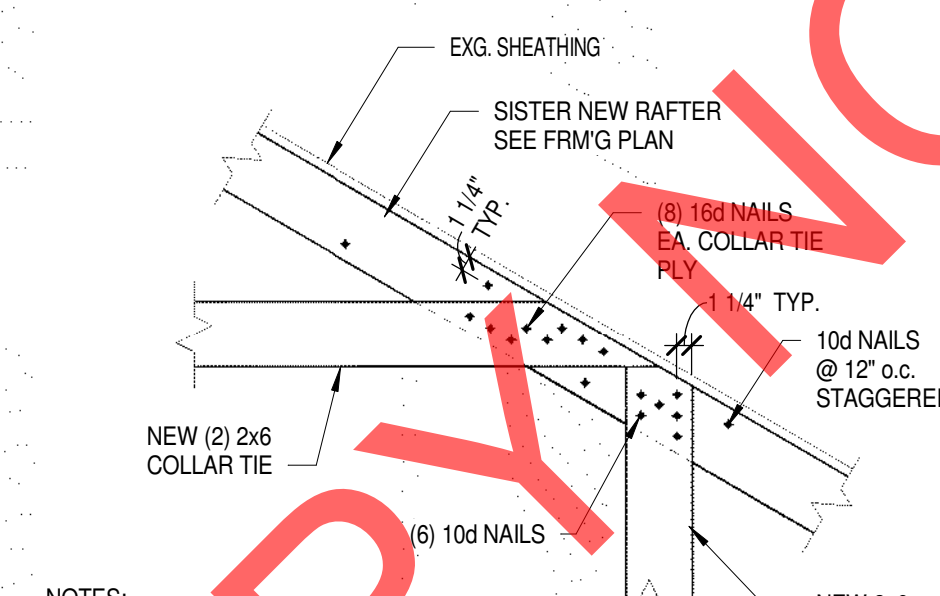
C5 ROOF FRAMING SECTION  
SCALE: NO SCALE



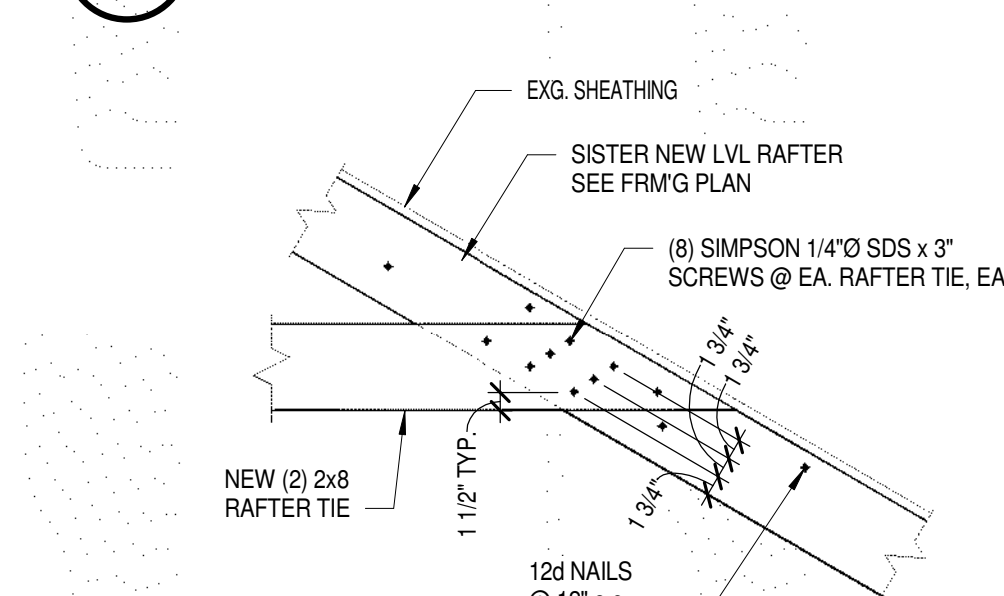
B1 CEILING JOIST LAP CONN.  
SCALE: NO SCALE



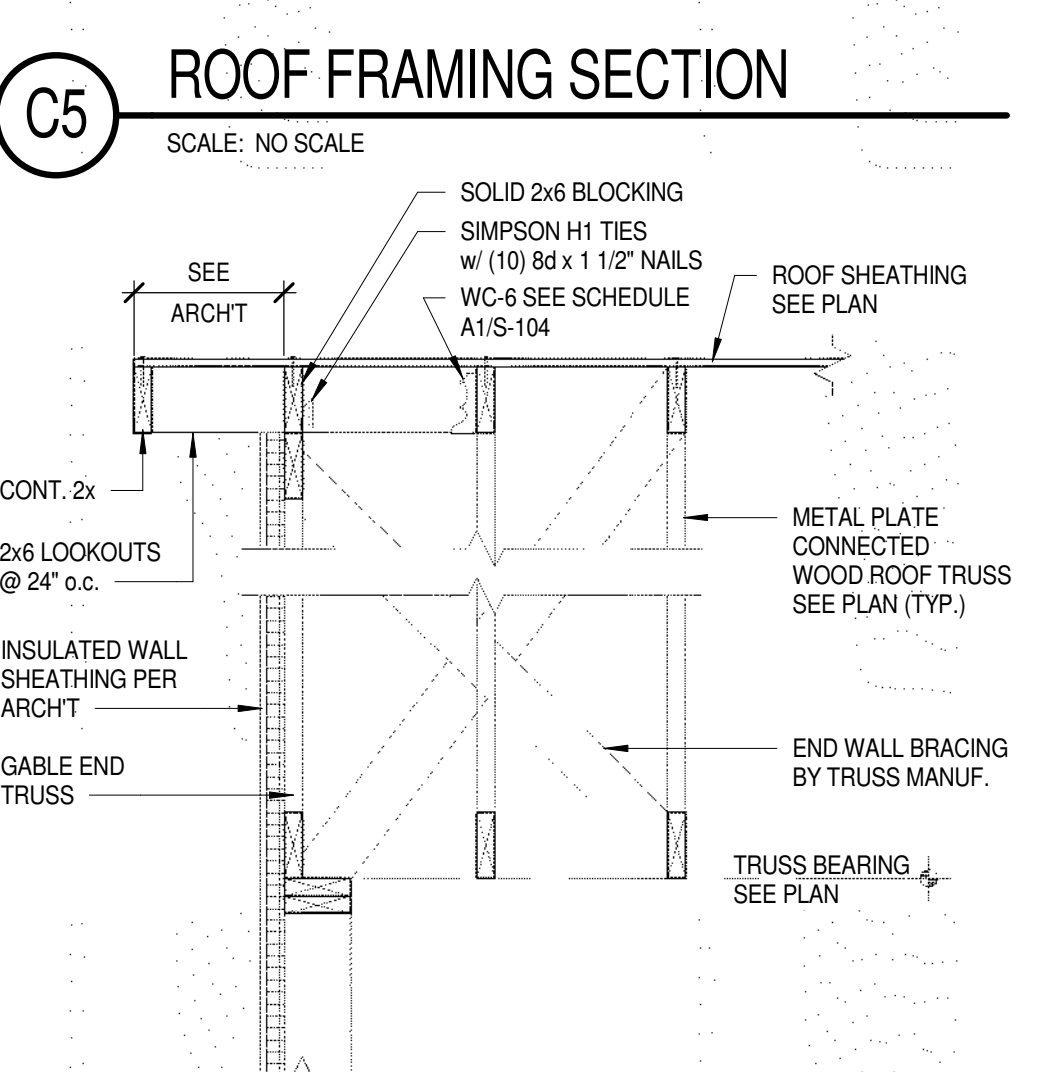
B2 ROOF FRAMING SECTION  
SCALE: NO SCALE



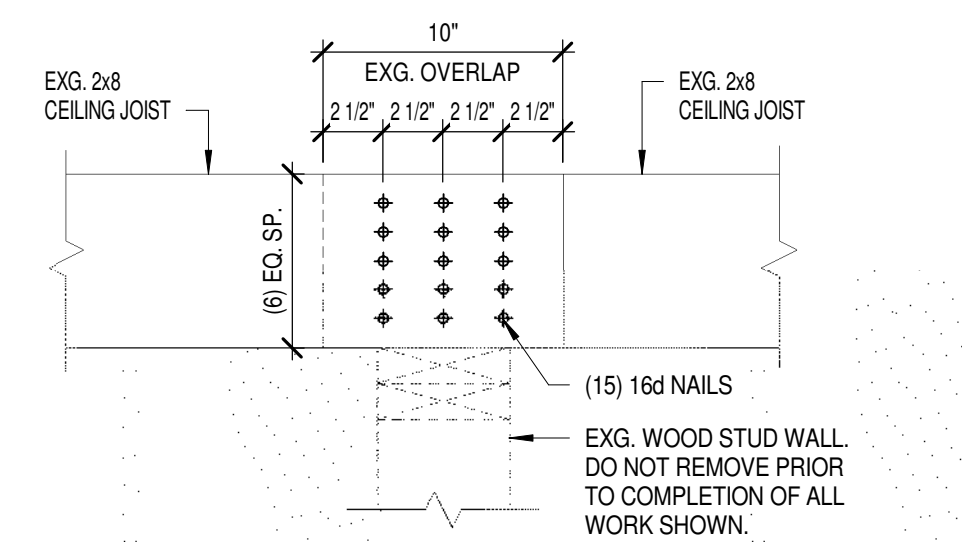
B3 ROOF FRAMING SECTION  
SCALE: NO SCALE



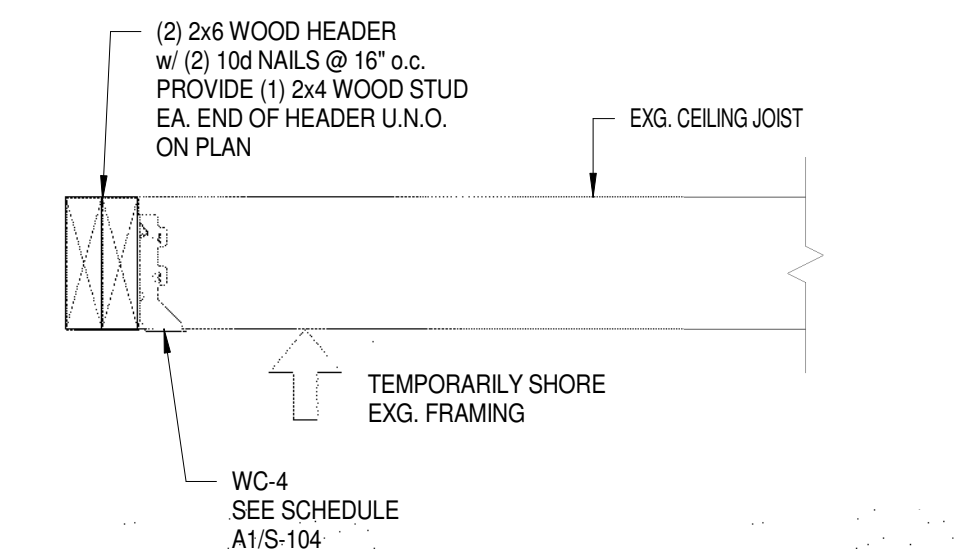
B4 ROOF FRAMING SECTION  
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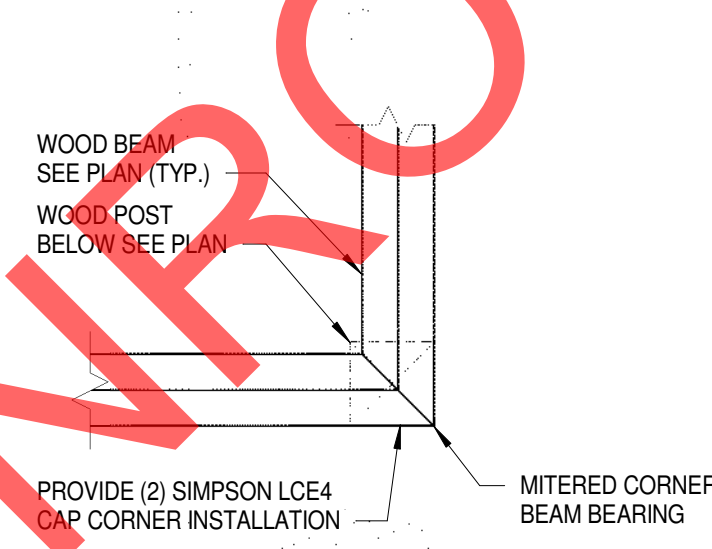
B5 ROOF FRAMING SECTION  
SCALE: NO SCALE



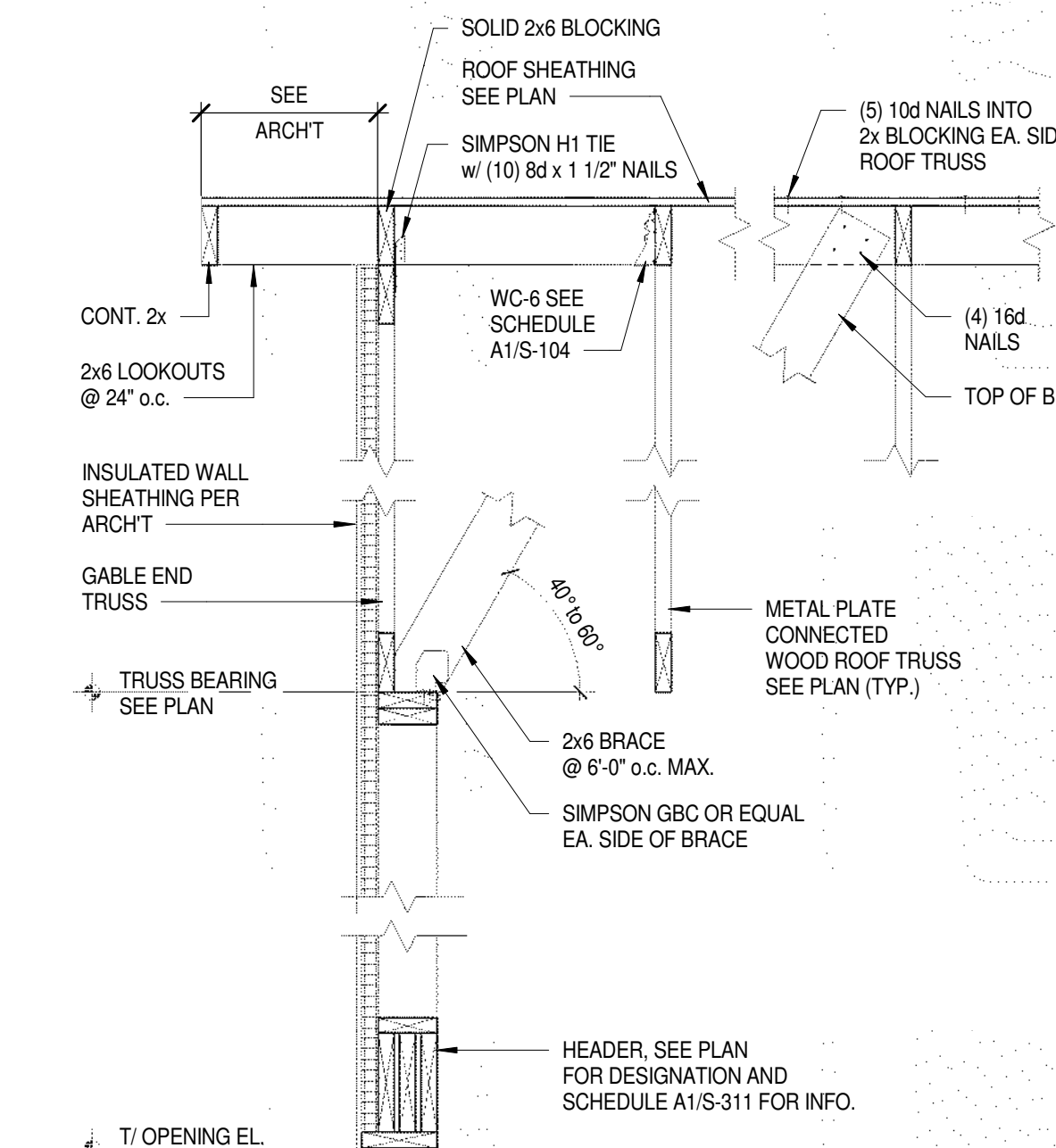
B1 CEILING JOIST LAP CONN.  
SCALE: NO SCALE



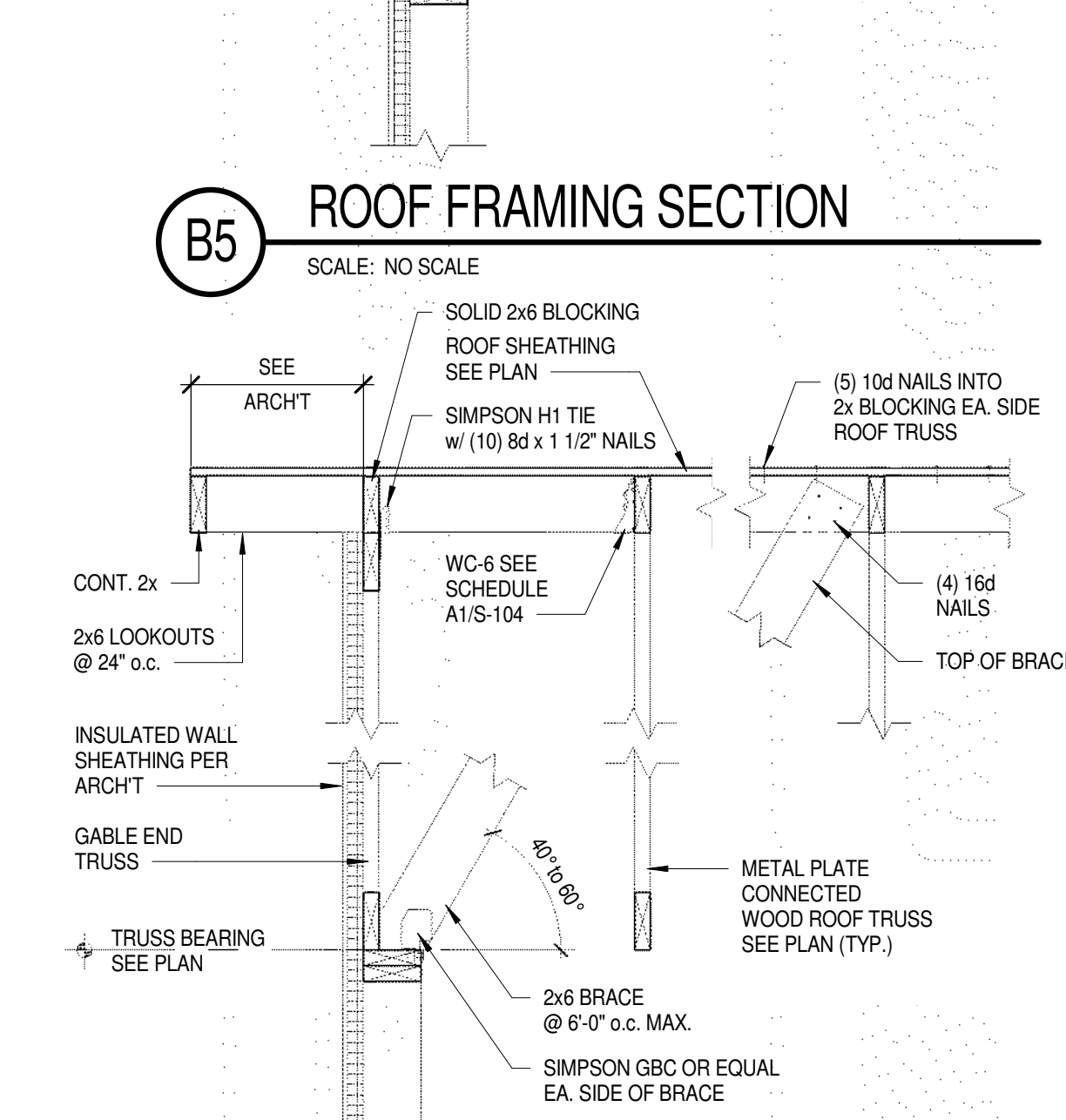
A1 FRAMING DETAIL  
SCALE: NO SCALE



A2 FRAMING DETAIL  
SCALE: NO SCALE

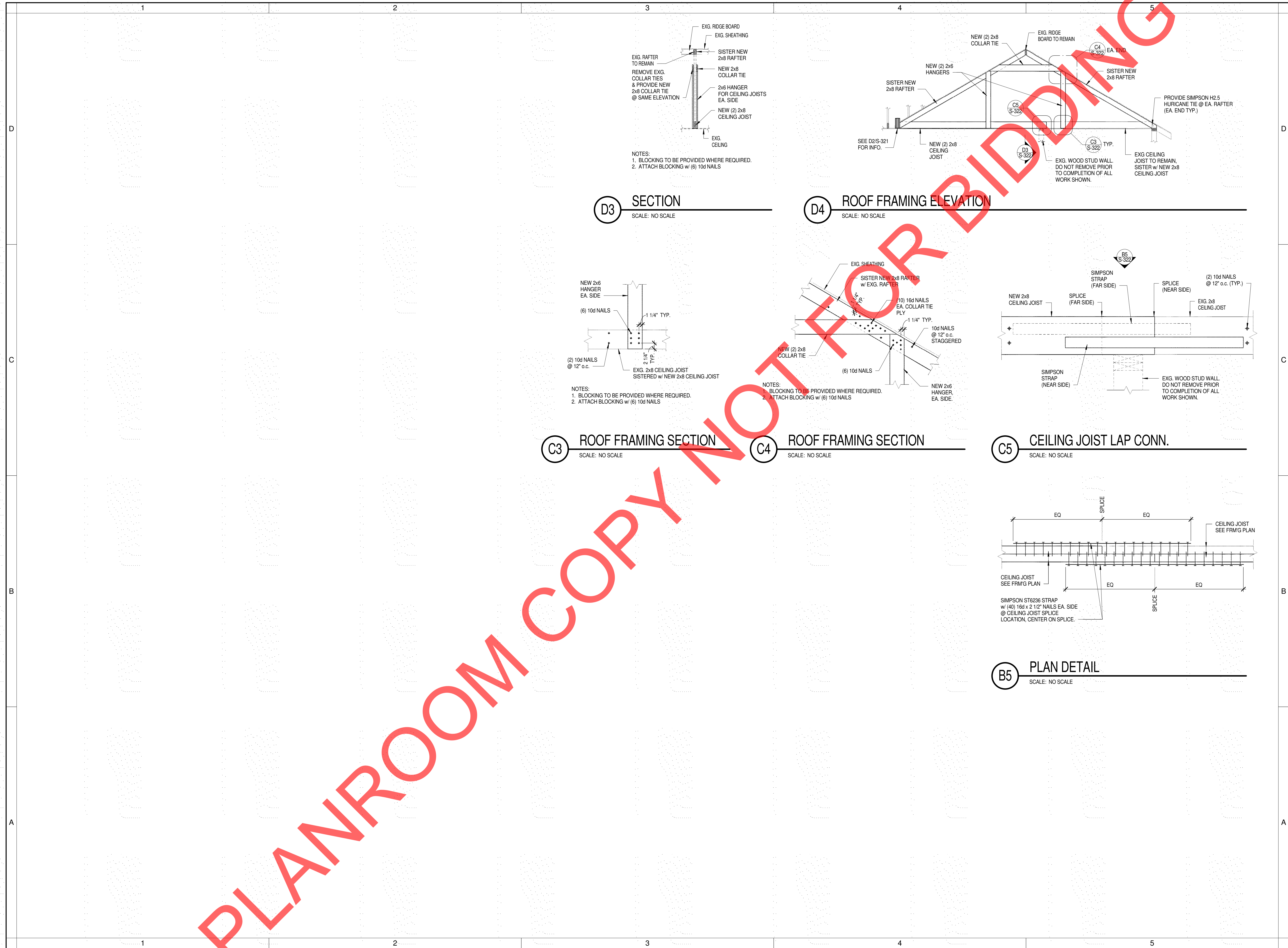


A3 ROOF FRAMING SECTION  
SCALE: NO SCALE



A5 ROOF FRAMING SECTION  
SCALE: NO SCALE





R E V I S I O N S		

ORDA PROJECT NUM
QPK PROJECT NUM
221101.00
D A T E
04/17/2023



PK

DESIGN

450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

STATE OF NEW YORK

ROBERT JAMES COSEMAN

063300

REGISTERED PROFESSIONAL ENGINEER

EXP. 06/30/2025

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DEVELOPMENT AUTHORITY

BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G- CONTRACT

REVISIONS

ORDA PROJECT NUM

QPK PROJECT NUM  
221101.00

D A T E  
04/17/2023

SHEET TITLE  
GENERAL NOTES

SG-001

1. STRUCTURE WAS DESIGNED IN ACCORDANCE WITH THE 2020 BUILDING CODE OF NEW YORK STATE.

2. CONTRACTOR SHALL VERIFY IN THE FIELD ALL EXISTING CONDITIONS AT THE SITE PRIOR TO BEGINNING ANY WORK. IF EXISTING FIELD CONDITIONS DO NOT PERMIT THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE DETAILS AS SHOWN, NOTIFY ENGINEER IMMEDIATELY.

3. DESIGN LOADS:

a. ROOF LIVE LOADS:

1. GROUND SNOW LOAD.....Pg = 96 PSF

2. FLAT-ROOF SNOW LOAD.....Pf = 80 PSF

3. SNOW EXPOSURE FACTOR.....Ce = 1.0

4. SNOW LOAD IMPORTANCE FACTOR.....Is = 1.0

5. THERMAL FACTOR.....Ct = 1.2

b. SEISMIC DESIGN DATA:

1. RISK CATEGORY.....II

2. SEISMIC IMPORTANCE FACTOR.....1.0

3. MAPPED SPECTRAL RESPONSE ACCELERATION.....Ss = 0.158 g

4. MAPPED SPECTRAL RESPONSE ACCELERATION.....Si = 0.063 g

5. DESIGN SPECTRAL RESPONSE COEFFICIENT.....Sds = 0.169 g

6. DESIGN SPECTRAL RESPONSE COEFFICIENT.....Sdi = 0.101 g

7. SITE CLASS.....B

8. SEISMIC DESIGN CATEGORY.....

9. BASIC FORCE RESISTING SYSTEMS:

STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE

10. ANALYSIS PROCEDURE.....EQUIVALENT LATERAL FORCE PROCEDURE

11. DESIGN BASE SHEAR.....2200 lbs

12. SEISMIC RESPONSE COEFFICIENT.....0.056

13. RESPONSE MODIFICATION FACTOR.....3.0

c. WIND LOAD:

1. ULTIMATE DESIGN WIND SPEED (3 SEC GUST).....110 MPH

2. NOMINAL DESIGN WIND SPEED.....85 MPH

3. WIND EXPOSURE CATEGORY.....B

4. RISK CATEGORY.....II

5. WIND IMPORTANCE FACTOR.....1.0

6. INTERNAL PRESSURE COEFFICIENT.....+/- 0.55

7. COMPONENT AND CLADDING NOT SPECIFICALLY DESIGNED HEREIN SHALL BE DESIGNED FOR THE FOLLOWING ULTIMATE STRENGTH DESIGN WIND PRESSURES, BASED ON TRIBUTARY AREA. TO CONVERT INTO ASD SERVICE LOAD WIND PRESSURES, MULTIPLY TABULATED VALUES BY 0.60.

BUILDING COMPONENT & CLADDING PRESSURE (psf)										
Effective Wind Area	WALL				ROOF					
	Zone 5		Zone 4		Zone 3		Zone 2		Zone 1	
	-	+	-	+	-	+	-	+	-	+
10 SF	-75.10	60.10	-63.90	60.10	-143.10	39.40	-89.10	39.40	-76.70	39.40
20 SF	-71.30	58.30	-62.00	58.30	-131.00	38.60	-85.00	38.60	-74.60	38.60
50 SF	-66.50	55.30	-59.80	55.30	-117.40	36.50	-78.80	36.50	-71.70	36.50
100 SF	-62.00	53.40	-57.50	53.40	-105.70	35.20	-72.60	35.20	-68.40	35.20
500 SF	-52.70	48.90	-52.70	48.90	-105.70	35.20	-72.60	35.20	-68.40	35.20

NOTES:

- ZONE DEFINED IN BUILDING CODE USING A = 3 ft.

\*\* - PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE SURFACES, RESPECTIVELY

2A

A

3

2

4A

4A

4A

4A

PLAN

5

4

5

A

A

ELEVATION

1. CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS:

a. ACI 117 "STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"

b. ACI 304 "GUIDE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE"

c. ACI 347 "GUIDE TO FORMWORK FOR CONCRETE"

d. ACI DETAILING MANUAL

e. CONCRETE REINFORCING STEEL INSTITUTE (CRSI), "MANUAL OF STANDARD PRACTICE"

2. CONCRETE SHALL BE READY MIXED PER ASTM C94.

3. PREPARE DESIGN MIXES FOR EACH TYPE, AND STRENGTH OF CONCRETE BY EITHER LABORATORY TRIAL BATCH OR FIELD EXPERIENCE METHODS AS SPECIFIED IN ACI 318.

4. PORTLAND CEMENT - ASTM C150, TYPE I / II.

5. AGGREGATES - ASTM C33, CRUSHED LIMESTONE.

6. AIR ENTRAINING ADMIXTURE - ASTM C260, CERTIFIED BY MANUFACTURER TO BE COMPATIBLE WITH OTHER REQUIRED ADMIXTURES.

7. PROHIBITED ADMIXTURES - CALCIUM CHLORIDE THYOCYANATES OR ADMIXTURES CONTAINING MORE THAN 0.1 PERCENT CHLORIDE IONS ARE NOT PERMITTED.

8. MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS (NORMAL WEIGHT):

a. FOOTINGS.....Fc = 3,000 PSI

b. FOUNDATION WALLS & PIERS.....Fc = 4,500 PSI

c. SLAB-ON-GRADE.....Fc = 4,500 PSI

9. UNLESS OTHERWISE NOTED, REINFORCING SHALL HAVE THE FOLLOWING CONCRETE COVER:

a. CONCRETE CAST AGAINST AND EXPOSED TO EARTH 3"

b. CONCRETE EXPOSED TO EARTH OR WEATHER 2"

c. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:

1. ELEVATED SLABS AND WALLS.....2 1/2"

2. PIERS.....1 1/2"

10. REINFORCING BARS - ASTM A615, LATEST EDITION, GRADE 60, DEFORMED.

11. PROVIDE MINIMUM BAR SUPPORT SYSTEMS AS FOLLOWS:

a. USE PLASTIC SPACERS IN WALLS

b. SUPPORT BARS AND CHAIRS FOR DECK REINFORCING SYSTEM AT MAXIMUM 36" SPACING SUPPORT BARS SHALL BE NO LESS THAN SIZE #4

12. UNLESS OTHERWISE SHOWN, REINFORCING BAR SPLICES ARE TO BE CLASS 'B' SPLICES.

13. PROTECT CONCRETE WORK FROM THE DETRIMENTAL EFFECTS OF COLD TEMPERATURES IN COMPLIANCE WITH ACI 306, LATEST EDITION AND OF HOT WEATHER OR WINDY CONDITIONS IN COMPLIANCE WITH ACI 305, LATEST EDITION.

14. CONSTRUCTION JOINTS PERMITTED ONLY AS APPROVED BY THE STRUCTURAL ENGINEER.

15. THE OWNER WILL EMPLOY A TESTING AGENCY TO PERFORM SAMPLING AND TESTING SUBMIT TEST REPORTS.

16. SUBMIT CONCRETE MIX PROPORTIONS w/ SUPPORTING TEST DATA, MATERIAL CERTIFICATIONS AND PRODUCT DATA, TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS ABOVE.

C3

CAST-IN-PLACE CONCRETE NOTES

SCALE: NO SCALE

1. STRUCTURAL STEEL WORK INCLUDES ALL STRUCTURAL STEEL TO BE FURNISHED AND ERRECTED INCLUDING BEAMS, ANGLES, AND BEARING PLATES AS INDICATED ON THE DRAWINGS.

2. COMPLY WITH THE FOLLOWING CODES AND STANDARDS:

a. AISC STEEL CONSTRUCTION MANUAL, ASD, LATEST EDITION.

b. AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE STEEL"

3. SHOP DRAWINGS:

SUBMIT SHOP DRAWINGS INCLUDING COMPLETE DETAILS AND SCHEDULES FOR FABRICATION AND ASSEMBLY OF STRUCTURAL STEEL MEMBERS, PROCEDURES AND DIAGRAMS.

4. MATERIALS:

a. HOLLOW STRUCTURAL SECTIONS.....ASTM A 500, GRADE B

b. ANGLES, PLATES & CHANNELS.....ASTM A36

c. ANCHOR RODS.....ASTM F1554, GRADE 36

d. CONNECTION BOLTS:

BOLTS.....ASTM A325 N (U.N.O.)

e. RODS.....ASTM A36

f. POST-INSTALLED ANCHORS.....AS SHOWN

g. WELDING ELECTRODES.....E-70XX SERIES

h. SHRINKAGE COMPENSATING GROUT.....ASTM C1107

B3

STRUCTURAL STEEL NOTES

SCALE: NO SCALE

B4

GENERAL DESIGN NOTES

SCALE: NO SCALE

AN INSPECTION, TESTING AND QUALITY CONTROL PROGRAM FOR THE CONSTRUCTION PHASE OF THE PROJECT SHALL BE IMPLEMENTED AS OUTLINED IN THE DOCUMENT ENTITLED SPECIAL INSPECTIONS AND TESTING. THE OWNER WILL ENGAGE AN APPROVED TESTING/INSPECTION AGENCY TO PROVIDE SPECIAL INSPECTION AND TESTING AS REQUIRED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE SCHEDULE WITH THE TESTING/INSPECTION AGENCY. DEFINITIONS AND REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 1701 OF THE 2020 BUILDING CODE OF NEW YORK STATE. FAILURE TO COMPLY WILL RESULT IN REMOVAL AND RECONSTRUCTION OF ANY STRUCTURAL ELEMENTS NOT VERIFIED, TESTED OR INSPECTED.

A4

STRUCTURAL TESTING NOTES

SCALE: NO SCALE

1. NOT ALL WORK IS NOTED OR DETAILED ON THE STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL WORK REQUIRED. BOTH ARCHITECTURAL AND STRUCTURAL DRAWINGS ARE INTENDED TO WORK TOGETHER AND DEFINE THE COMPLETE SCOPE OF WORK REQUIRED. IF DISCREPANCIES ARE FOUND, NOTIFY THE ARCHITECT IMMEDIATELY.

2. STRUCTURAL ASSEMBLY SHOWN HEREIN WAS DESIGNED TO BE SELF SUPPORTING IN ITS FINAL STATE ONLY. TEMPORARY BRACING TO SUPPORT LATERAL LOADS DURING CONSTRUCTION IS THE CONTRACTOR'S RESPONSIBILITY.

3. LEGEND OF ABBREVIATIONS:

ADD. or ADD'L.....ADDITIONAL

ALT.....ALTERNATE

ANCH.....ANCHOR

APPROX.....APPROXIMATE

ARCH.....ARCHITECT(URAL)

B.....BOTTOM

B.....BOTTOM OF

BFE.....BOTTOM FOOTING ELEVATION

BM.....BEAM

BS.....BOTH SIDES

COL.....COLUMN

CONC.....CONCRETE

CONT.....CONTINUOUS

C.J.....CONTROL JOINT

CLR.....CLEAR

DIA.....DIAMETER

DTL.....DETAIL

DWG or DWGs.....DRAWINGS

DWLS.....DOWELS

EAL.....EACH

E.F.....EACH FACE

E.J.....EXPANSION JOINT

ELEV.....ELEVATION

ELEV.....ELEVATOR

ECC.....EDGE OF CONCRETE

EOD.....EDGE OF DECK

EOS.....EDGE OF SLAB

EQ.....EQUAL

E.W.....EACH WAY

EXG or EX.....EXISTING

EXP.....EXPANSION

EXT.....EXTERIOR

F.....FACE OF

FDN.....FOUNDATION

F.F.....FAR FACE

FFE.....FINISHED FLOOR ELEVATION

FIN.....FINISHED

FRMG.....FRAMING

FS.....FOOTING STEP

FTG.....FOOTING

GA.....GAUGE

GALV.....GALVANIZED

INSUL.....INSULATION

INT.....INTERIOR

INV.....INVERT

JT.....JOINT

L.....LENGTH

Ld.....DEVELOPMENT LENGTH

LG.....LONG

LLV.....LIVE LOAD

LLH.....LONG LEG HORIZONTAL

LLV.....LONG LEG VERTICAL

MAX.....MAXIMUM

MIN.....MINIMUM

MISC.....MISCELLANEOUS

M.O.....MASONRY OPENING

MTL.....METAL

N.F.....NEAR FACE

N.A.....NOT APPLICABLE

NTS.....NOT TO SCALE

O.C.....ON CENTER

OPNG.....OPENING

O.H.....OPPOSITE HAND

PSF.....POUNDS PER SQUARE FOOT

PSI.....POUNDS PER SQUARE INCH

R.....RADIUS/RISE

R.D.....ROOF DRAIN

REINF.....REINFORCING

REQ'D.....REQUIRED

SCHED.....SCHEDULE

SECT.....SECTION

SF.....SQUARE FOOT

SHT.....SHEET

SIM.....SIMILAR

S.O.G.....SLAB-ON-GRADE

SP.....SPACING

SPEC.....SPECIFICATION

S.S.....STAINLESS STEEL

STD.....STANDARD

STL.....STEEL

STRUCT.....STRUCTURE or STRUCTURAL

SYM.....SYMMETRICAL

SW.....SHEAR WALL

T.....TOP

T.O.....TOP OF

T/CONC.....TOP OF CONCRETE

T & B.....TOP AND BOTTOM

TEMP.....TEMPERATURE OF TEMPORARY

TFE.....TOP OF FOOTING

TH.....THICK (NESS)

TPE.....TOP OF PIER

T.O.S.....TOP OF STEEL ELEVATION

TYP.....TYPICAL

TVE.....TOP OF WALL ELEVATION

VB.....VAPOR BARRIER

VERT.....VERTICAL

V.EJ.....VERTICAL EXPANSION JOINT

V.I.F.....VERIFY IN FIELD

V.S.C.....VERTICAL SLIDE CLIP

W.....WIDTH

WP.....WORK POINT

WWF.....WELDED WIRE FABRIC

W.....WITH

A2

MISCELLANEOUS NOTES & ABBREVIATIONS

SCALE: NO SCALE

IF OLD FILL OR UNSUITABLE BEARING IS ENCOUNTERED AT BEARING GRADE UNDERCUT AND REPLACE WITH WELL COMPACTED STRUCTURAL FILL FOR UNDERCUT. SUBGRADE IS TO BE APPROVED BY ENGINEER'S REPRESENTATIVE BEFORE BACKFILLING WITH STRUCTURAL FILL. COMPACT FILL TO 95% MODIFIED PROCTOR DENSITY IN MAXIMUM 1 FOOT LOOSE LIFTS.

C1

FOUNDATION PREPARATION DETAIL

SCALE: NO SCALE

FOUNDATION CONSTRUCTION

FOOTINGS HAVE BEEN PROPORTIONED BASED ON PRESUMPTIVE ALLOWABLE NET BEARING STRESS OF 2 ksi PER 2020 BUILDING CODE OF NEW YORK STATE.

1. ALL FOUNDATIONS TO BEAR ON STABLE NATURAL SUBGRADE OR WELL-COMPACTED STRUCTURAL FILL PLACED DURING BUILDING EARTHWORK.

2. ENGINEER'S REPRESENTATIVE MUST APPROVE SUBGRADE / SUBBASE PRIOR TO PLACING CONCRETE.

3. FOOTINGS REQUIRING PROTECTION FROM FROST HEAVE TO BEAR AT LEAST 5 FEET BELOW FINAL ADJACENT FINISHED GRADE.

4. FOOTING SUBGRADE TO BE UNDERCUT BY 4 INCHES TO ALLOW PLACEMENT OF A LEVELING COURSE OF STRUCTURAL FILL. IF REQUIRED BY ENGINEER'S REPRESENTATIVE, STRUCTURAL FILL FOR LEVELING COURSE TO CONSIST OF MATERIAL CONFORMING TO REQUIREMENTS FOR NYSDOT SELECT GRANULAR FILL ITEM 733-11 AND HAVING 100 PERCENT PASSING A 2 INCH SIEVE. GRANULAR FILL TO BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM MODIFIED PROCTOR DENSITY AS DETERMINED BY ASTM D1557 PROCEDURES. SUBGRADE TO BE APPROVED BY ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF LEVELING COURSE.

5. IF UNSTABLE, OR UNSUITABLE MATERIAL IS ENCOUNTERED AT SUBGRADE, UNDERCUT TO STABLE SUBGRADE PER DETAIL C1/S-100 AS DIRECTED BY ENGINEER'S REPRESENTATIVE AND BACKFILL WITH WELL-COMPACTED BACKFILL MATERIAL.

6. BACKFILL TO CONSIST OF IMPORTED OR APPROVED ON-SITE GRANULAR MATERIAL CONFORMING TO REQUIREMENTS FOR NYSDOT SELECT GRANULAR FILL ITEM 733-11, AND HAVING LESS THAN 10% PASSING #200 SIEVE, COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM MODIFIED PROCTOR DENSITY AS DETERMINED BY ASTM D1557 PROCEDURES.

CONCRETE SLAB-ON-GRADE FLOOR

1. CONSTRUCT SLAB-ON-GRADE FLOORS OVER MINIMUM 12 INCH THICK WELL-COMPACTED SUBBASE COURSE.

2. ENGINEER'S REPRESENTATIVE MUST APPROVE SUBGRADE BEFORE PLACING SUBBASE.

3. ENGINEER'S REPRESENTATIVE MUST APPROVE SUBBASE BEFORE PLACING CONCRETE.

B1

FOUNDATION NOTES

SCALE: NO SCALE

BAR LAP LENGTH SCHEDULE - GRADE 60 REINFORCING

BAR SIZE	TYPE	NORMAL WEIGHT CONCRETE Fc = (PSI)	
		3,000 PSI	4,500 PSI
#6 OR SMALLER	LAP CLASS A	44 DIA.	36 DIA.
	LAP CLASS B	57 DIA.	47 DIA.
#6 OR SMALLER	LAP CLASS A	55 DIA.	45 DIA.
	LAP CLASS B	71 DIA.	58 DIA.
#11 OR SMALLER	HOOK	18 DIA.	16 DIA.

TABLE APPLIES TO BARS WITH CLEAR SPACING AT LEAST 2 BAR DIAMETERS AND CLEAR COVER AT LEAST 1 BAR DIAMETER.

NOTES:

1. MULTIPLY LAP SPLICE BY 1.3 FOR TOP BARS (WHERE MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW THE SPLICE).

2. MULTIPLY LAP SPLICE BY 1.5 FOR EPOXY COATED REINFORCING.

3. MULTIPLY HOOK BY 1.2 FOR EPOXY COATED REINFORCING.

4. THE FACTORS FROM NOTES 1 & 2, WHEN MULTIPLIED, NEED NOT BE GREATER THAN 1.7.

5. MULTIPLY VALUES BY 1.3 FOR LIGHTWEIGHT CONCRETE.

6. IN THE CASE OF SPLICES BETWEEN TWO DIFFERENT SIZE BARS, PROVIDE SPLICE BASED ON THE SMALLER BAR SIZE, OR CLASS A OF THE LARGER BAR SIZE, WHICHEVER IS GREATER.

A1

BAR LAP LENGTH SCHEDULE

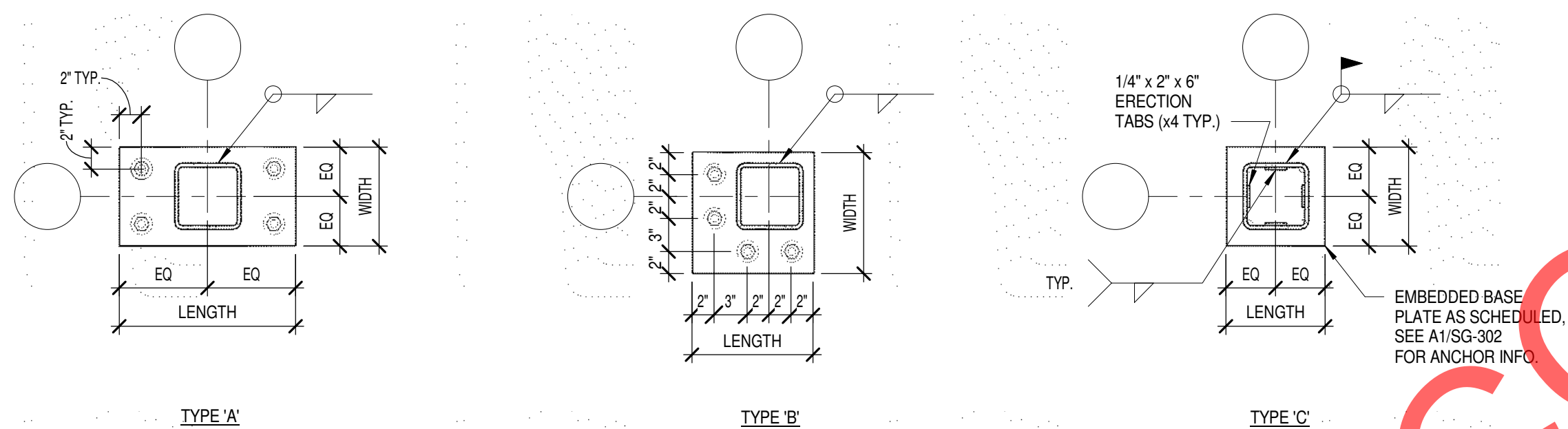
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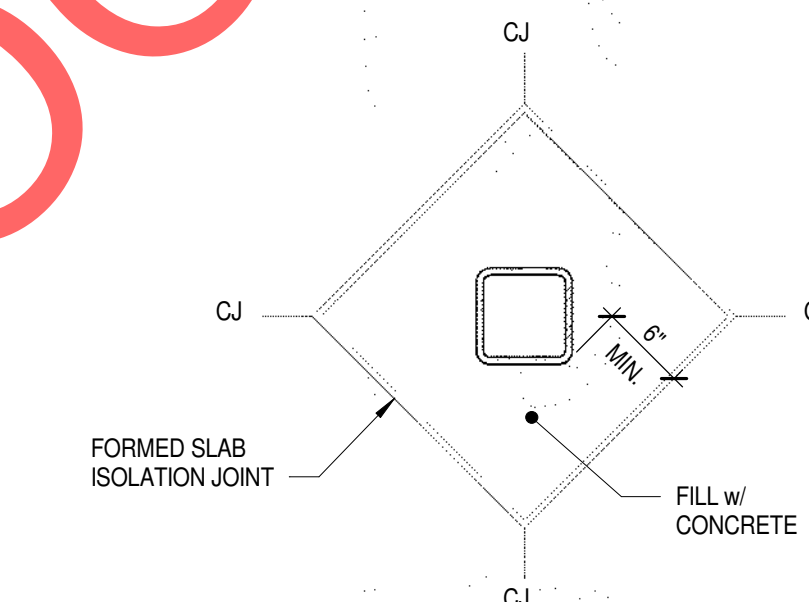
COLUMN SCHEDULE									
ROOF L.P. 20' - 0"									ROOF L.P. 20' - 0"
T/ GIRT INTERMEDIATE 16' - 0"									T/ GIRT INTERMEDIATE 16' - 0"
T/ GIRT LOW (U.N.O.) 8' - 0"									T/ GIRT LOW (U.N.O.) 8' - 0"
1st FLOOR 0"									1st FLOOR 0"
Base Plate	ANCH. BOLTS LENGTH WIDTH THICKNESS TYPE SEE B1/SG-101 PIER / BASE DETAIL	SEE A1/SG-302 9" 9" 3/4" TYPE C A1/SG-301	(4) 3/4" dia. 1" - 4" 9" 3/4" TYPE A A4/SG-301	SEE A1/SG-302 9" 9" 3/4" TYPE C A1/SG-301	(4) 3/4" dia. 1" - 4" 9" 3/4" TYPE A A4/SG-301	(4) 3/4" dia. 1" - 4" 9" 3/4" TYPE A A5/SG-301	(4) 3/4" dia. 1" - 4" 9" 3/4" TYPE A A2/SG-301	SEE A1/SG-302 9" 9" 3/4" TYPE C A3/SG-301	(4) 3/4" dia. 1" - 4" 9" 3/4" TYPE B A1/SG-301
Column Locations	A-1	A-3	A-4	B-1	B-4	C-1	C-2	C-4	D-1

NOTES:  
1. REFER TO ROOF FRAMING PLAN FOR TOP OF STEEL ELEVATIONS.  
2. BOTTOM OF COLUMN BASE PLATE ELEVATION (BPE) REFERENCED (+/-) FROM TOP OF S.O.G. EL.  
TOP OF EMBEDDED COLUMN BASE PLATE ELEVATION (TBPE) REFERENCED (+/-) FROM TOP OF S.O.G. EL.  
3. REFER TO B4/SG-301 FOR COLUMN BASE / ANCHOR DETAIL

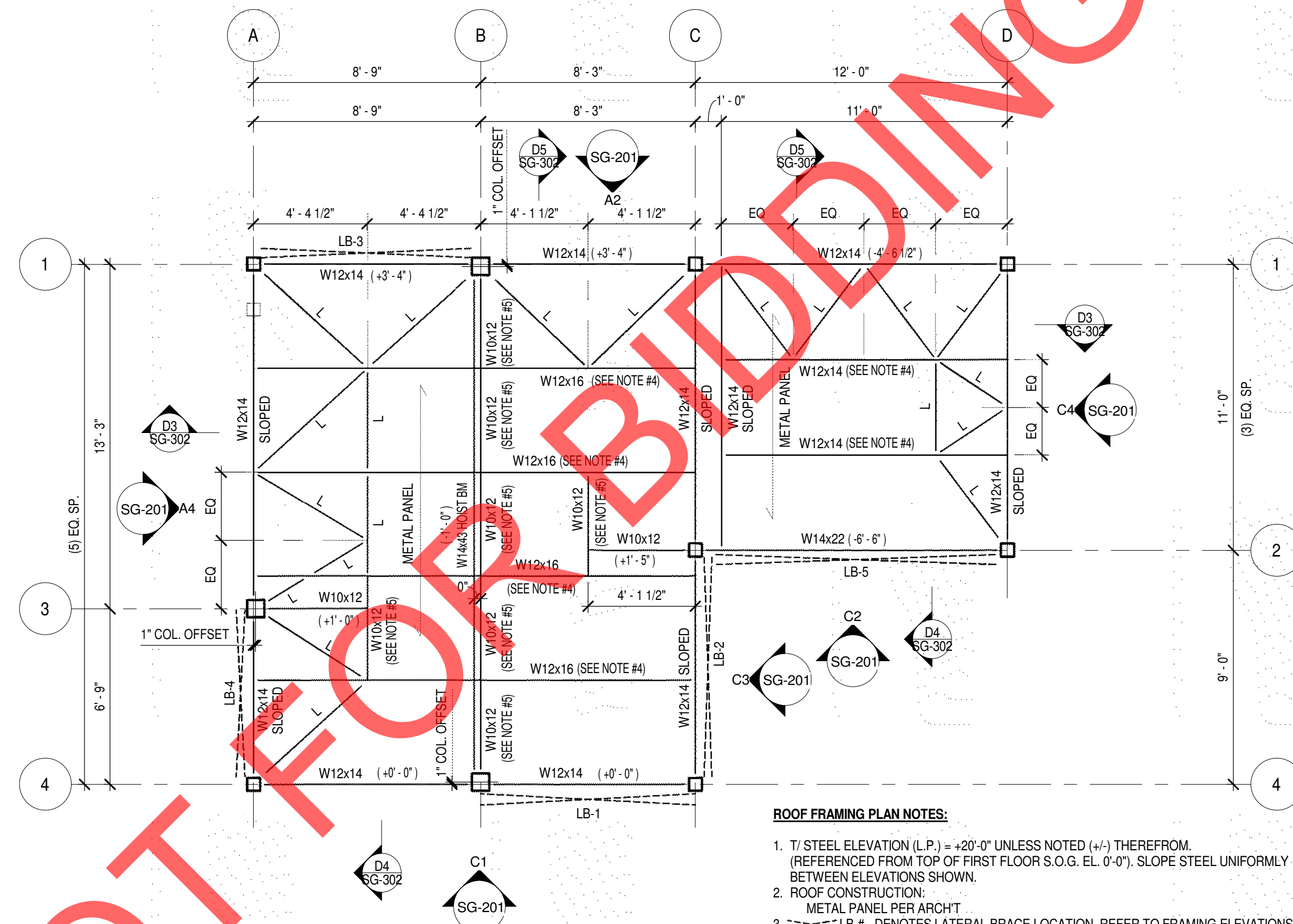
C1 COLUMN SCHEDULE  
SCALE: NO SCALE



B1 BASE PLATE TYPES  
SCALE: NO SCALE

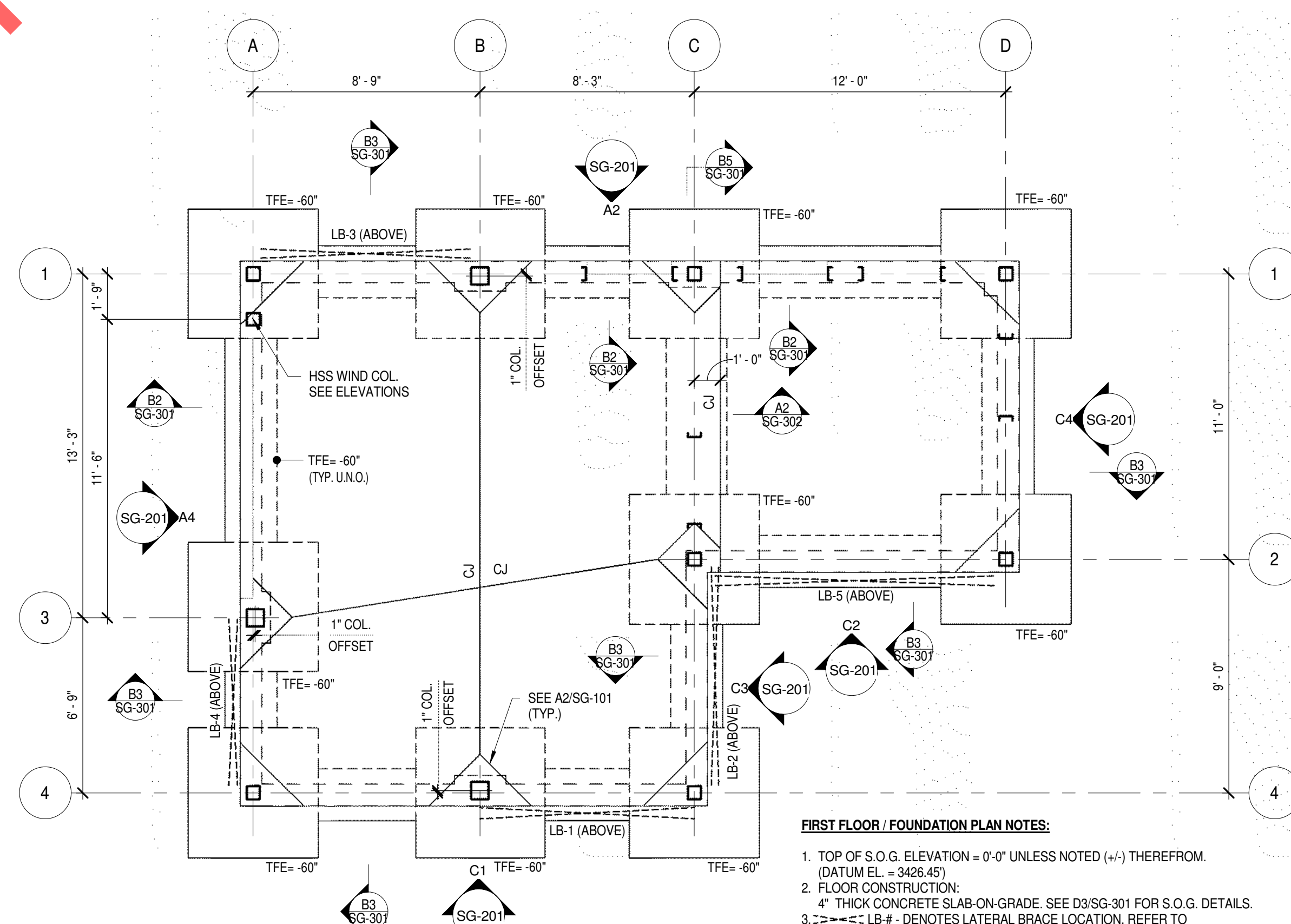


A2 TYP. COLUMN ISOLATION JOINT  
SCALE: NO SCALE



ROOF FRAMING PLAN NOTES:  
1. T/ STEEL ELEVATION (L.P.) = +20'-0" UNLESS NOTED (+/-) THEREFROM.  
(REFERENCED FROM TOP OF FIRST FLOOR S.O.G. EL. 0'-0"). SLOPE STEEL UNIFORMLY  
BETWEEN ELEVATIONS SHOWN.  
2. ROOF CONSTRUCTION:  
METAL PANEL PER ARCHT  
3. --- LB-# --- DENOTES LATERAL BRACE LOCATION. REFER TO FRAMING ELEVATIONS  
FOR INFO.  
4. ROTATE BEAMS TO FOLLOW ROOF SLOPE. TOP FLANGE TO BE PARALLEL AND FLUSH  
WITH BOTTOM OF ROOF PANEL WHERE NOTED ON PLAN.  
5. BEAMS SLOPED PARALLEL TO ROOF PANEL & LOWERED TO PROVIDE 1" CLEAR BETWEEN  
TOP FLANGE AND BOTTOM OF ROOF PANEL WHERE NOTED ON PLAN.  
6. 'L' - DENOTES Lx3x1/4 ANGLE - WELD TO UNDERSIDE OF TOP FLANGE OF ROOF BEAM.

C3 ROOF FRAMING PLAN  
SCALE: 1/4" = 1'-0"



FIRST FLOOR / FOUNDATION PLAN NOTES:  
1. TOP OF S.O.G. ELEVATION = 0'-0" UNLESS NOTED (+/-) THEREFROM.  
(DATUM EL. = 3426.45)  
2. FLOOR CONSTRUCTION:  
4" THICK CONCRETE SLAB-ON-GRADE. SEE D3/SG-301 FOR S.O.G. DETAILS.  
3. --- LB-# --- DENOTES LATERAL BRACE LOCATION. REFER TO  
FRAMING ELEVATIONS FOR INFO.  
4. REFER TO COLUMN SCHEDULE C1/SG-101 FOR COLUMN & CONCRETE PIER /  
PIESTER INFO.  
5. COORDINATE WITH ARCH. / MEP DRAWINGS FOR LOCATIONS OF FLOOR  
DEPRESSIONS, FLOOR DRAINS (FD) AND FLOOR SLOPES.  
6. REFER TO SG-001 FOR GENERAL NOTES.  
7. 'CJ' - DENOTES LOCATION OF S.O.G. CONTROL JOINTS. REFER TO D3/SG-301  
FOR DETAIL.  
8. TOP OF FOOTING ELEVATION (TFE) REFERENCED FROM TOP OF S.O.G. EL. (0'-0").

A3 FIRST FLOOR FRAMING PLAN  
SCALE: 1/4" = 1'-0"





IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING ARCHITECT SHALL AFFIX THEIR SEAL AND THE NOTATION ALTERED BY FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G- CONTRACT

REVISIONS

NO.	DESCRIPTION	DATE

ORDA PROJECT NUM

QPK PROJECT NUM

221101.00

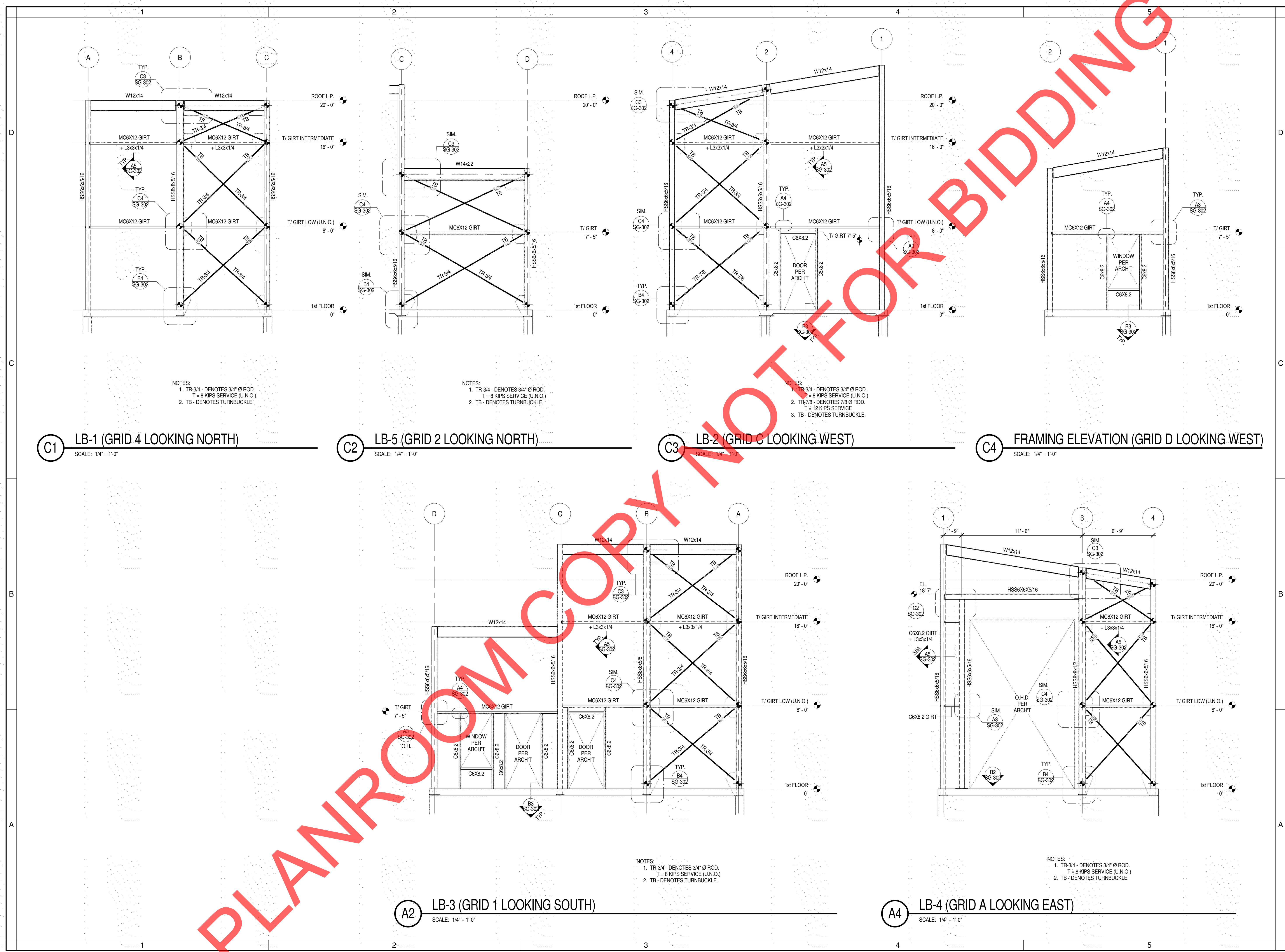
D A T E

04/17/2023

SHEET TITLE

FRAMING  
ELEVATIONS

SG-201





REVISIONS		

ORDA PROJECT NUM

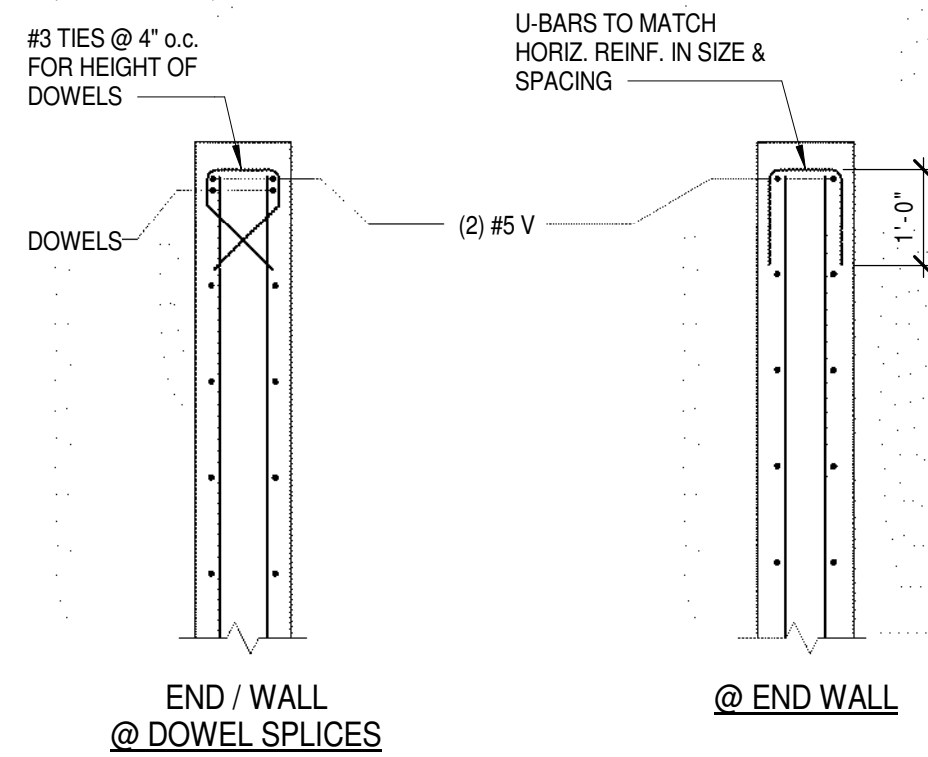
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D A T E  
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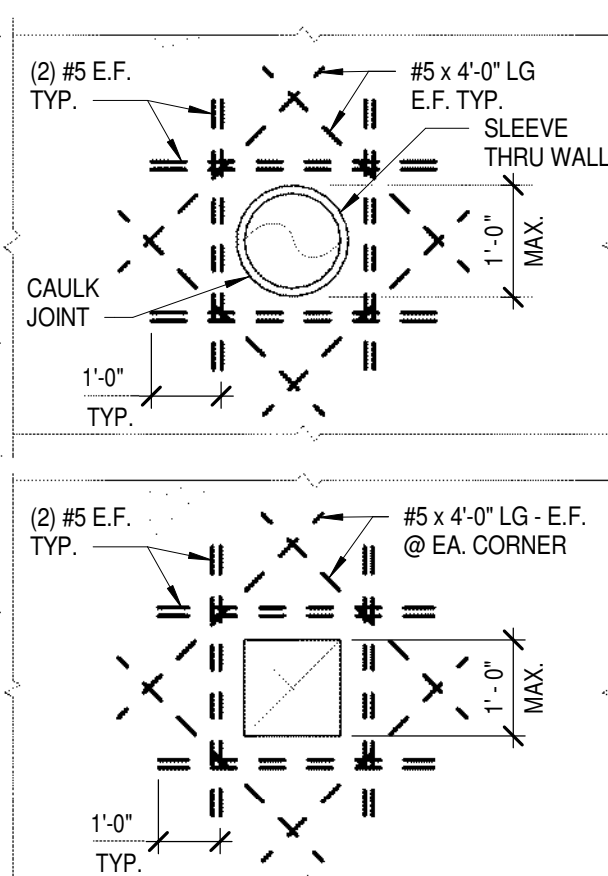
SECTIONS &  
DETAILS

SG-301



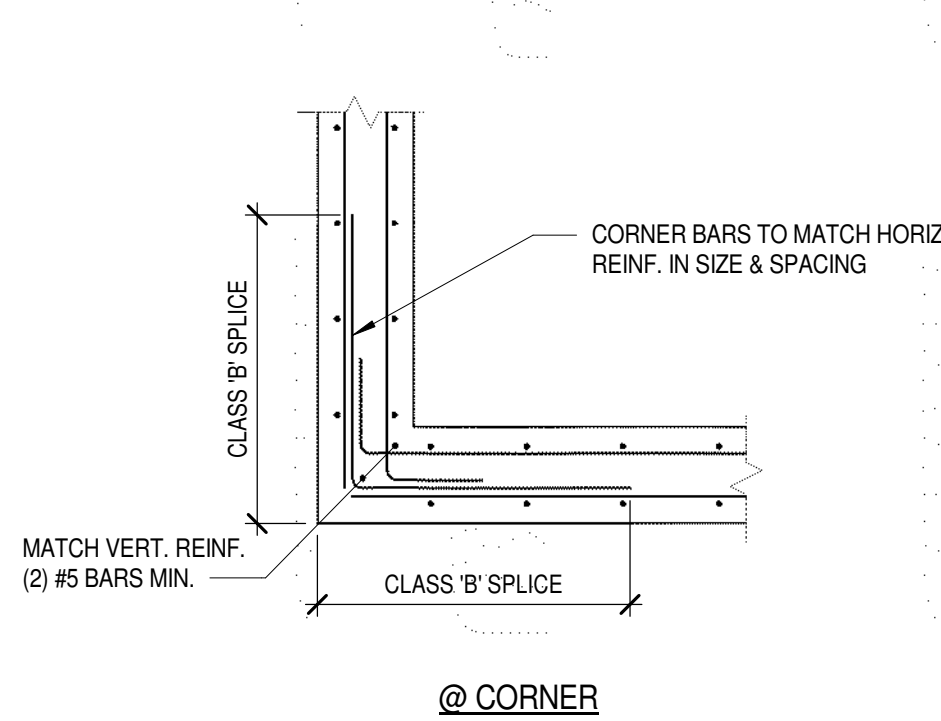
NOTE:  
DETAILS APPLY TO WALLS w/ DOUBLE CURTAIN REINF.

D1 TYP. WALL CORNER & END REINF. PLAN DETAILS  
SCALE: NO SCALE



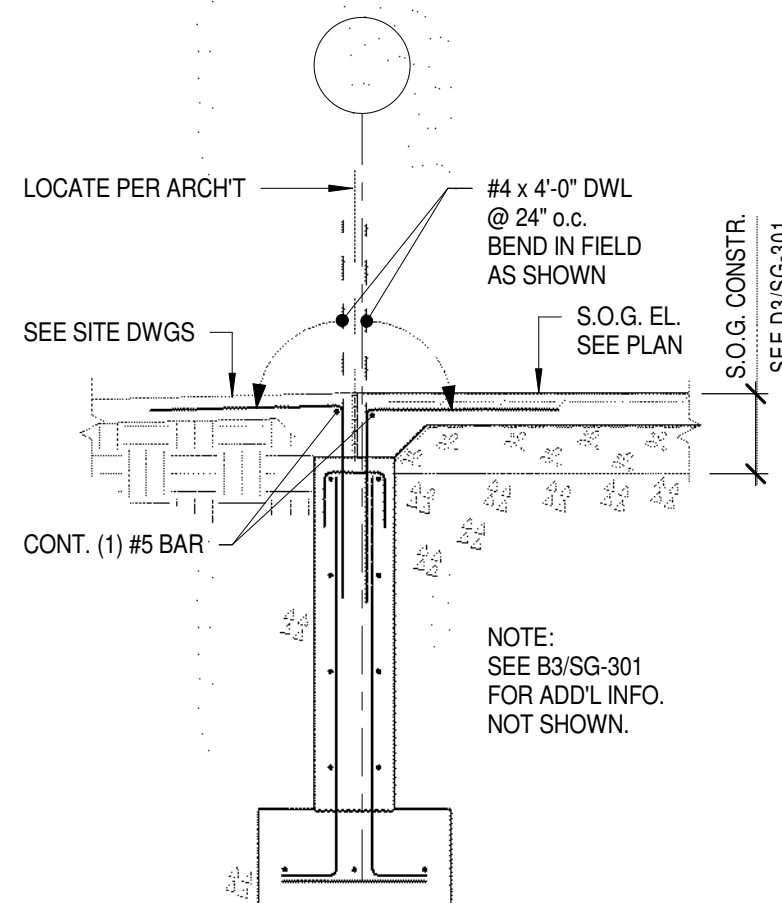
NOTE:  
VERIFY LOCATIONS & SIZES OF OPNGS w/ MEP DWGS.

B1 TYP. OPN'G THRU FDN WALL DETAIL  
SCALE: NO SCALE

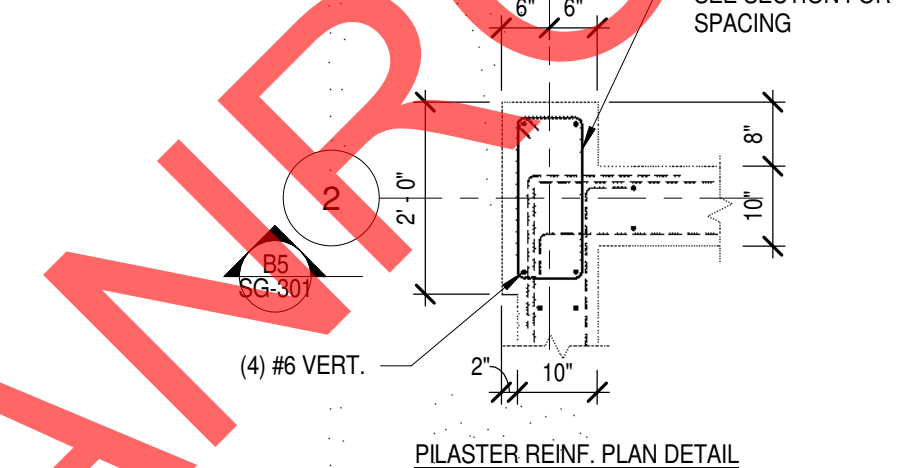


NOTE:  
SEE B3/SG-301  
FOR ADDL INFO.  
NOT SHOWN.

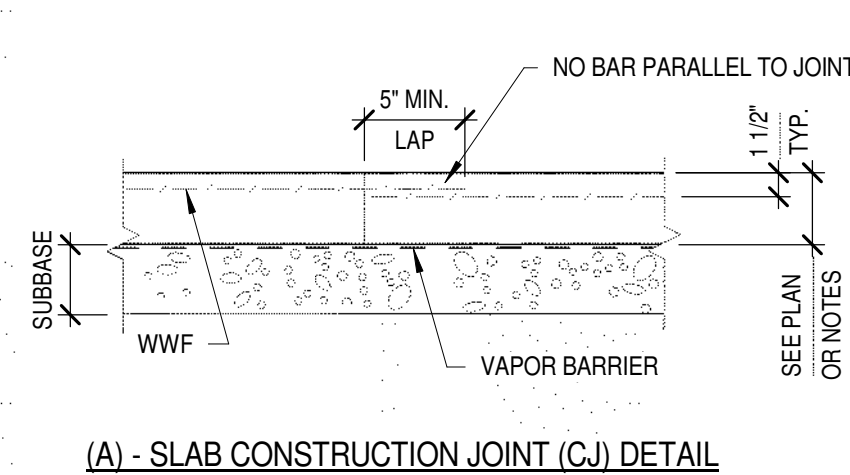
B2 FOUNDATION SECTION @ DOOR  
SCALE: NO SCALE



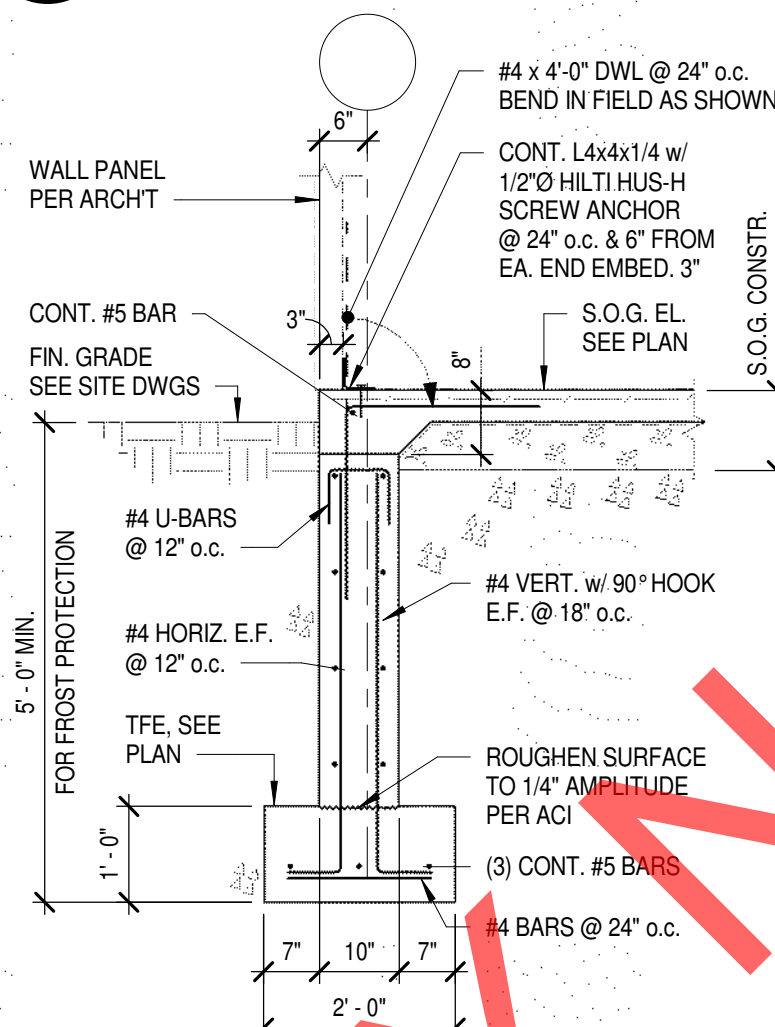
NOTES:  
1. T/ CONC. EL. SHOWN  
REFERENCED FROM  
1ST FLOOR S.O.G. EL.  
2. REFER TO FOUNDATION  
PLAN FOR ORIENTATION.



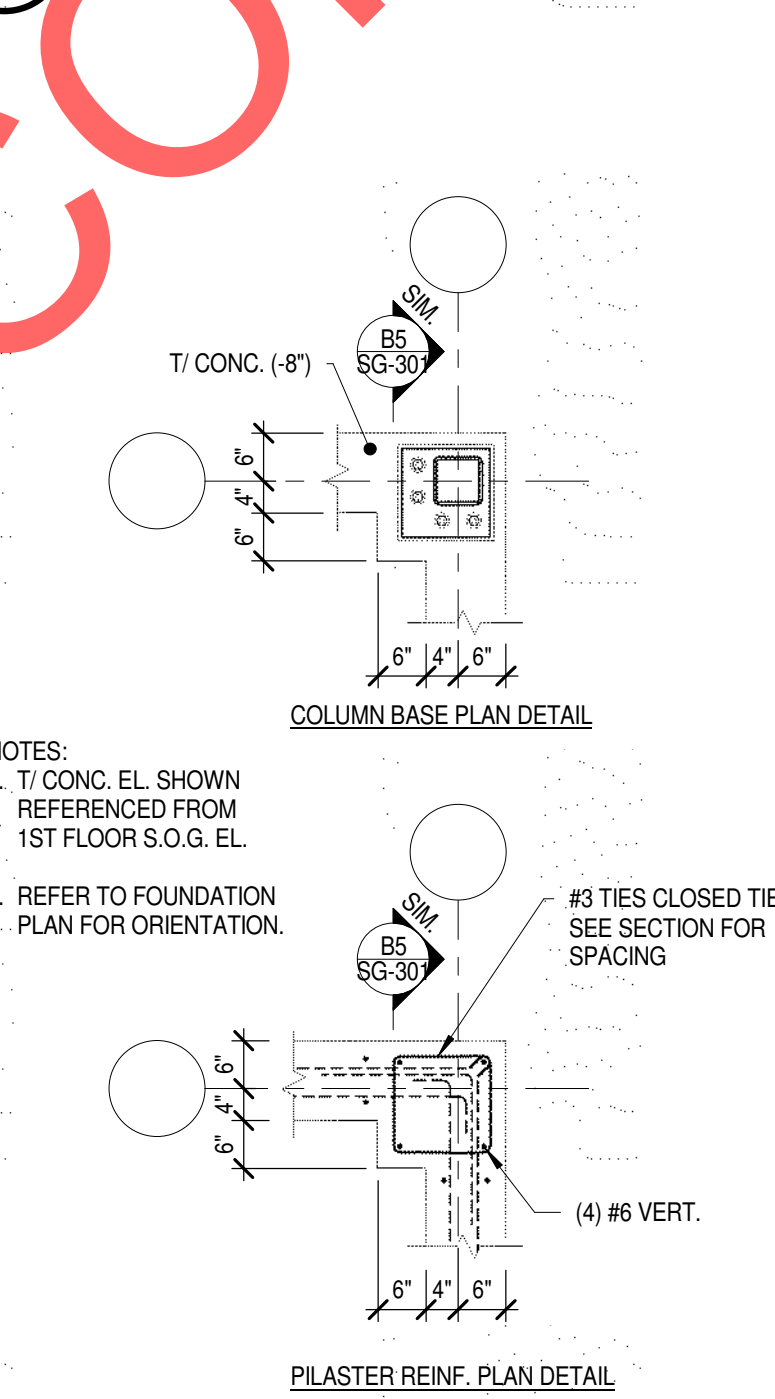
A2 PLAN DETAILS  
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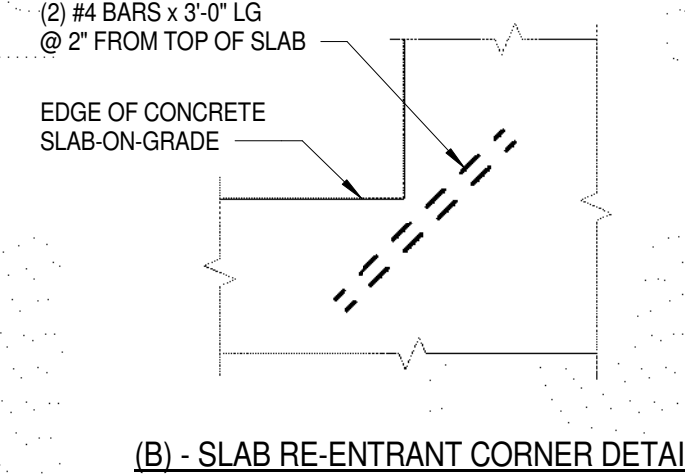
D3 TYPICAL SLAB-ON-GRADE DETAILS  
SCALE: NO SCALE



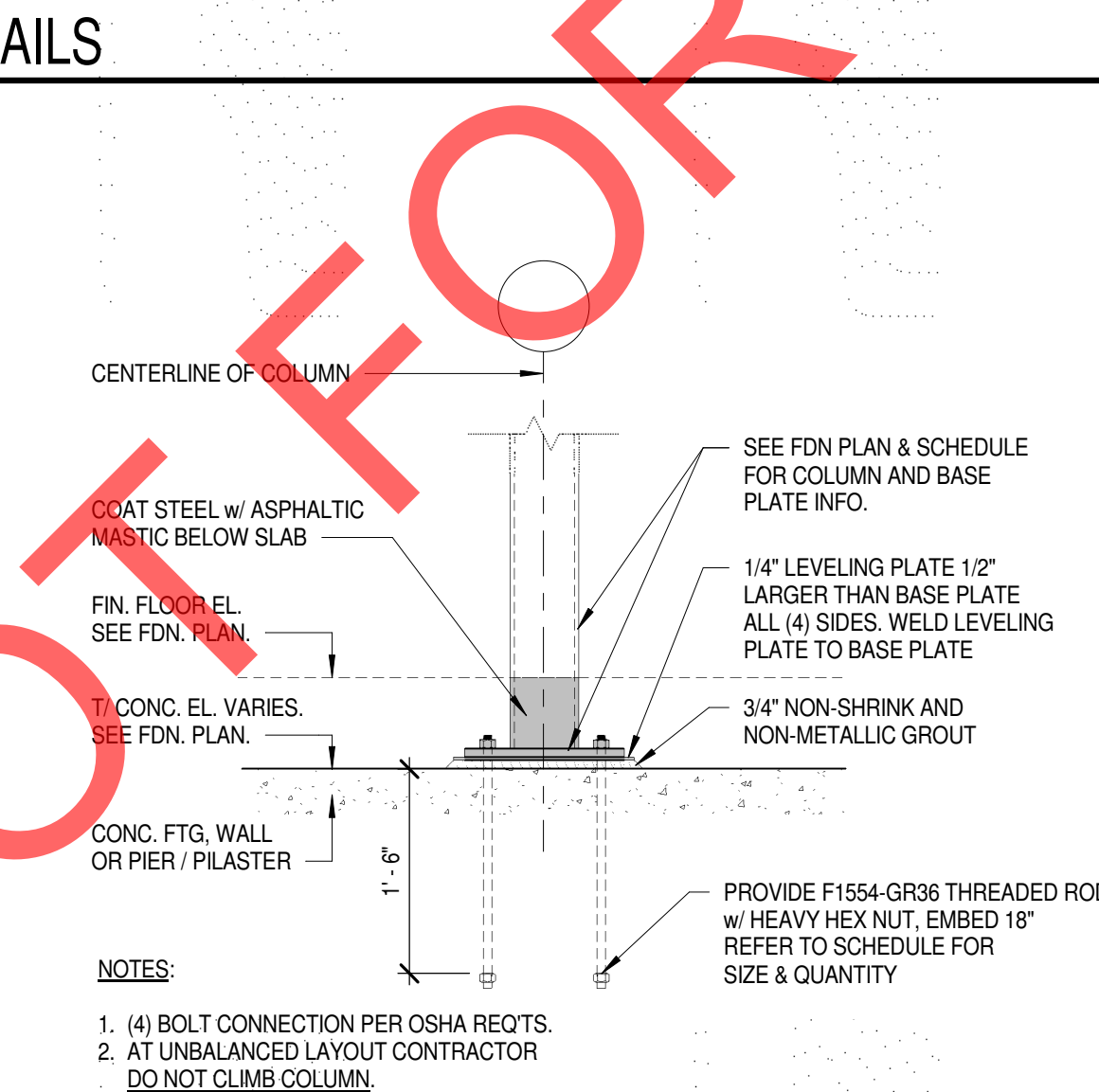
B3 FOUNDATION SECTION  
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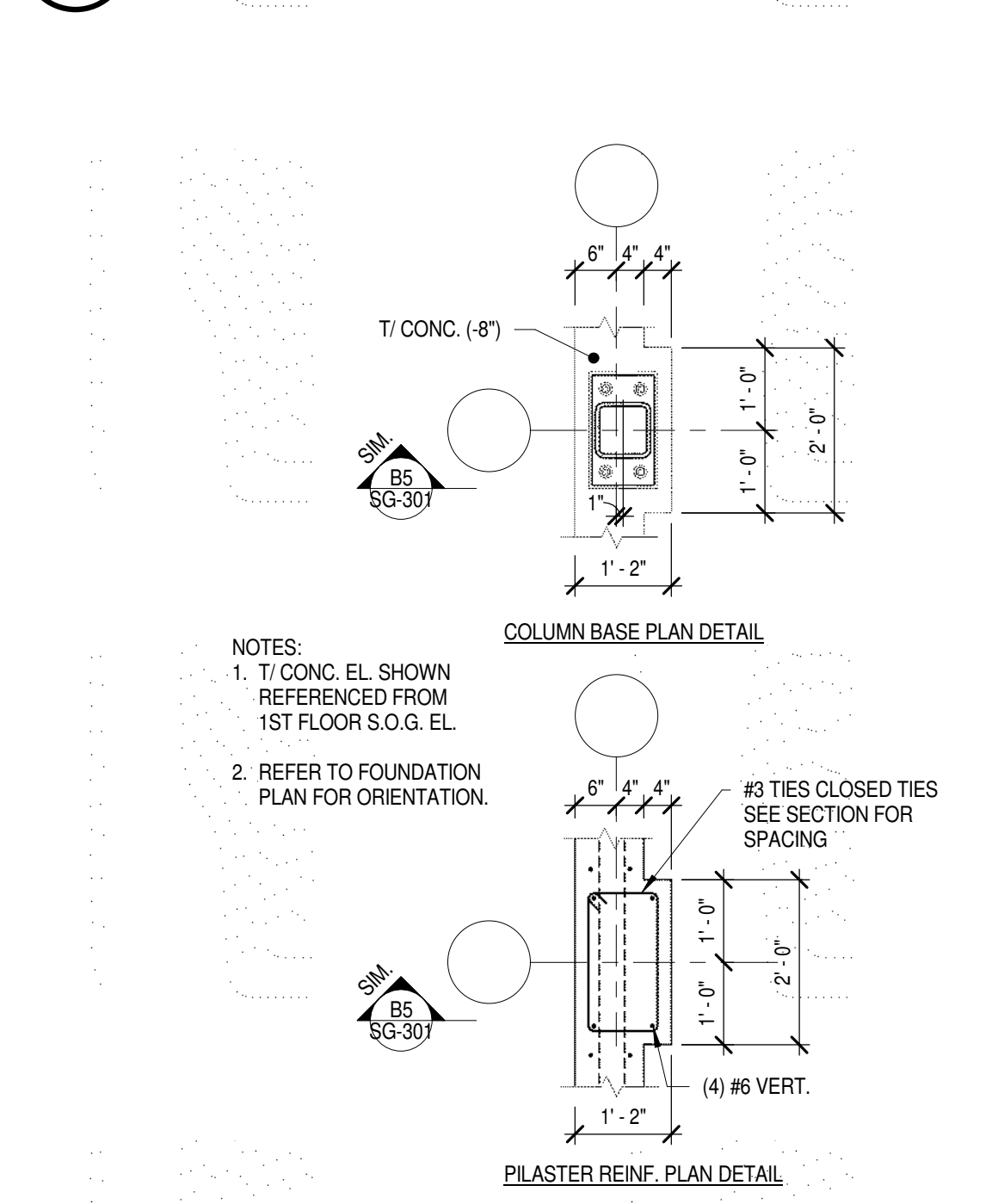
A3 PLAN DETAILS  
SCALE: NO SCALE



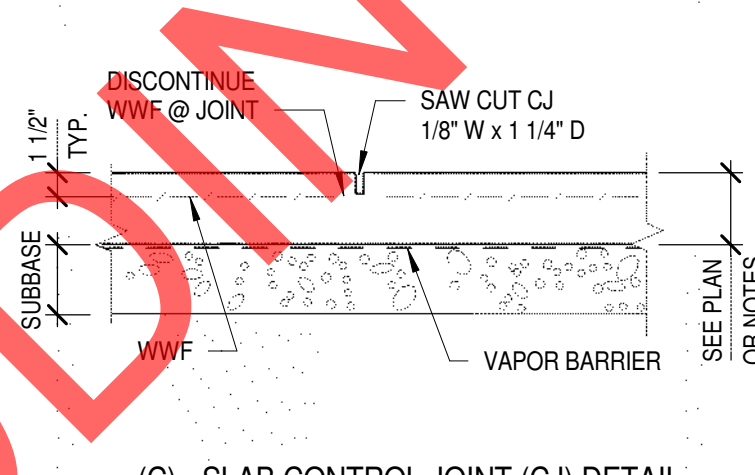
SLAB-ON-GRADE NOTES:  
1. WWF - DENOTES 6x6-W2.9xW2.9 WELDED WIRE FABRIC (U.N.O.)  
2. SUBBASE DENOTES MIN. COMPACTED SUBBASE. REFER TO B1/SG-001  
FOR FOUNDATION NOTES.



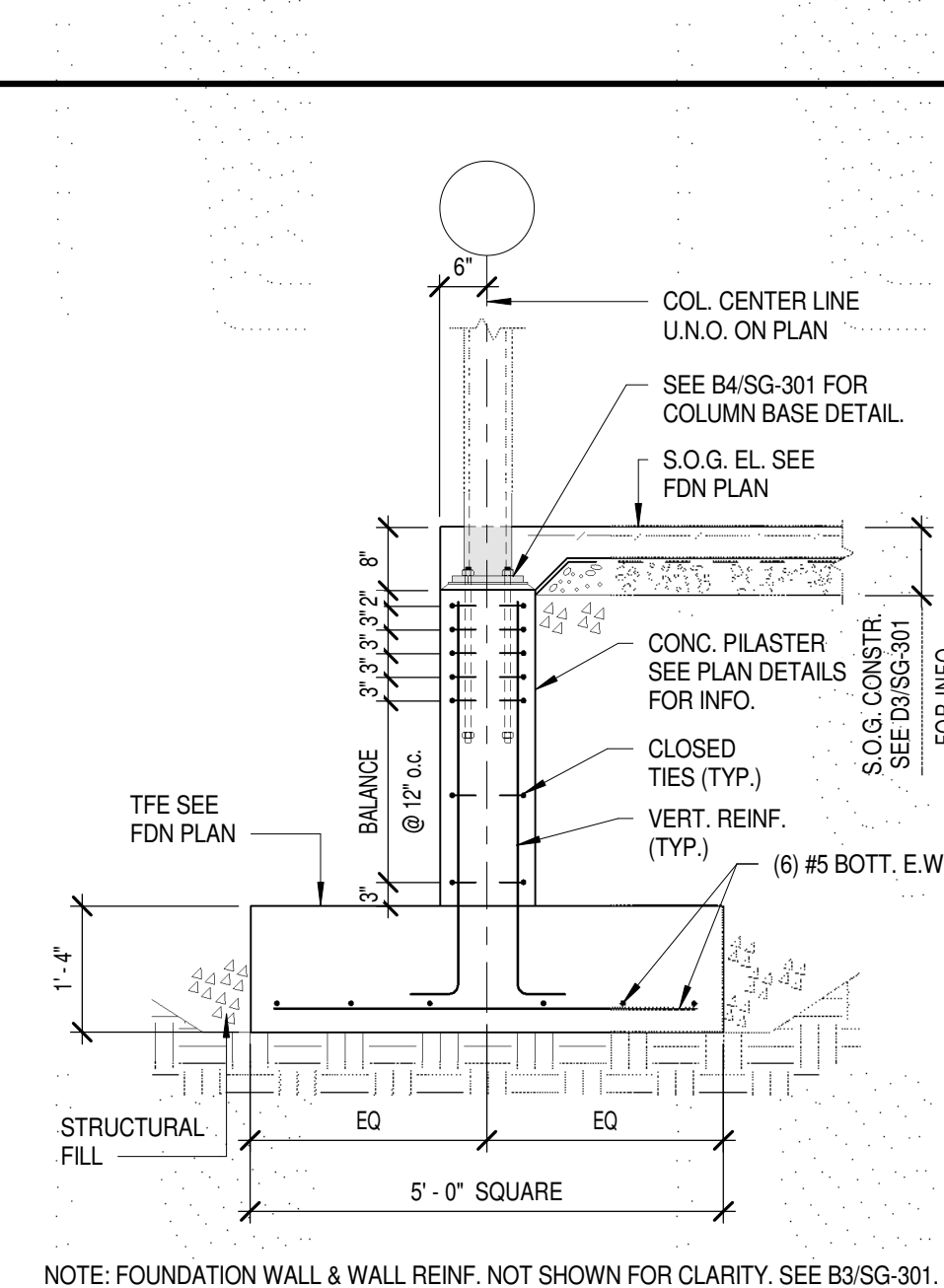
B4 COLUMN BASE DETAIL  
SCALE: NO SCALE



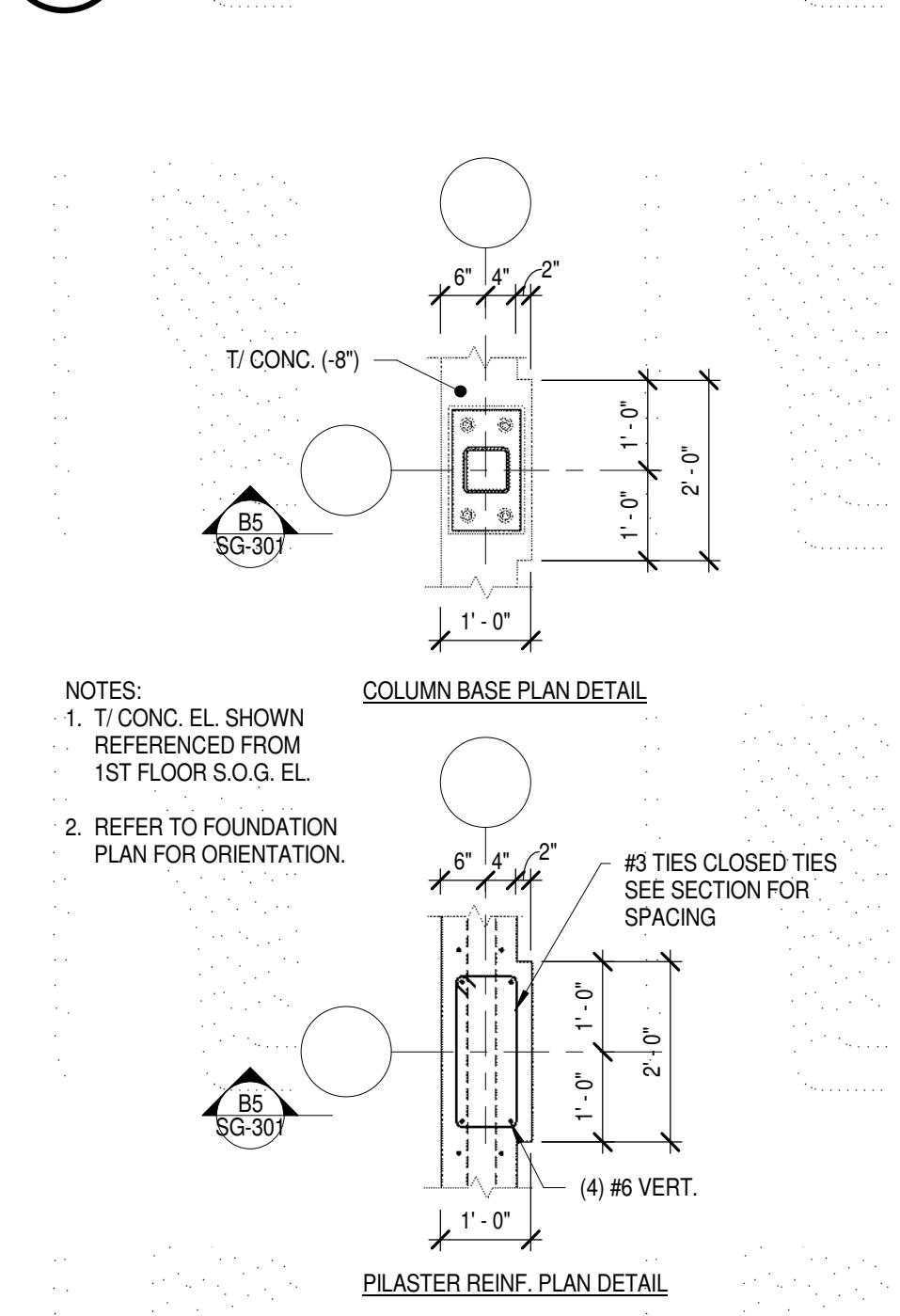
A4 PLAN DETAILS  
SCALE: NO SCALE



NOTE: FOUNDATION WALL & WALL REINF. NOT SHOWN FOR CLARITY. SEE B3/SG-301.

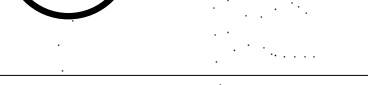
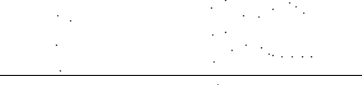


B5 TYP. CONC. PILASTER DETAIL  
SCALE: NO SCALE

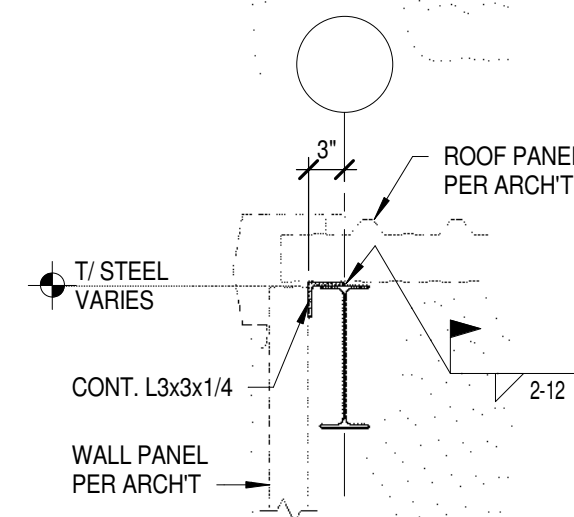


A5 PLAN DETAILS  
SCALE: NO SCALE

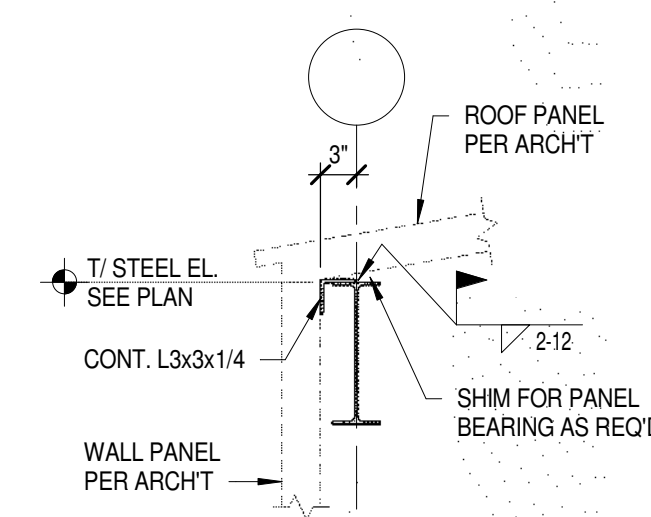
A1 PLAN DETAILS  
SCALE: NO SCALE



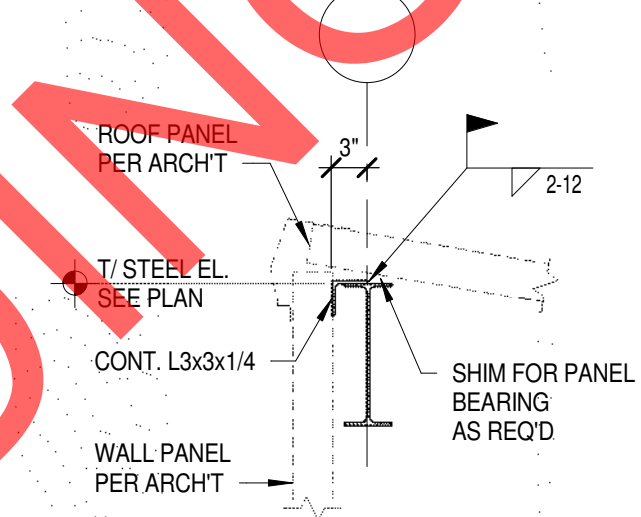




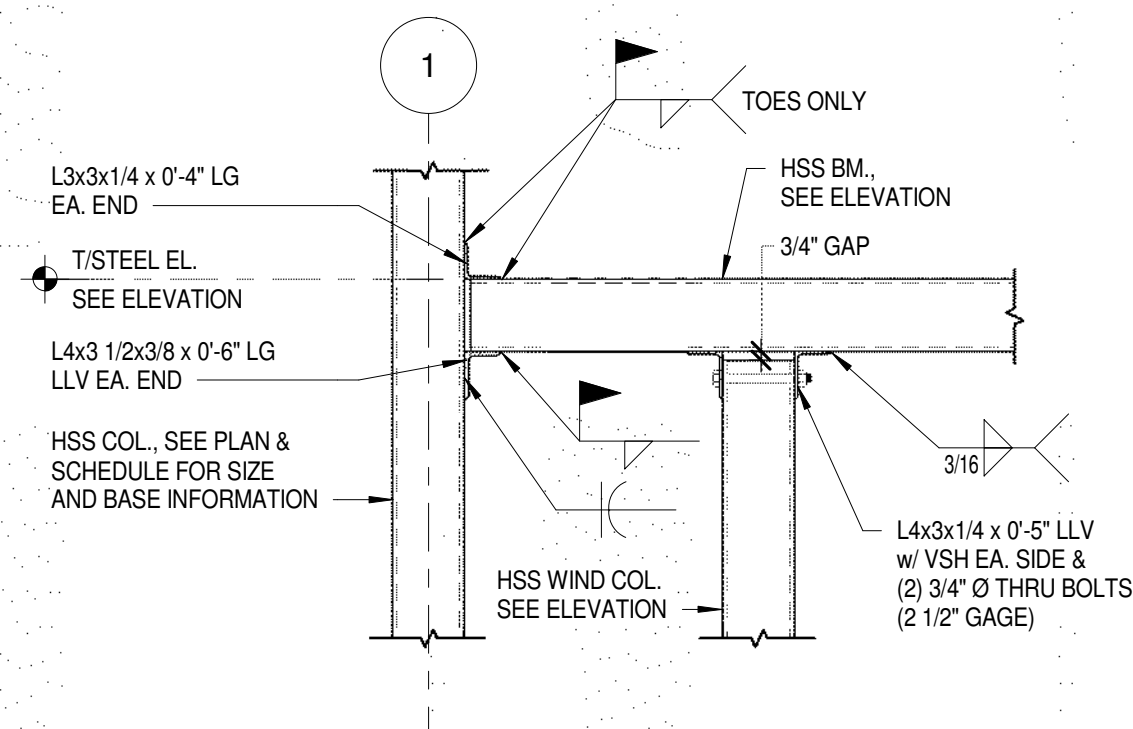
**D3** ROOF FRAMING DETAIL  
SCALE: NO SCALE



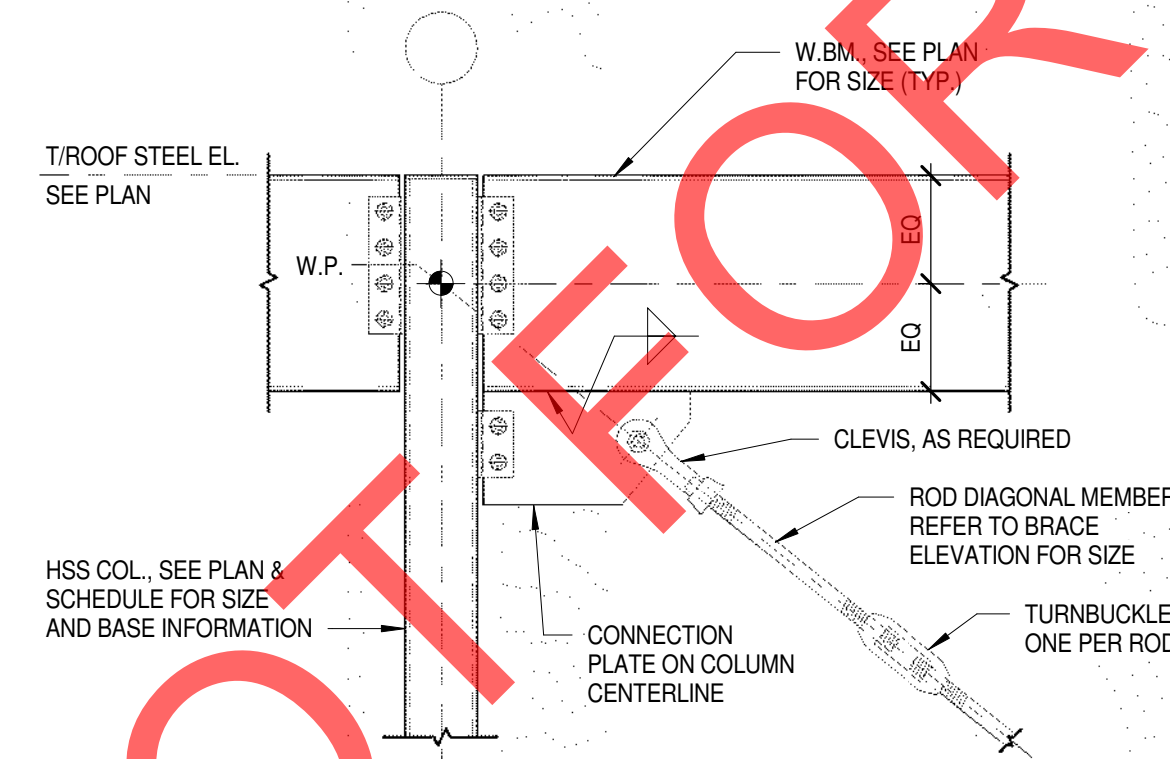
**D4** ROOF FRAMING DETAIL  
SCALE: NO SCALE



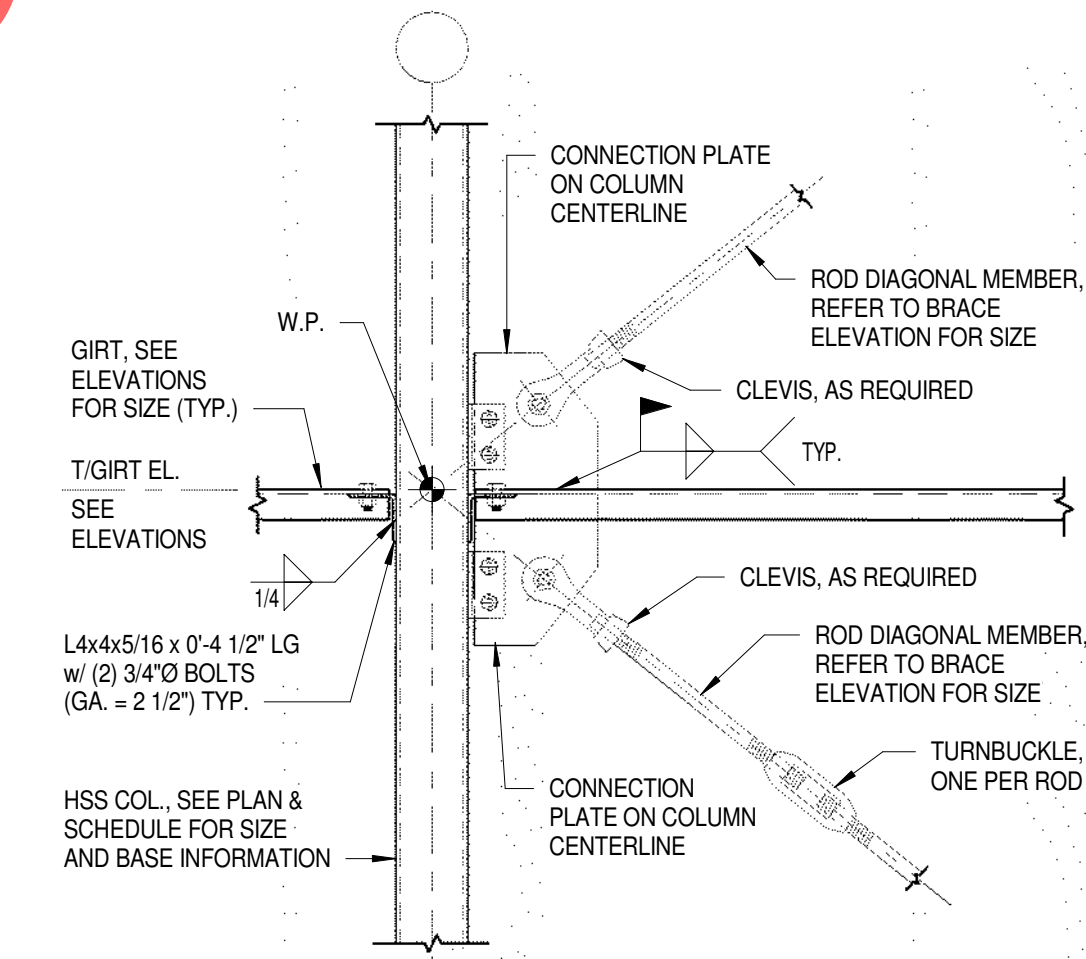
**D5** ROOF FRAMING DETAIL  
SCALE: NO SCALE



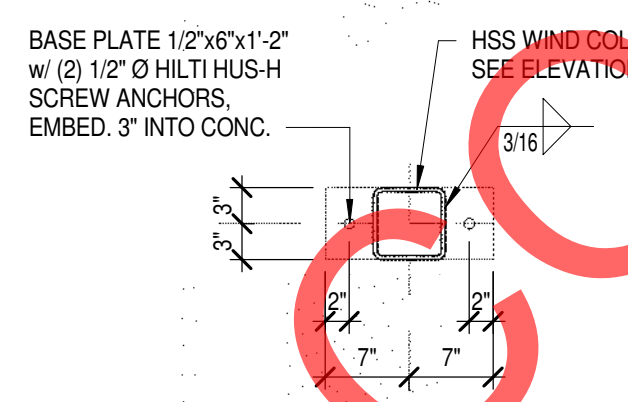
**C2** FRAMING DETAIL  
SCALE: NO SCALE



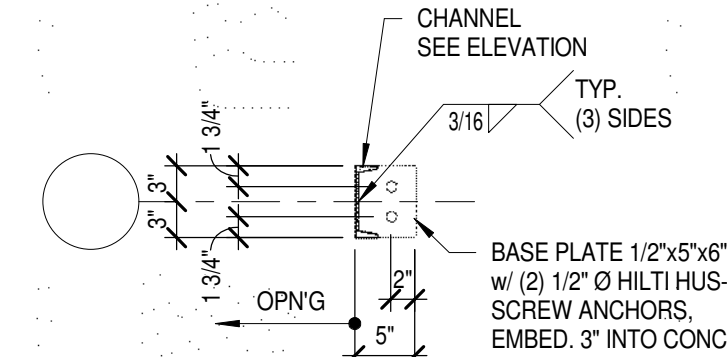
**C3** LATERAL BRACE DETAIL  
SCALE: NO SCALE



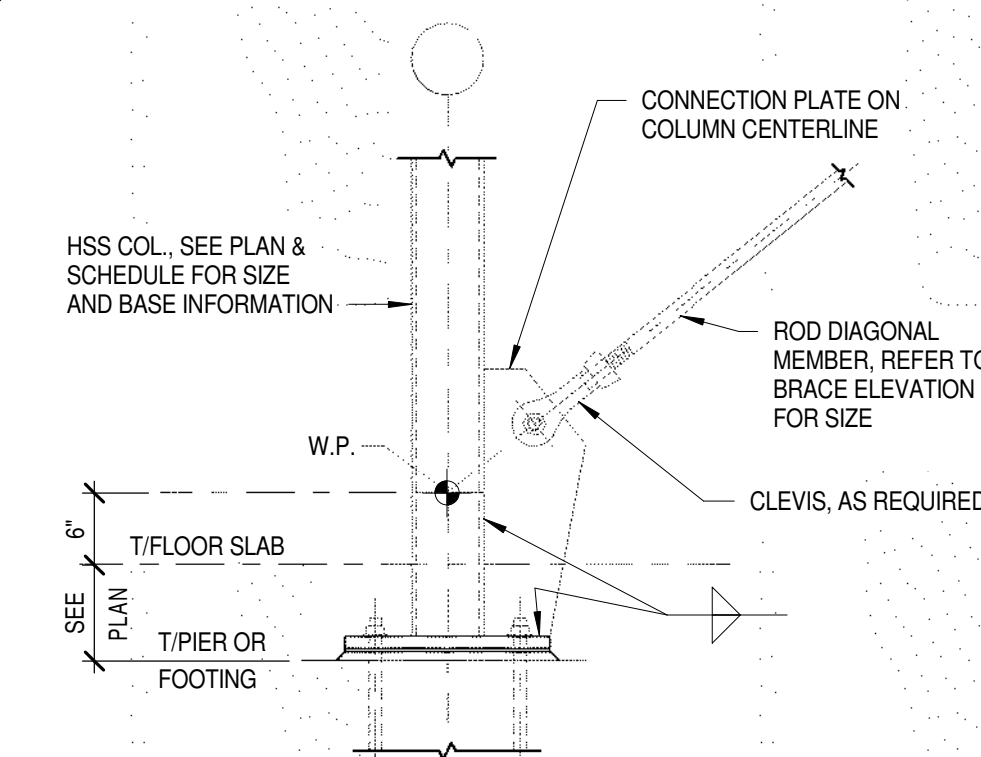
**C4** LATERAL BRACE DETAIL  
SCALE: NO SCALE



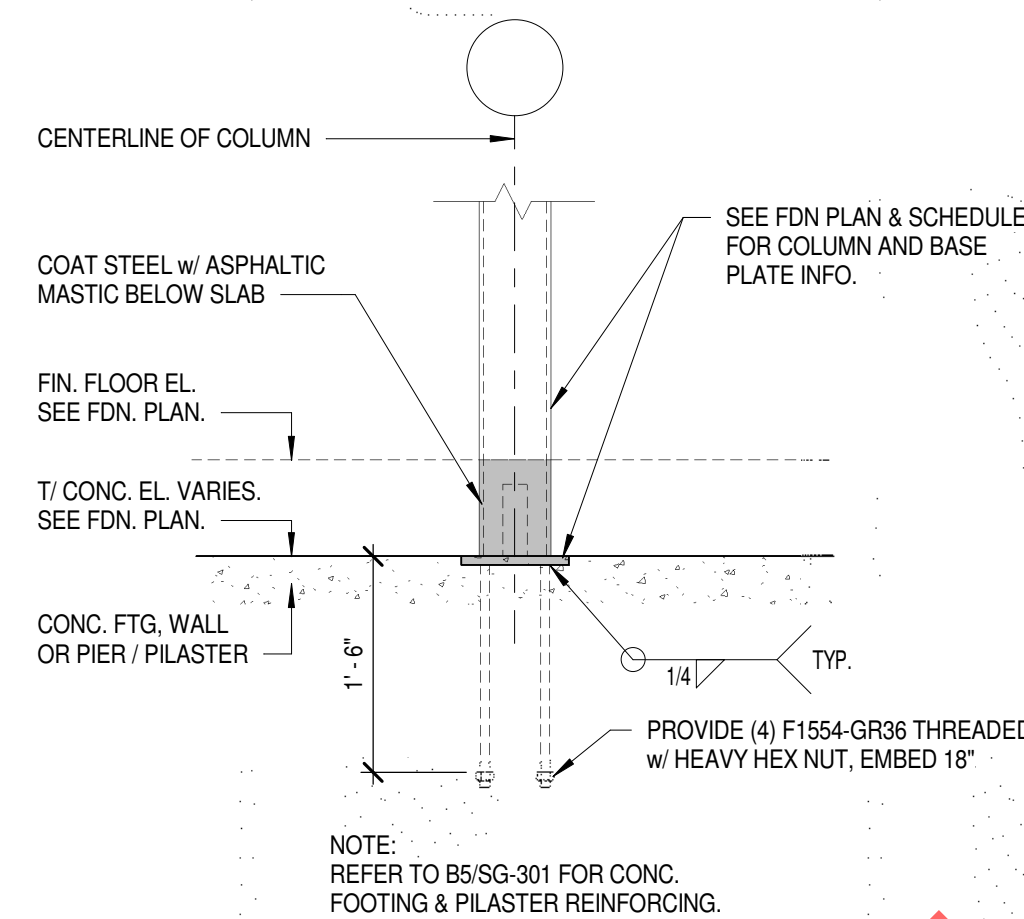
**B2** **PLAN DETAIL**  
SCALE: NO SCALE



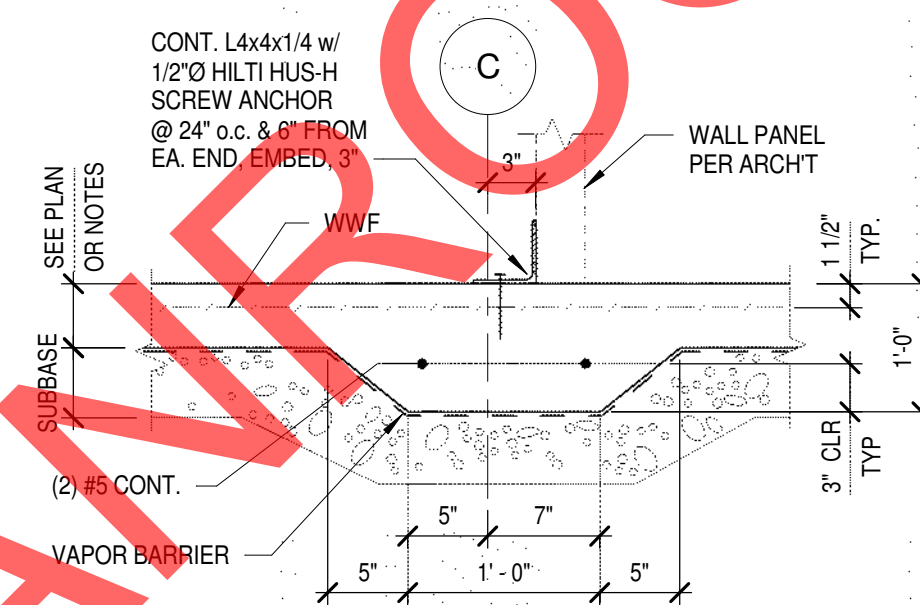
**B3** PLAN DETAIL  
SCALE: NO SCALE



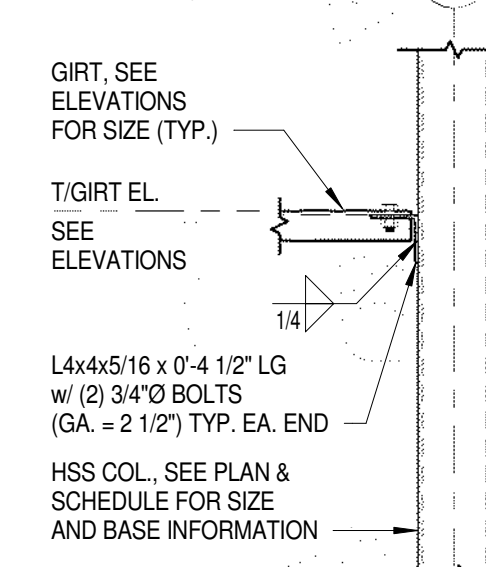
**B4** LATERAL BRACE DETAIL  
SCALE: NO SCALE



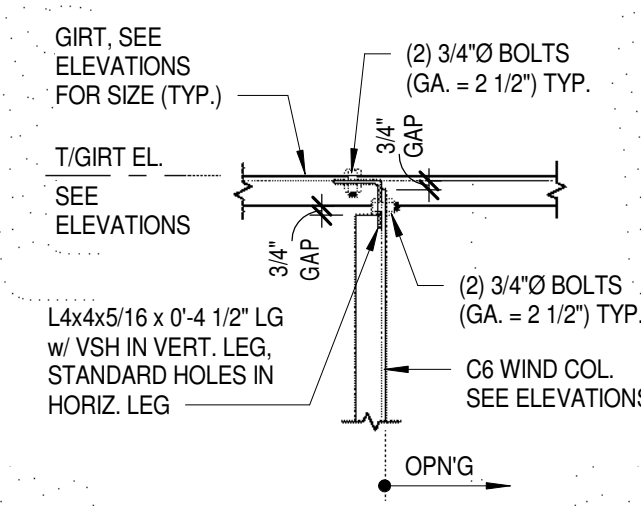
**A1** COLUMN BASE DETAIL-EMBED. PLATE  
SCALE: NO SCALE



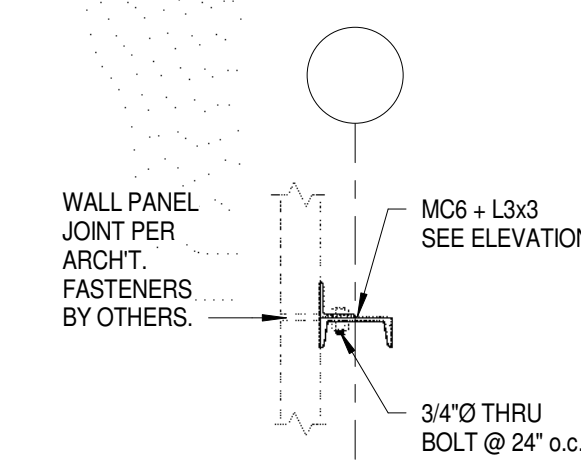
**A2 FOUNDATION DETAIL**  
SCALE: NO SCALE



**A3** **FRAMING DETAIL**  
SCALE: NO SCALE



**A4** FRAMING DETAIL  
SCALE: NO SCALE



**A5** FRAMING DETAIL  
SCALE: NO SCALE



EXP. 06/30/2025

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**BELLEAYRE  
ADMINISTRATIVE BUILDING  
& GONDOLA STORAGE  
BUILDING**

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G- CONTRACT

## REVISIONS

ORDA PROJECT NUM

QPK PROJECT NUM

		221101.00	
D	A	T	E

04/17/2023

S H E E T.....T I T L E

## SECTIONS & DETAILS

SG-302

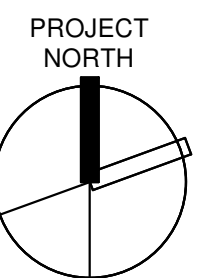


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**BELLEAYRE ADMINISTRATIVE  
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STORAGE BUILDING**

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## PROJECT TRADE G-CONTRACT



R	E	V	I	S	I	O	N	S
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PROJECT NUMBER
221101.00

D A T E  
4/17/23

S	H	E	E	T	T	I	T	L	E
<b>BASEMENT FLOOR REMOVALS</b>									

AD-101

CONTRACTOR SHALL PRODUCE A PROPOSED WORK SEQUENCE SCHEDULE FOR REVIEW BY FACILITY MANAGER. COORDINATE ANY DEVIATIONS FROM WORK SCHEDULE DIRECTLY WITH OWNER

CONTRACTOR SHALL FIELD VERIFY CONDITIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL RECORD ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND FIELD CONDITIONS AND NOTIFY THE ARCHITECT PRIOR TO PROCEEDING.

CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL REMOVED ITEMS IN A LEGAL MANNER

ASBESTOS ABATEMENT: RESILIENT TILES, SEALANTS AND MASTICS IDENTIFIED FOR REMOVAL SHALL BE CONSIDERED ASBESTOS CONTAINING MATERIALS UNTIL TESTING PROVES OTHERWISE AND SHALL BE REMOVED IN ACCORDANCE WITH EPA STANDARDS.

LEAD PAINT ABATEMENT: COMPLY WITH OSHA 1926.62 & EPA REQUIREMENTS. ALL PAINTED SURFACES IDENTIFIED FOR REMOVAL OR RE-PAINTING SHALL BE CONSIDERED LEAD CONTAINING MATERIALS UNTIL TESTING PROVES OTHERWISE.

CONTRACTOR SHALL MAINTAIN A CLEAN JOB SITE; REMOVE CONSTRUCTION DEBRIS FROM ALL FLOOR AREAS ON A DAILY BASIS UNLESS AGREED TO BY FACILITY MANAGER.

CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANY TEMPORARY BRACING OF WALLS TO REMAIN  
PRIOR TO REMOVAL OR MODIFICATION OF LOAD BEARING PARTITIONS

OWNER WILL ALLOCATE SPACE FOR PLACEMENT OF A DUMPSTER; CONTRACTOR SHALL COORDINATE LOADING AND UNLOADING OF DUMPSTER DIRECTLY WITH FACILITY MANAGER

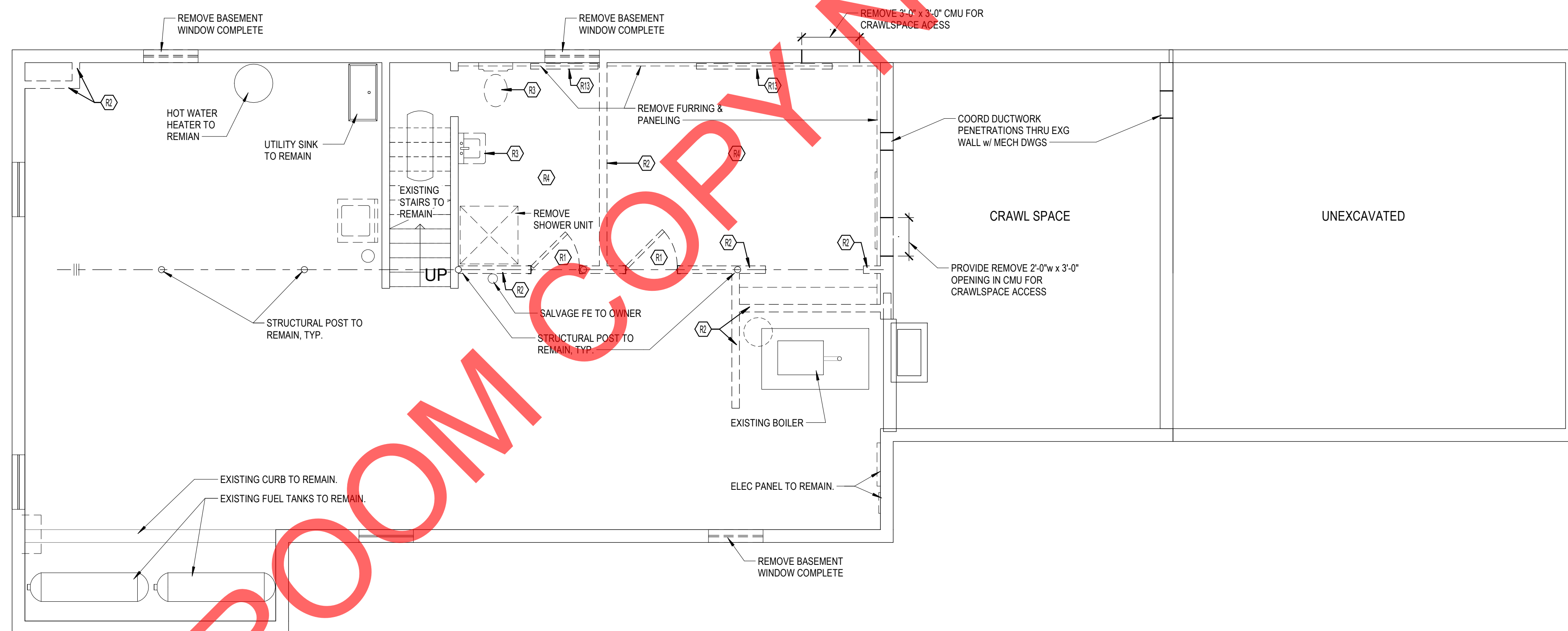
REMOVE EXISTING WIRING & CONDUIT IN WALLS NOTED TO BE REMOVED. TERMINATE ALL WIRING & CONDUIT IN NEXT NEAREST JUNCTION BOX IN A MANNER COMPLIANT WITH NYS ELECTRICAL CODES.

REMOVE PLUMBING CONDUCTORS IN WALLS NOTED TO BE REMOVED. TERMINATE ALL PLUMBING IN A MANNER COMPLIANT WITH NYS ELECTRICAL CODES.

## SCALE: NO SCALE

KEYED NOTES-DEMOLITION	
NUMBER	COMMENT
R1	REMOVE EXISTING DOOR, FRAME AND ALL ASSOCIATED FASTENERS AND SUB FRAMES.
R2	REMOVE EXISTING GWB PARTITION IN ITS ENTIRETY FROM FLOOR TO STRUCTURE ABOVE.
R3	REMOVE EXISTING BATHROOM IN ITS ENTIRETY, INCLUDING INDICATED WALLS, TOILETS, SINKS, WALL TILE, FLOOR TILE THRESHOLD AND ALL ACCESSORIES, COORD WITH OWNER FOR ANY SALVAGE ITEMS.
R4	REMOVE EXISTING SUSPENDED AC/CEILING ASSEMBLY THROUGHOUT, INCLUDING GRID, TILE, HANGER WIRE, AND LIGHTING/FIRE ALARM WIRES.
R5	REMOVE WINDOWS AND SHUTTERS
R6	REMOVE WOOD DECK, RAILINGS AND RAMPS
R7	REMOVE WOOD STAIRS
R8	REMOVE WOOD TRELLIS
R9	REMOVE LANDING AND STEPS
R10	REMOVE STONE VENEER
R11	REMOVE WOOD SIDING
R12	REMOVE STONE STOOP AND STEPS
R13	REMOVE BASEBOARD HEATER SEE MEP DRAWINGS.
R14	REMOVE STONE FIREPLACE SURROUND.
R15	REMOVE CABINETRY.
R16	REMOVE PAPER TOWEL DISPENSER
R17	REMOVE PORTION OF WALL COMPLETE, FROM FLOOR TO 6" ABOVE PROPOSED CEILING HEIGHT.

## SCALE: NO SCALE

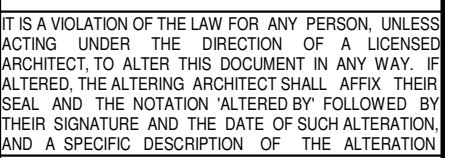
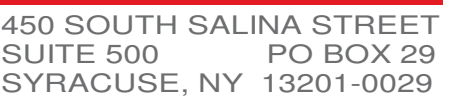


(A1)

SCALE: 1/4" = 1'-0"





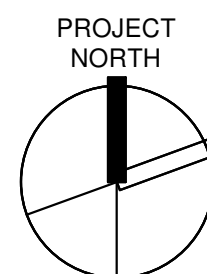


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12441

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**G-CONTRACT**



## REVISIONS

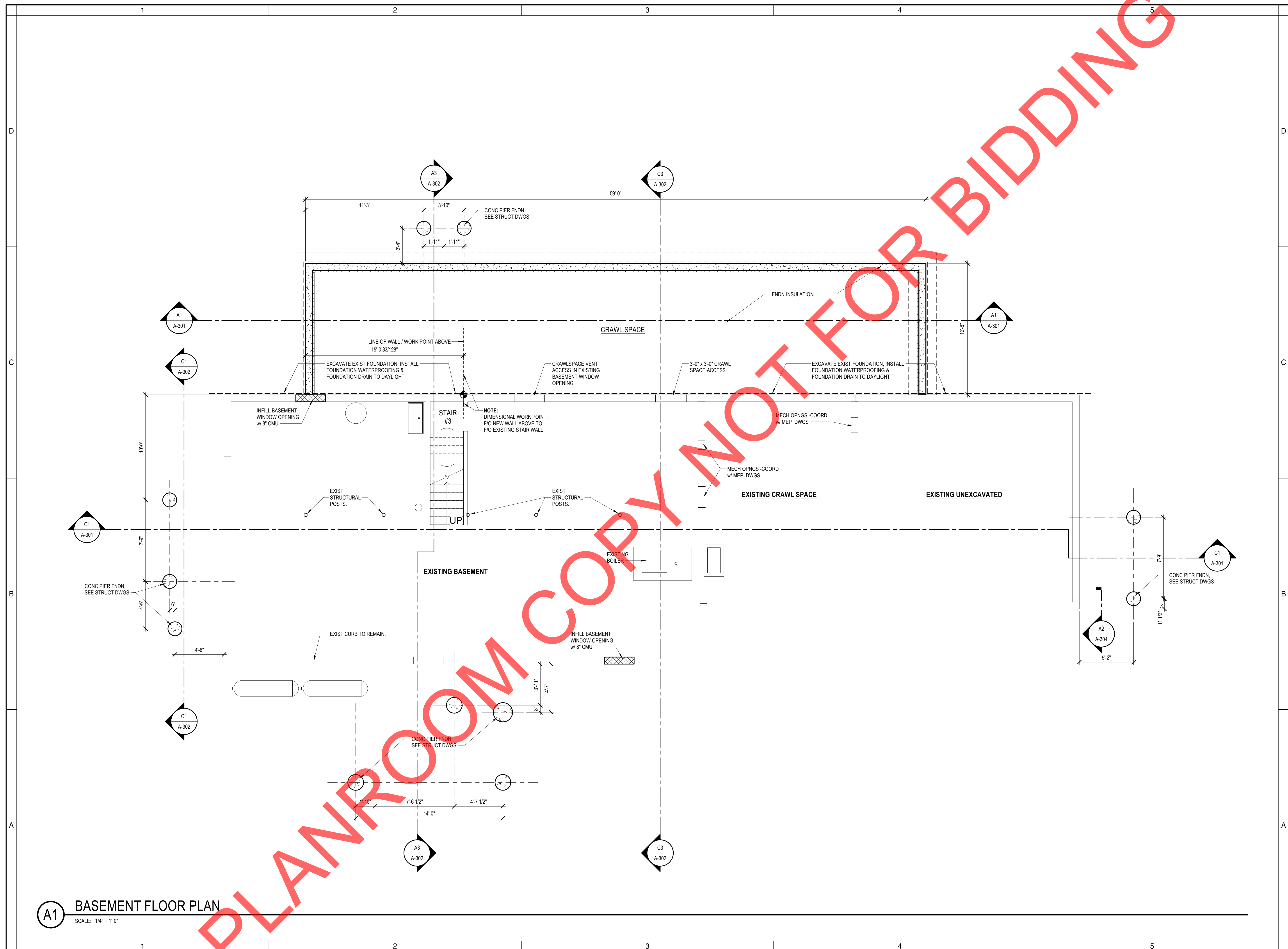

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221101.00

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4/17/23			

S H E E T   T I T L E

**BASEMENT FLOOR  
PLAN**

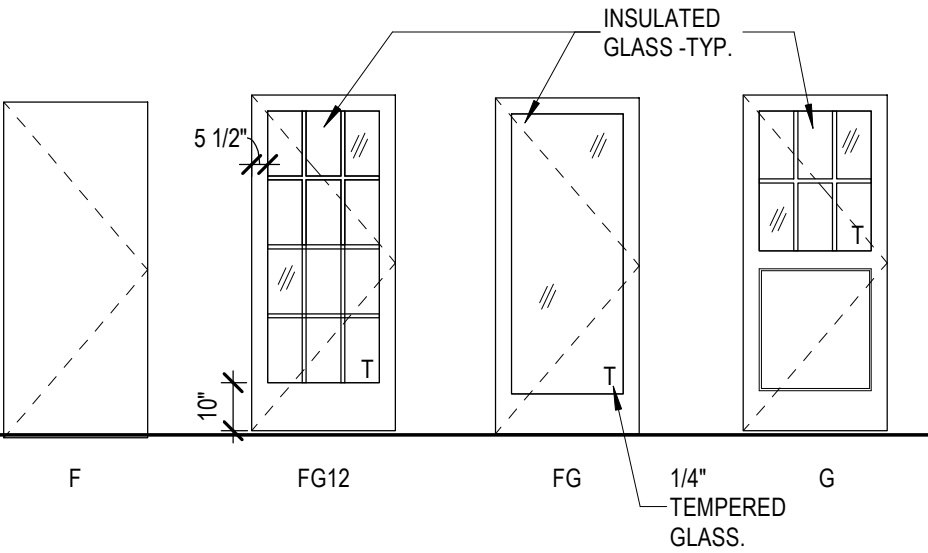
A-101



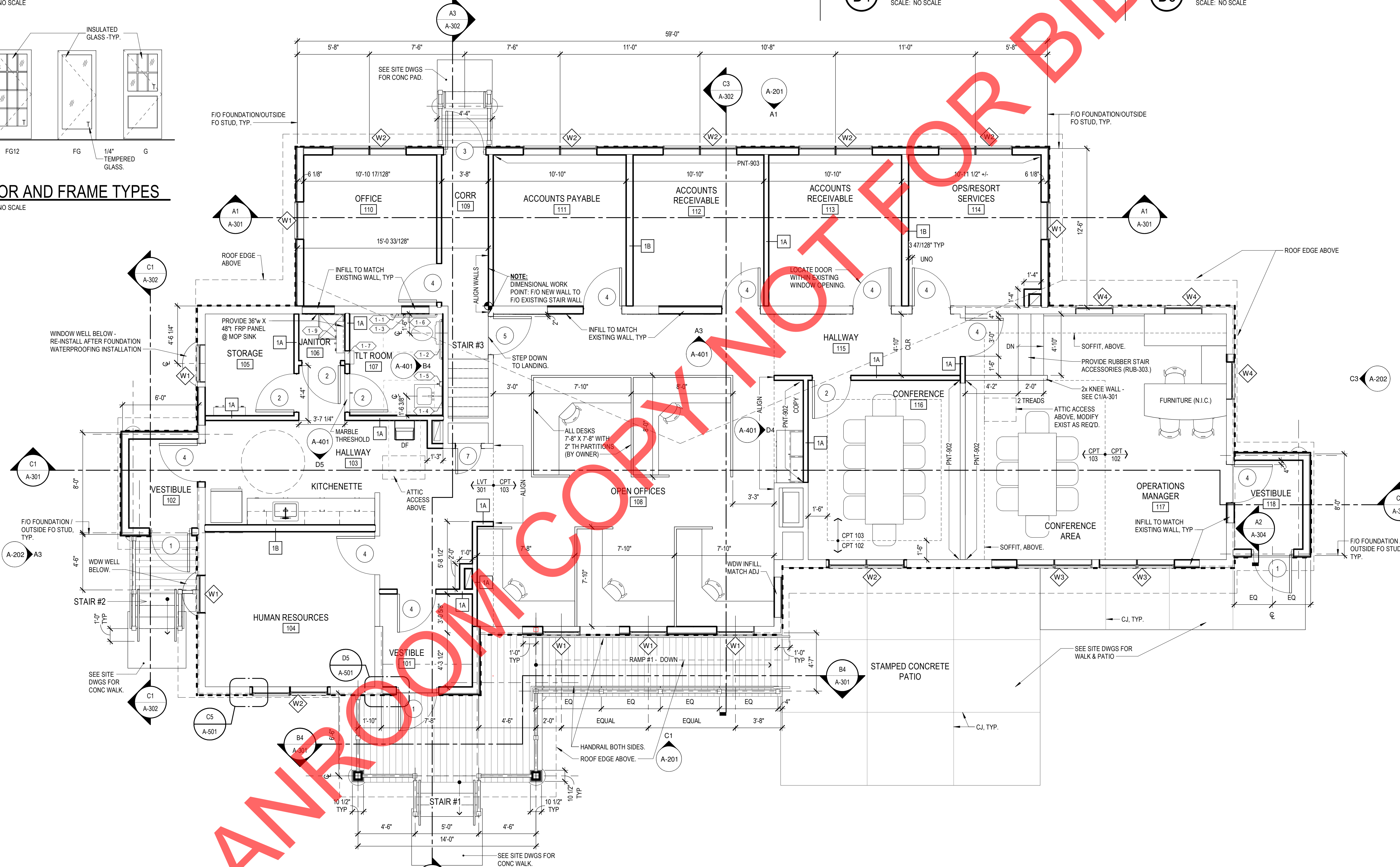


SCHEDULE-DOOR																
DOOR										FRAME						
DR NO	DR WIDTH	DR HEIGHT	P1 WIDTH	P1 TYPE	P2 WIDTH	P2 TYPE	MAT	FINISH	COLOR	TYPE	MAT	FINISH	COLOR	HEAD	JAMB	THRESHOLD
1	3'-0"	6'-8"	3'-0"	FG12	0"					3	WD					
2	3'-0"	7'-0"	3'-0"	F	0"					1	WD					
3	3'-0"	6'-8"	3'-0"	FG12	0"					3	WD					
4	3'-0"	7'-0"	3'-0"	FG	0"					1	WD					
5	3'-0"	7'-0"	3'-0"	F	0"					1	WD					
7	2'-0"	7'-0"	2'-0"	F	0"					1	WD					
14	2'-6"	7'-0"	2'-6"	F	0"					1	WD					
DR NO	REMARKS															
1																
2																
3																
4																
5																
7																
14																

D1 DOOR SCHEDULE  
SCALE: NO SCALE



C1 DOOR AND FRAME TYPES  
SCALE: NO SCALE

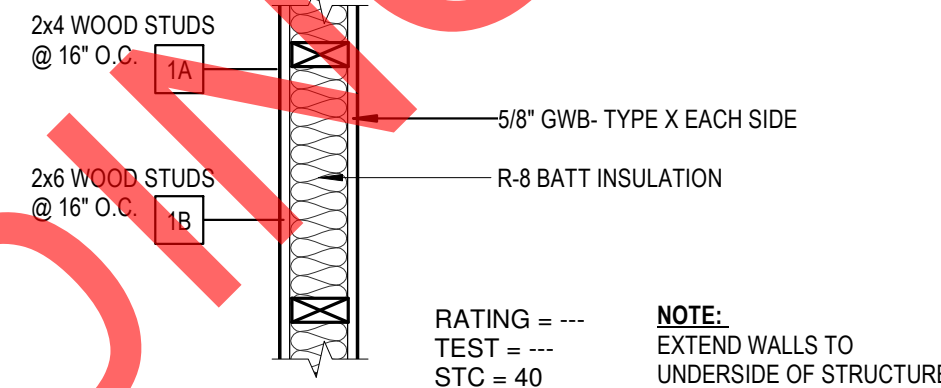


A1 MAIN FLOOR PLAN  
SCALE: 1/4" = 1'-0"

D4 GENERAL NOTES  
SCALE: NO SCALE

1. ALL PARTITIONS TO BE TYPE 1 (SEE FLOOR PLAN FOR STUD SIZE) UNO INCLUDING INFILL WALLS AT DOOR REMOVAL. EXTEND TO UNDERSIDE OF DECK AT OFFICES. STAGGER OUTLETS & WALL PENETRATIONS FOR ACOUSTICAL.
2. PROVIDE BATT INSULATION FOR SOUND ATTENUATION AT OFFICES.
3. PATCH AND PREP ALL EXISTING WALLS TO REMAIN FOR SCHEDULED FINISHES.
4. PREP ALL WALLS TO LEVEL 4 FINISH.

D5 PARTITION TYPES  
SCALE: NO SCALE



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



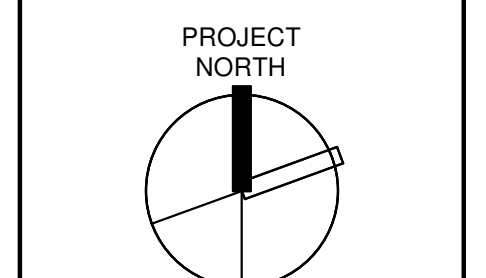
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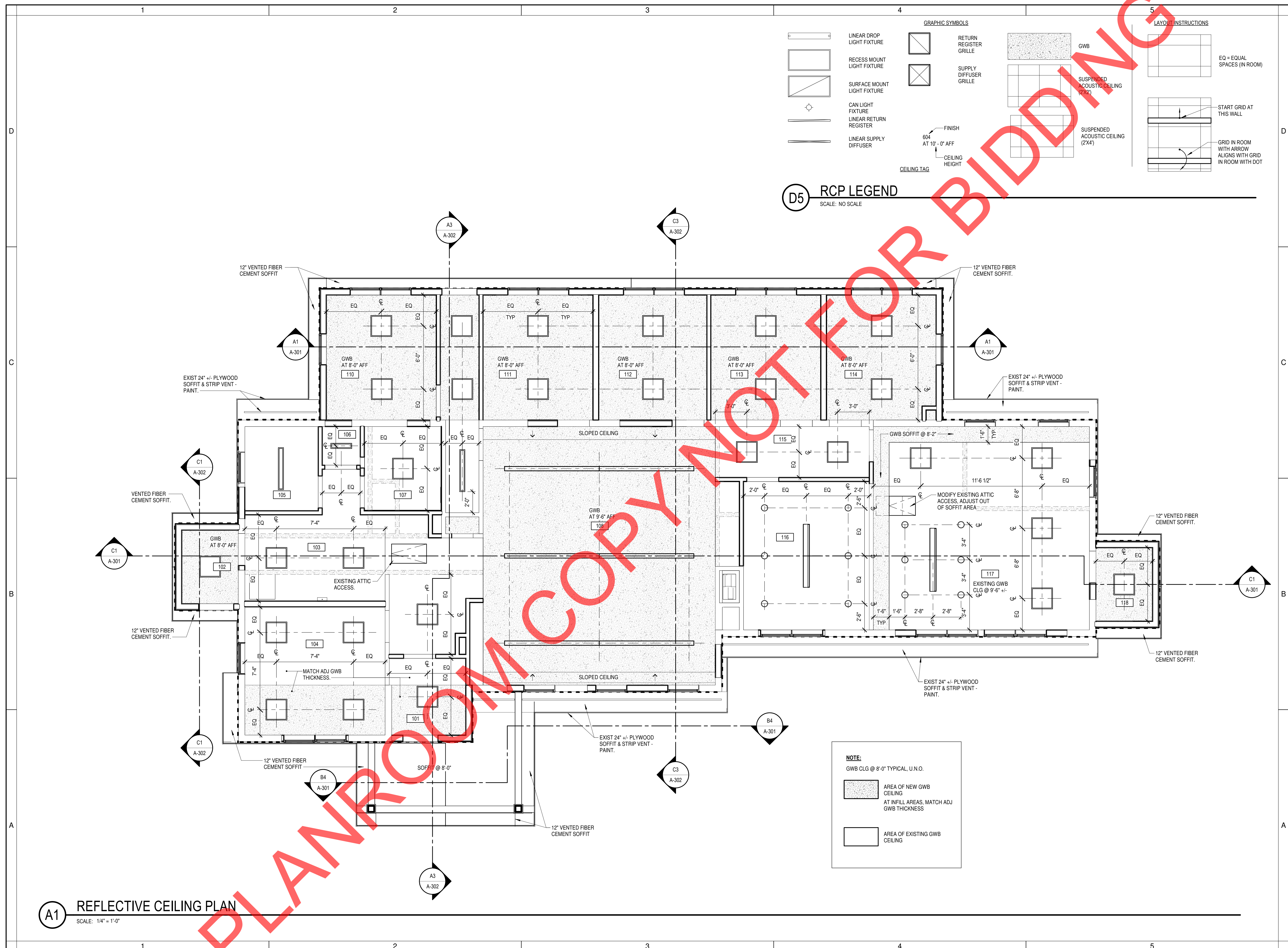
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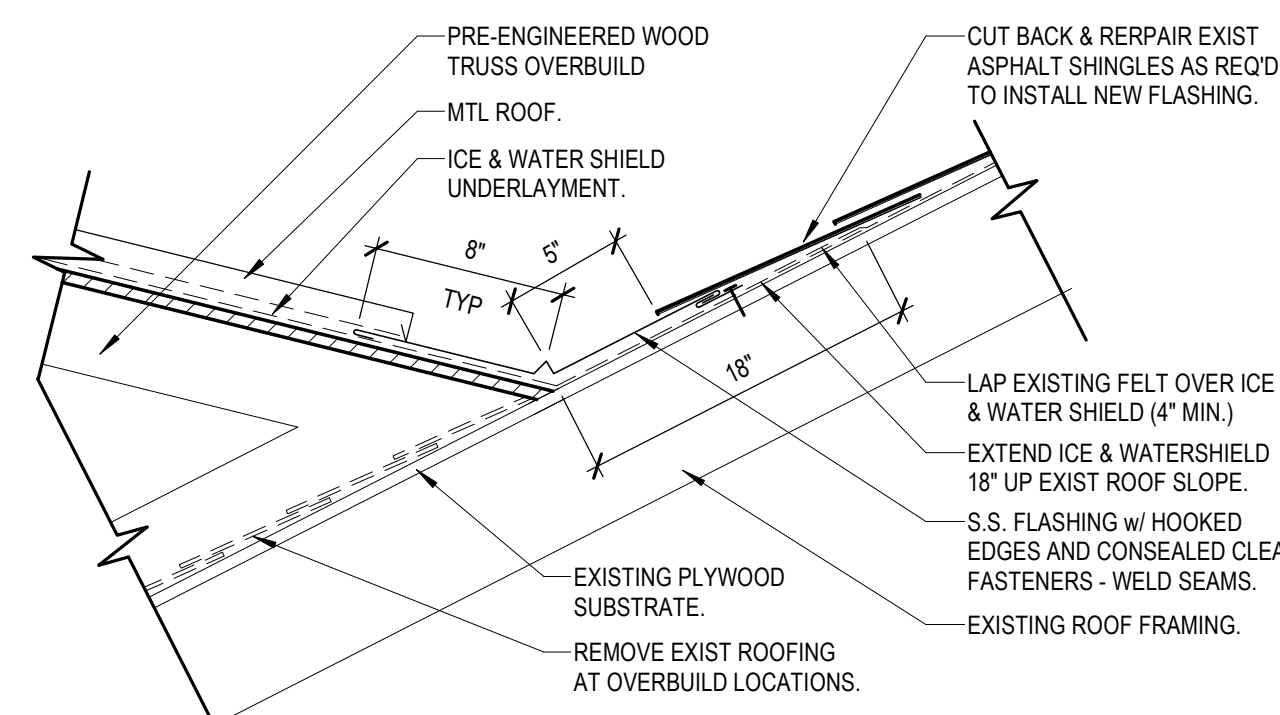
SHEET TITLE  
MAIN FLOOR PLAN

A-102

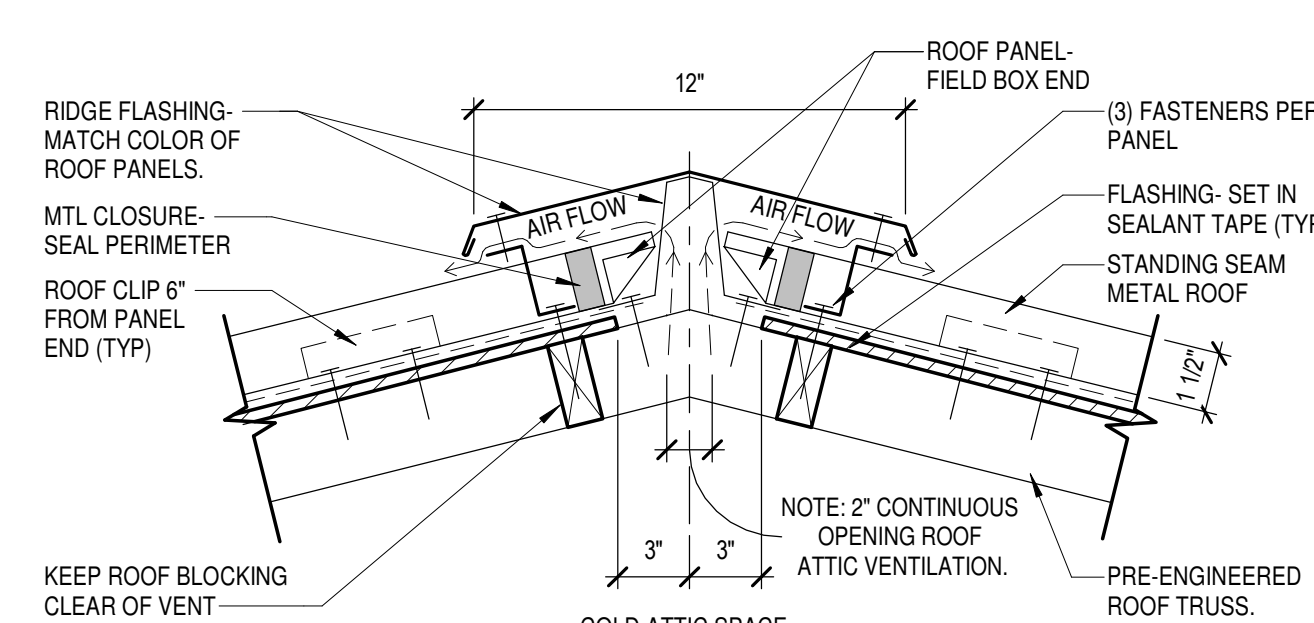




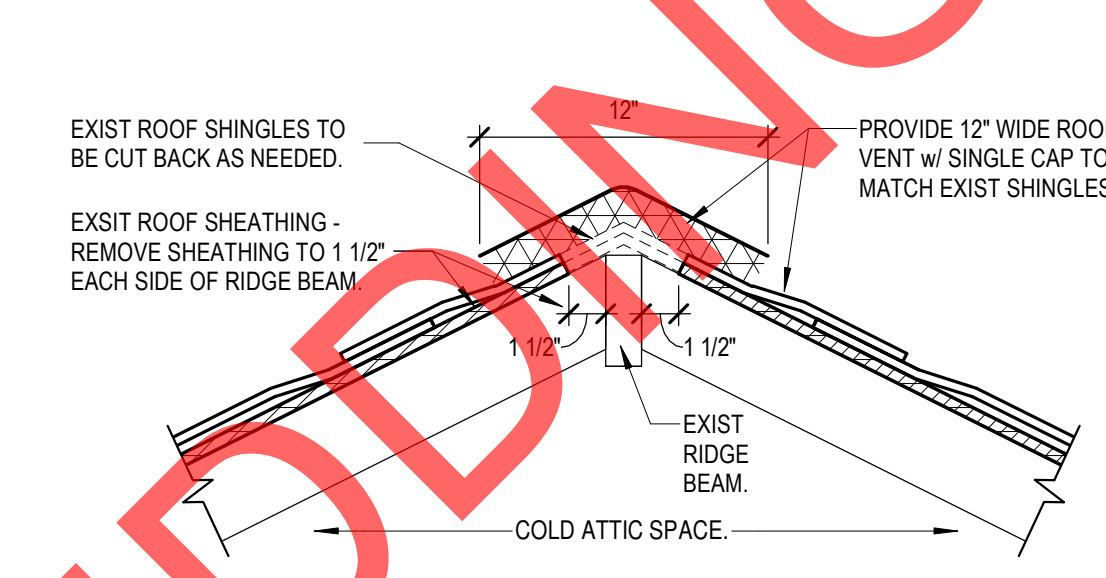




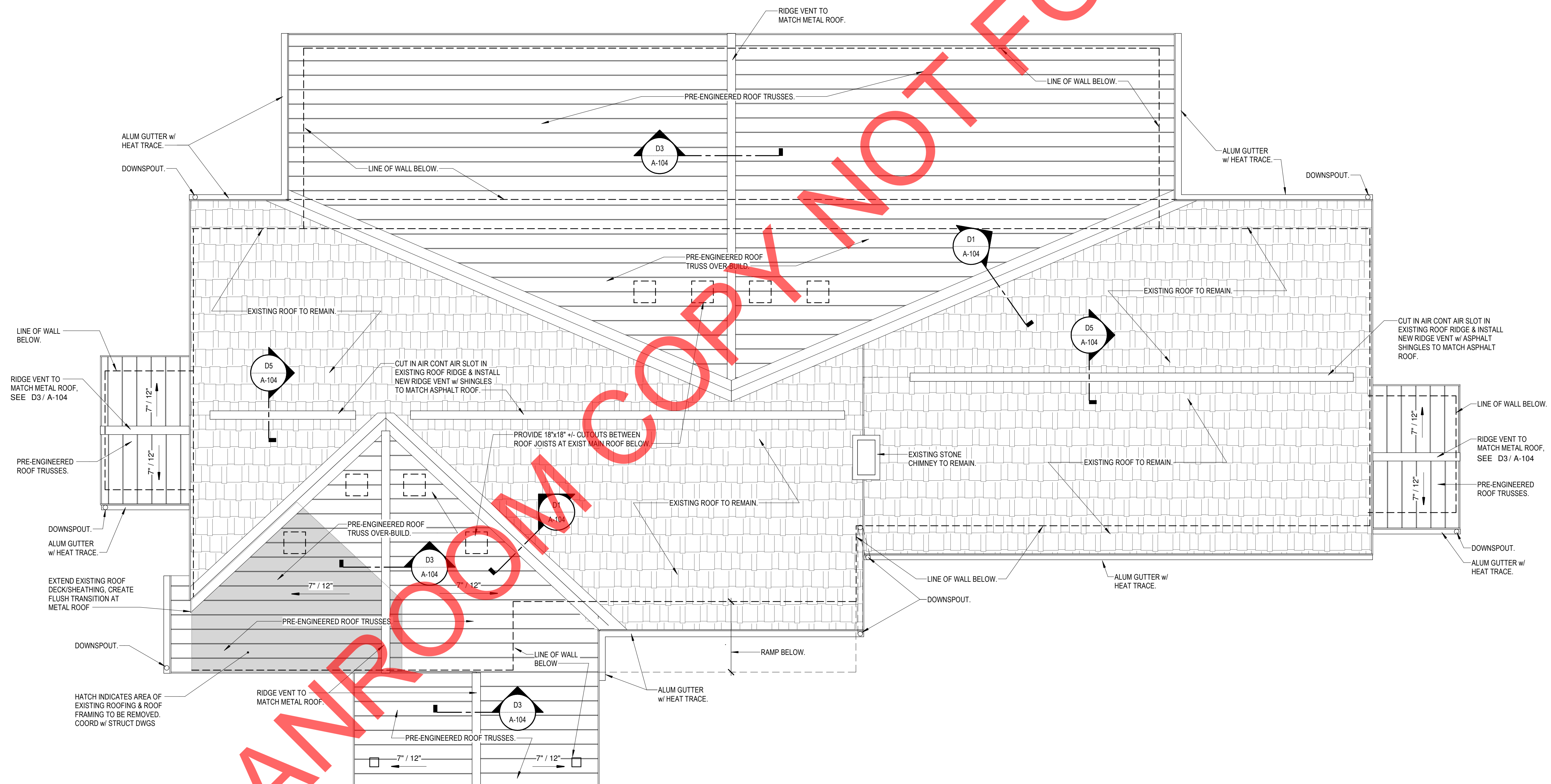
D1 VALLEY FLASHING DETAIL  
SCALE: 1 1/2" = 1'-0"



D3 RIDGE VENT @ METAL ROOF  
SCALE: 1 1/2" = 1'-0"



D5 RIDGE VENT @ EXISTING ROOF  
SCALE: 1 1/2" = 1'-0"



A1 ROOF PLAN  
SCALE: 1/4" = 1'-0"



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



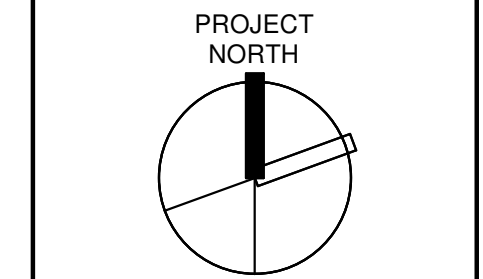
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4/17/23

SHEET TITLE  
ROOF PLAN

A-104





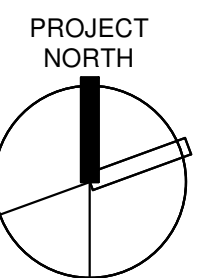
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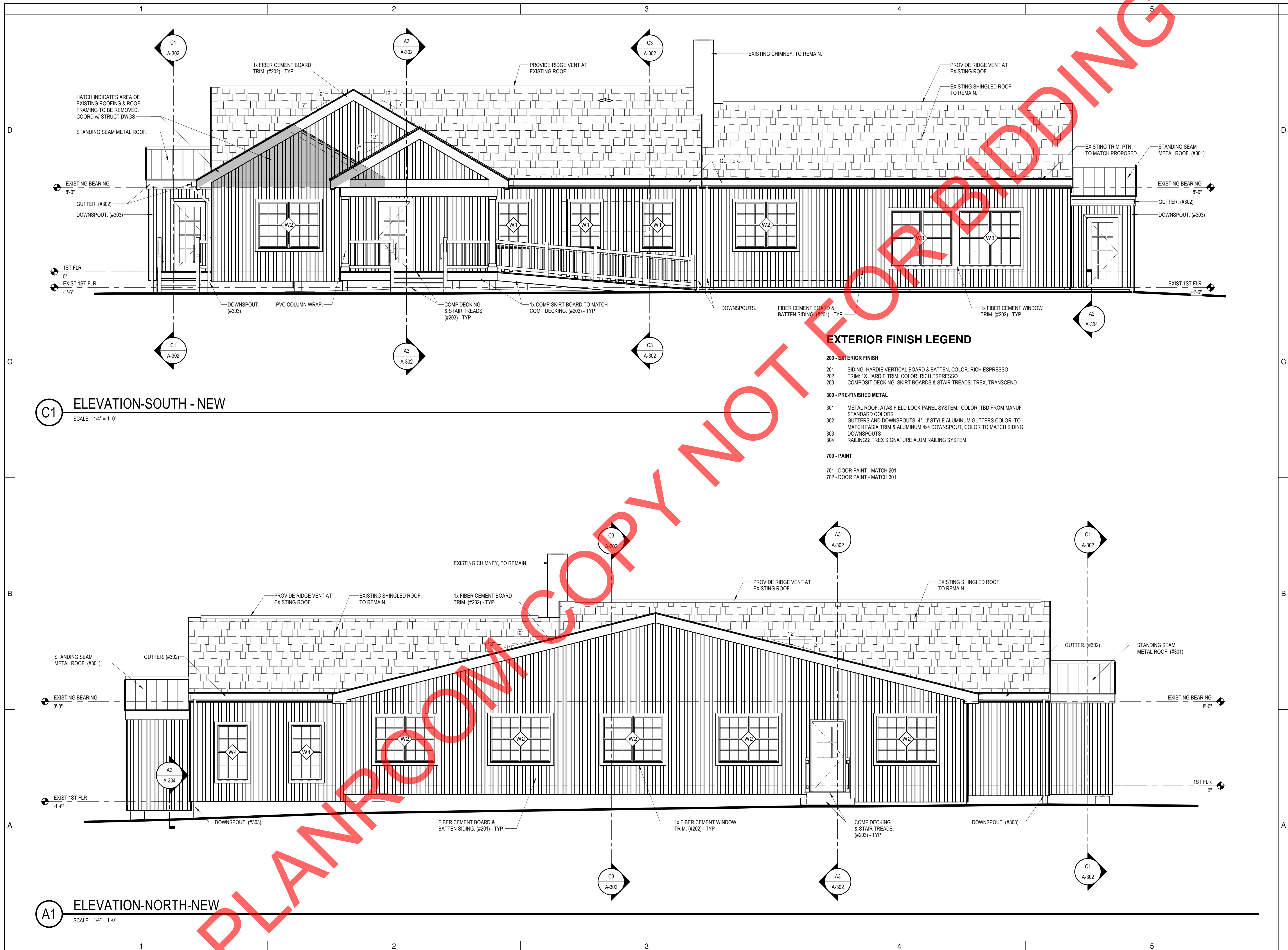
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221101.00

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4/17/23

SHEET TITLE

ELEVATIONS-  
EXTERIOR

A-201



ELEVATION-SOUTH - NEW

SCALE: 1/4" = 1'-0"

EXTERIOR FINISH LEGEND

200 - EXTERIOR FINISH

- 201 SIDING: HARDIE VERTICAL BOARD & BATTEN, COLOR: RICH ESPRESSO  
202 TRIM: 1X HARDIE TRIM, COLOR: RICH ESPRESSO  
203 COMPOSIT DECKING, SKIRT BOARDS & STAIR TREADS: TREX, TRANSCEND

300 - PRE-FINISHED METAL

- 301 METAL ROOF: ATAS FIELD LOCK PANEL SYSTEM. COLOR: TBD FROM MANUF STANDARD COLORS  
302 GUTTERS AND DOWNSPOUTS: 4", "J" STYLE ALUMINUM GUTTERS COLOR: TO MATCH FASIA TRIM & ALUMINUM 4x4 DOWNSPOUT, COLOR TO MATCH SIDING.  
303 DOWNSPOUTS  
304 RAILINGS: TREX SIGNATURE ALUM RAILING SYSTEM.

700 - PAINT

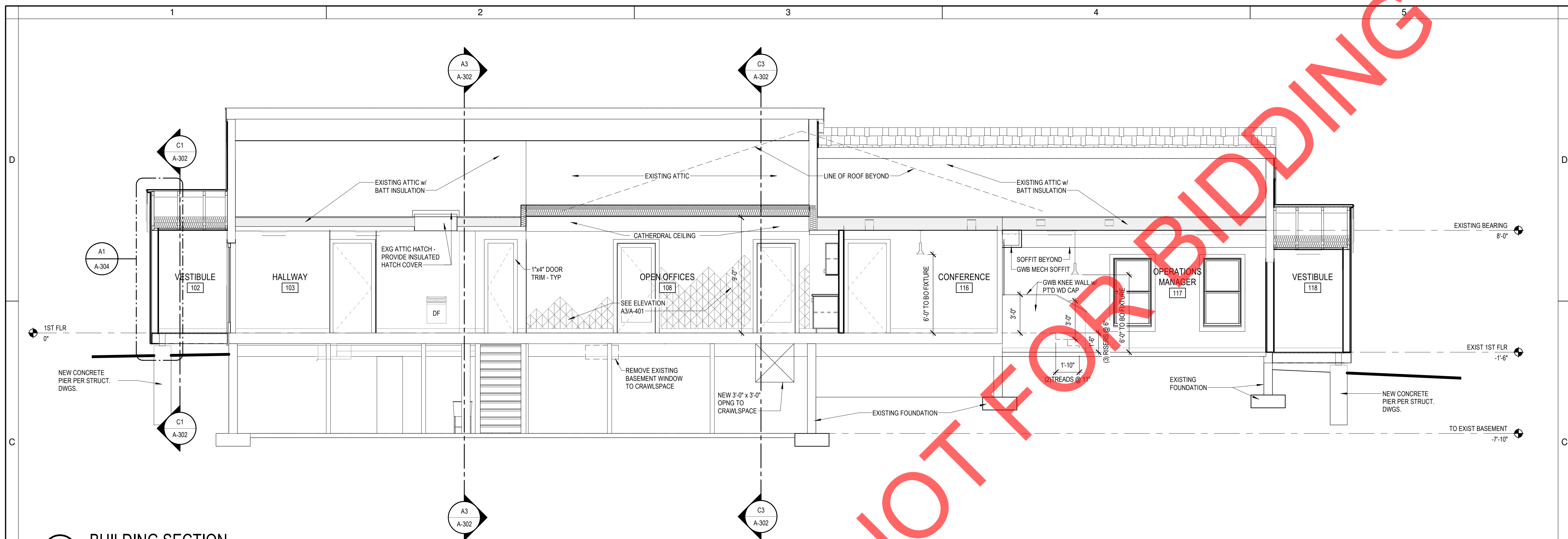
- 701 - DOOR PAINT - MATCH 201  
702 - DOOR PAINT - MATCH 301

ELEVATION-NORTH-NEW

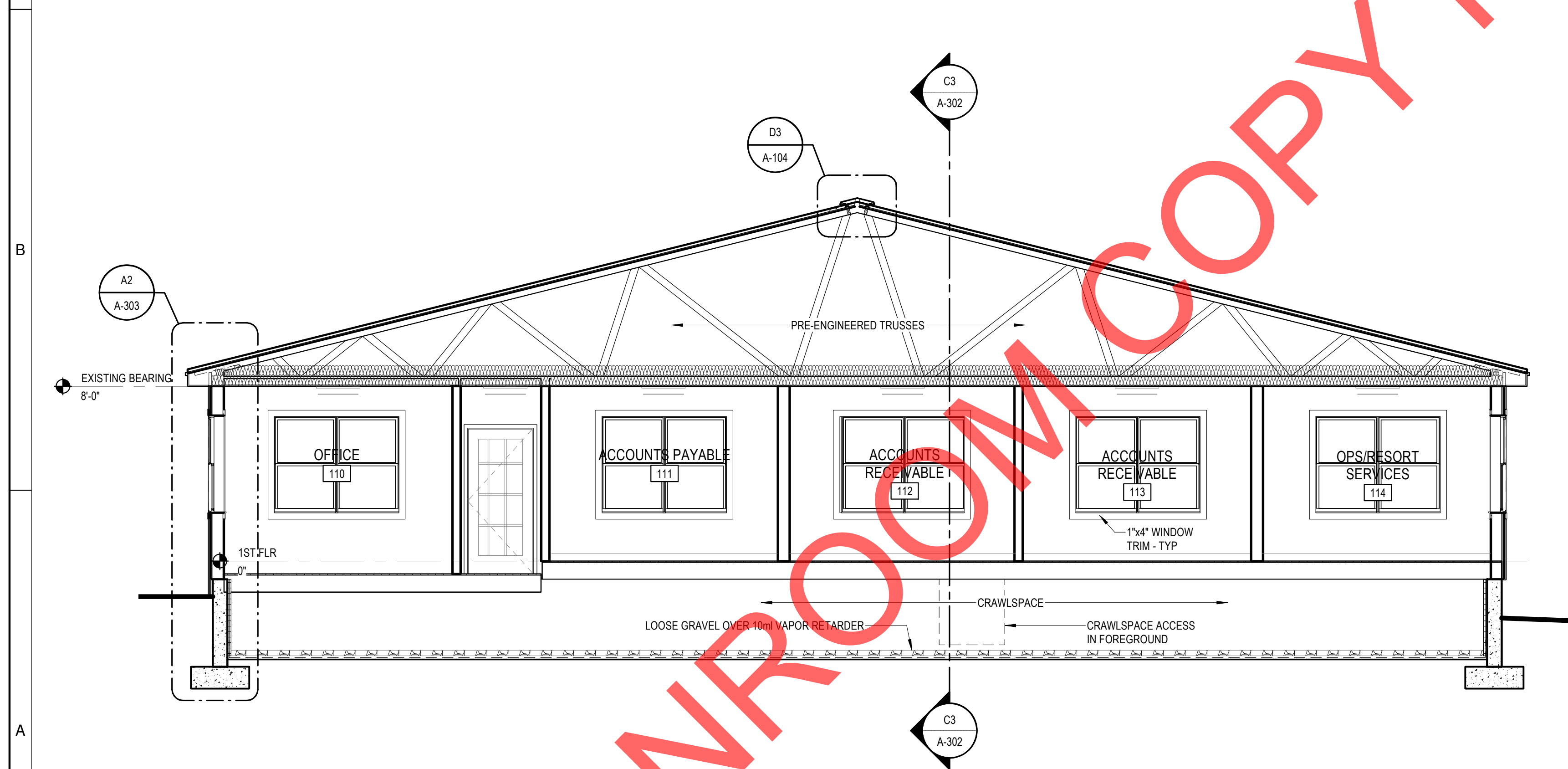
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## A-202

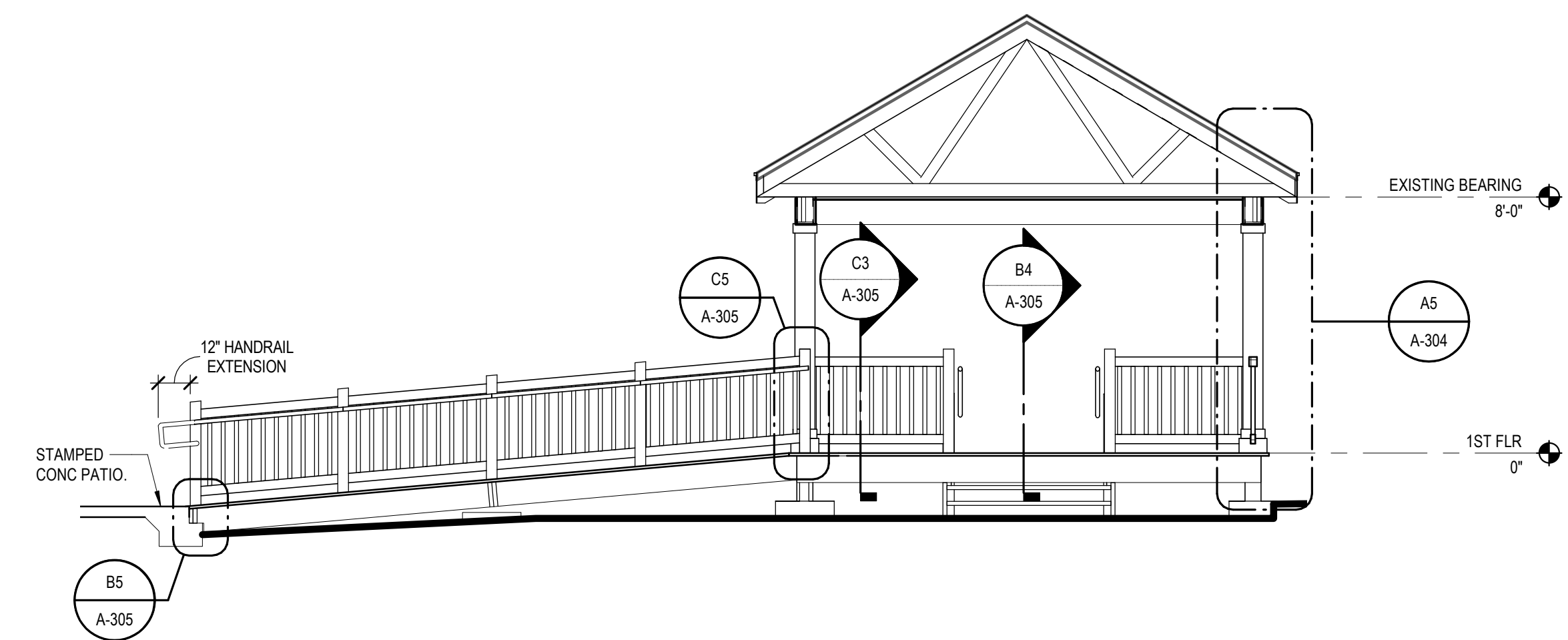




C1 BUILDING SECTION  
SCALE: 1/4" = 1'-0"



A1 BUILDING SECTION - ADDITION  
SCALE: 1/4" = 1'-0"



B4 SECTION @ RAMP #1  
SCALE: 1/4" = 1'-0"



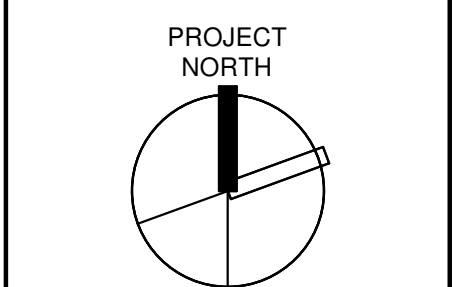
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**G-CONTRACT**



REVISIONS	

PROJECT NUMBER  
221101.00

D A T E  
4/17/23

SHEET TITLE  
**SECTIONS-  
BUILDING**



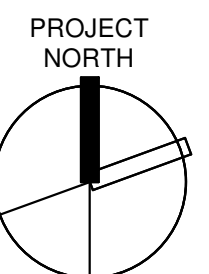
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**G-CONTRACT**



REVISIONS

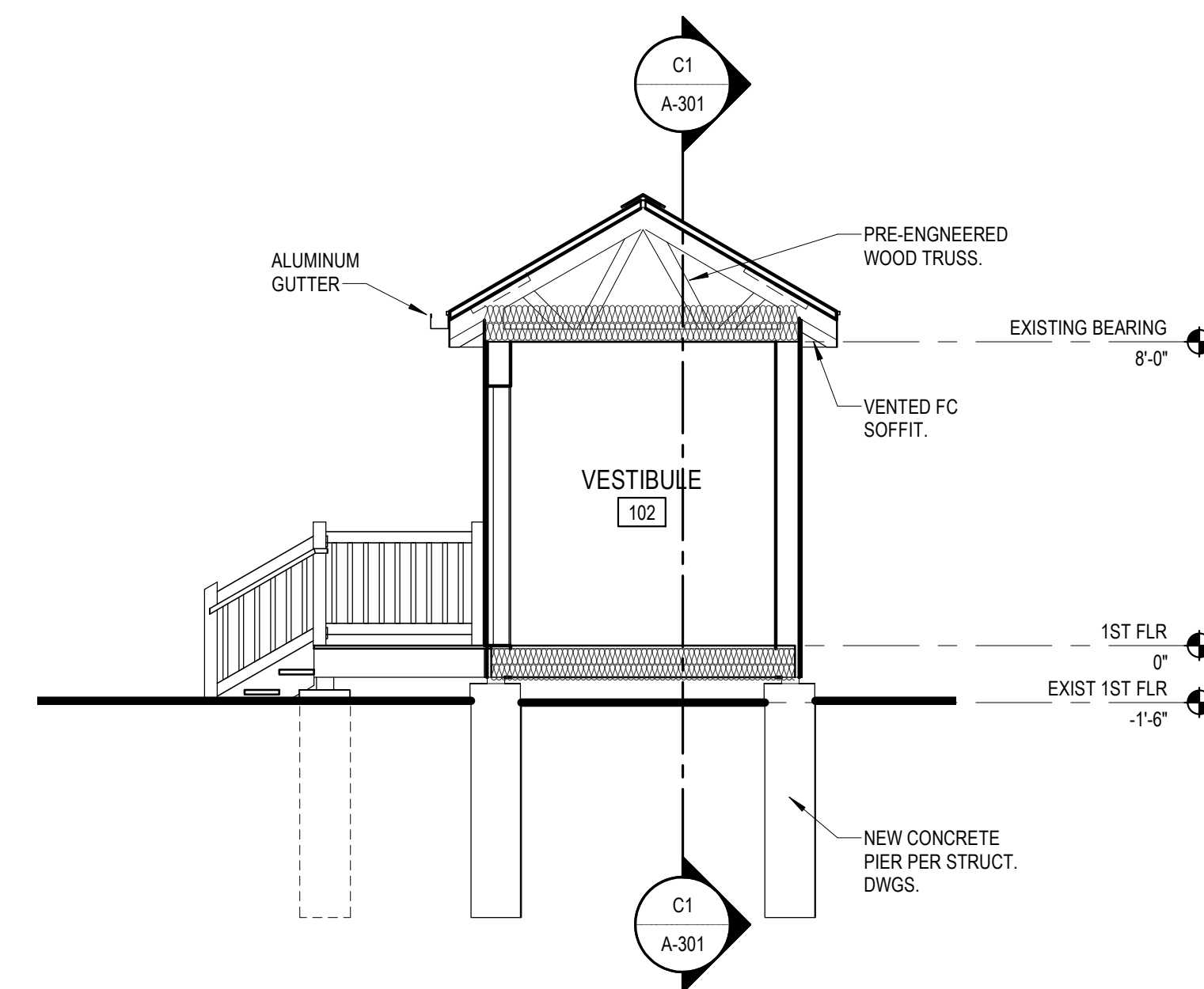
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DATE  
4/17/23

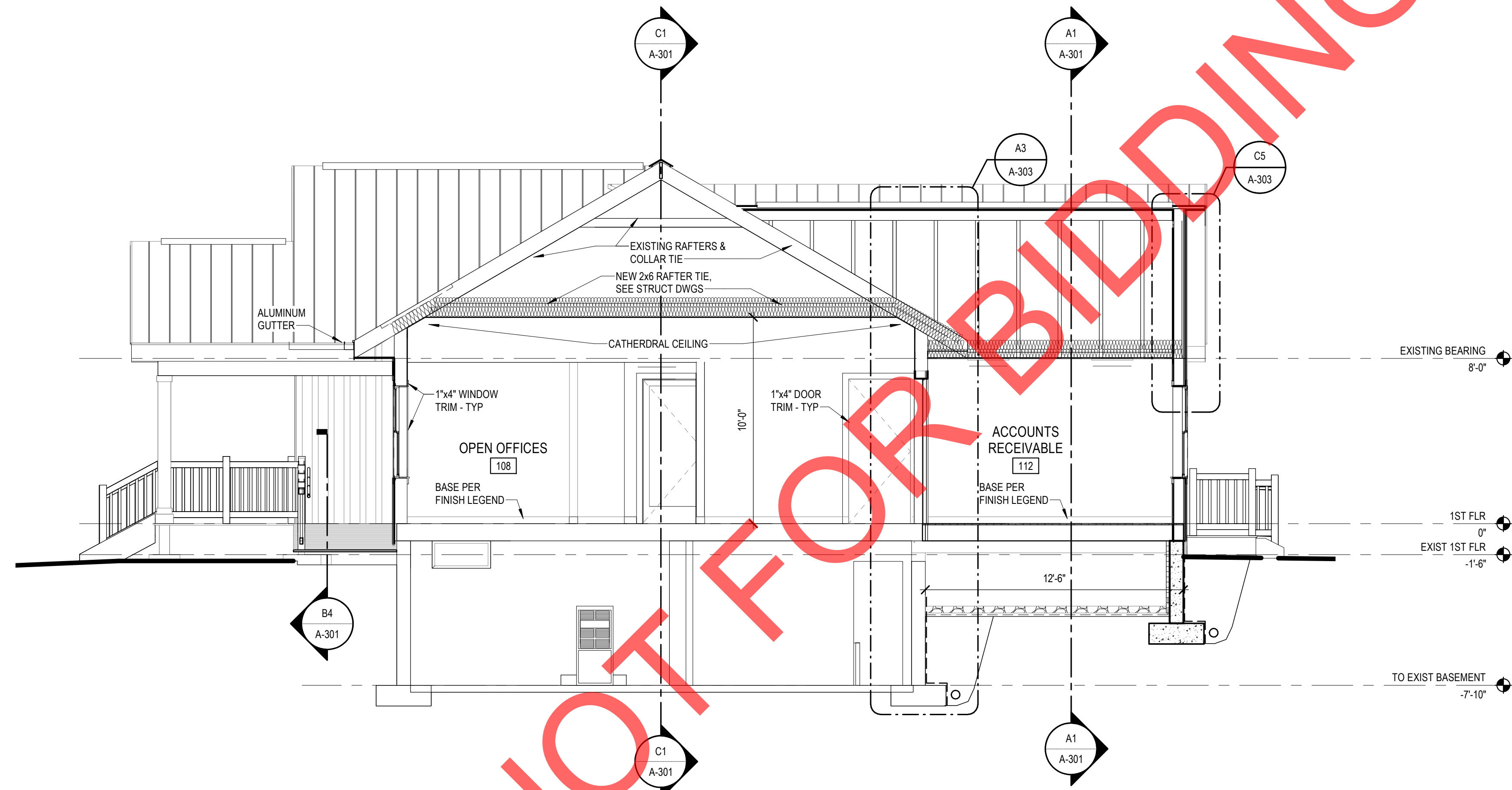
SHEET TITLE

**SECTIONS-  
BUILDING**

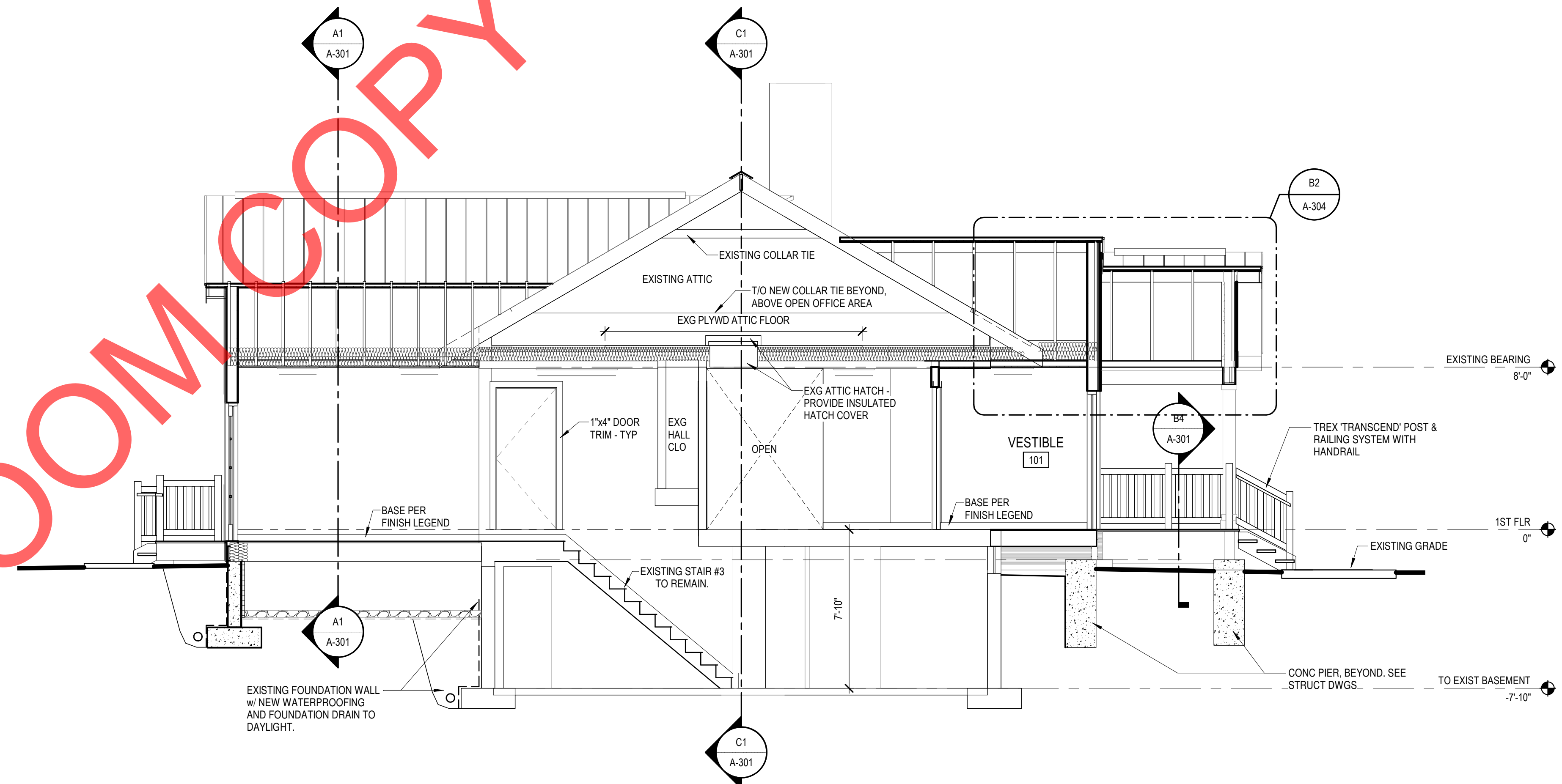
**A-302**



**C1** SECTION @ STAIR #2  
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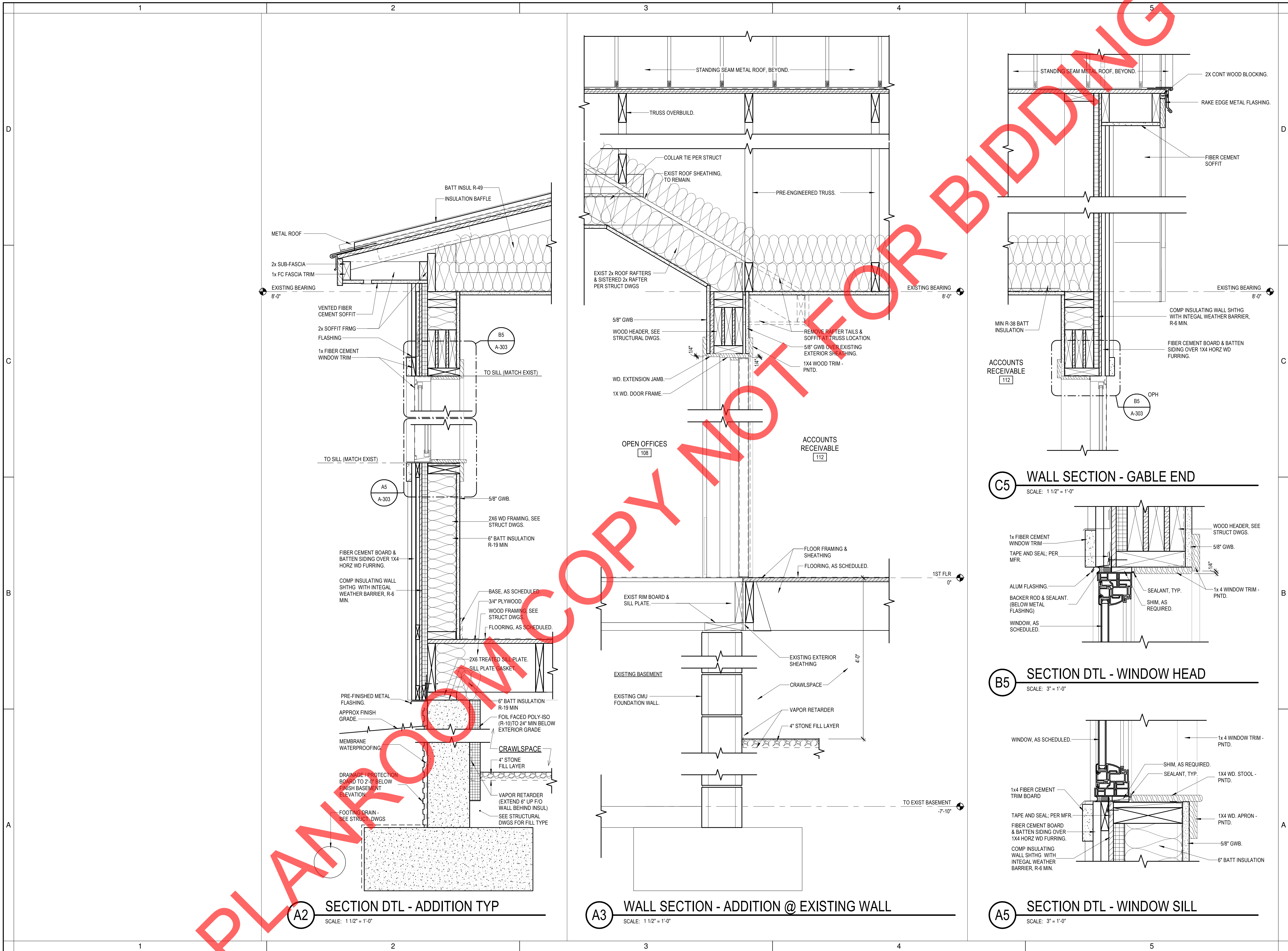


**C3** BUILDING SECTION-3  
SCALE: 1/4" = 1'-0"



**A3** BUILDING SECTION  
SCALE: 1/4" = 1'-0"





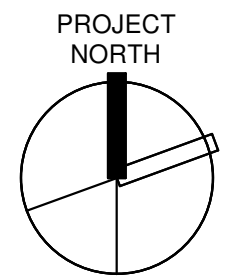
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REVISIONS


PROJECT NUMBER  
**221101.00**

D A T E  
**4/17/23**

SHEET TITLE  
**SECTIONS- WALL**

**A-303**





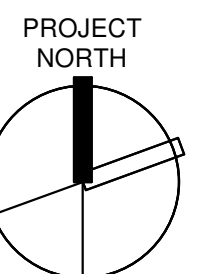
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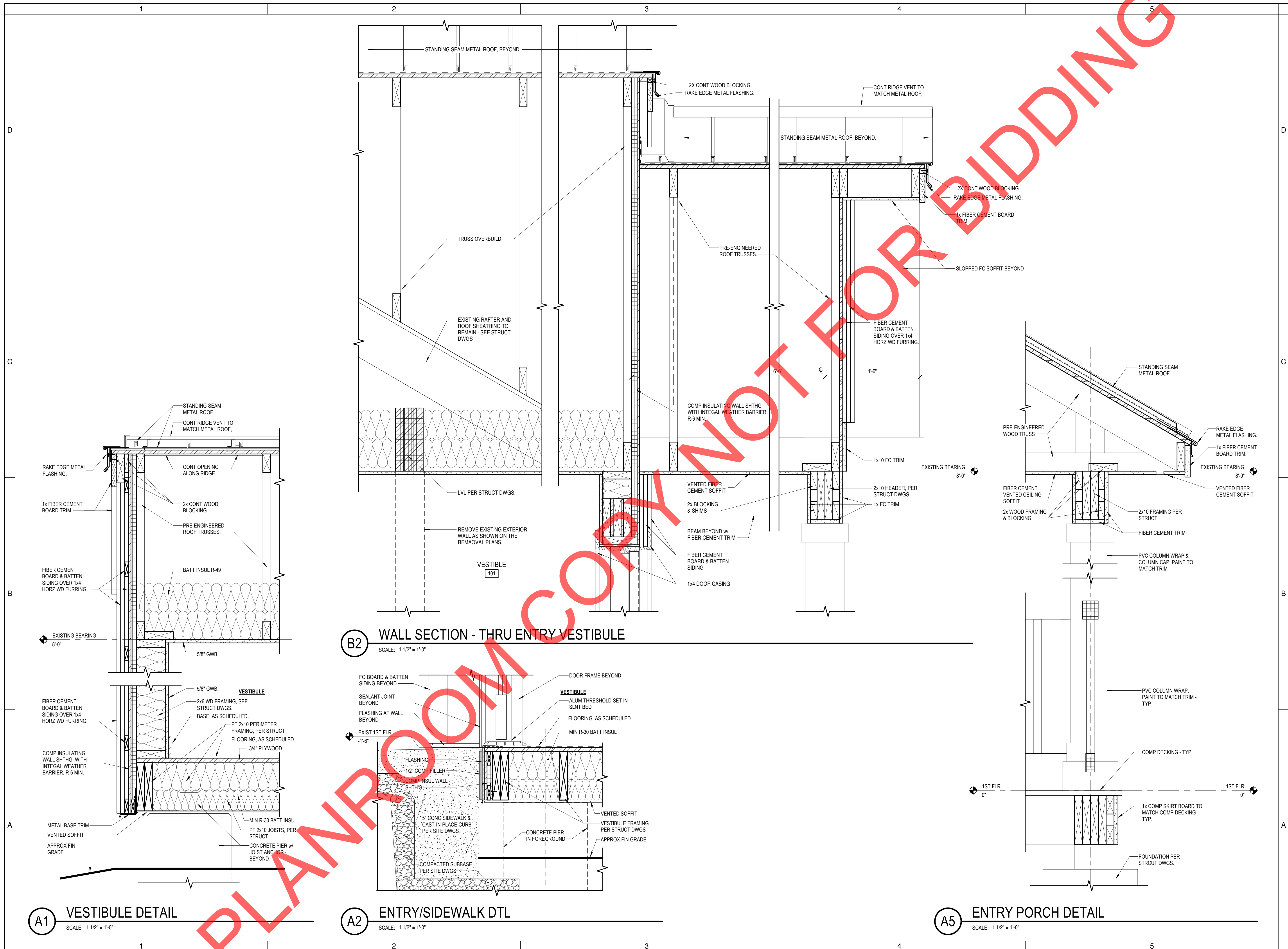
REVISIONS

PROJECT NUMBER  
221101.00

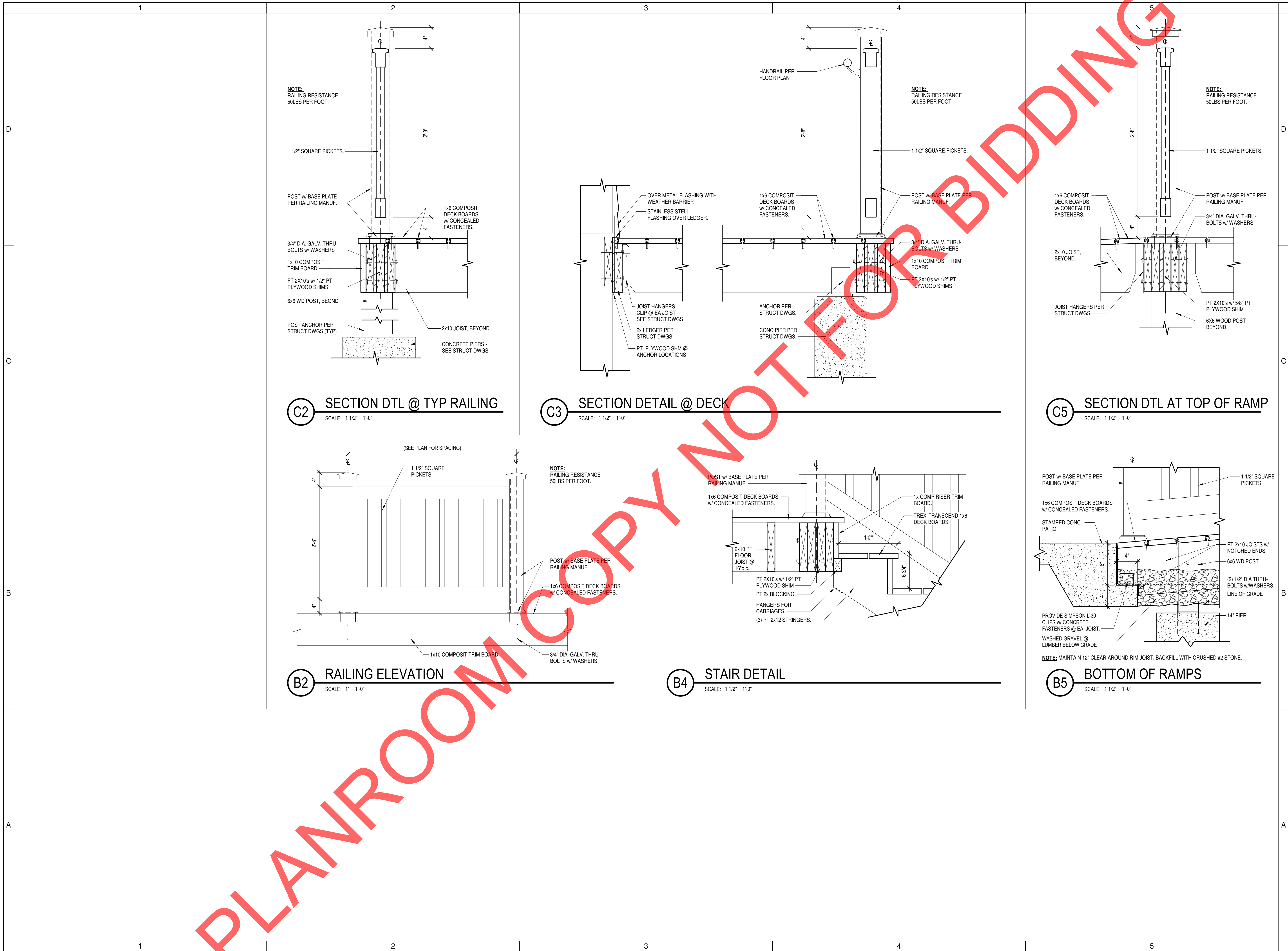
DATE  
4/17/23

SHEET TITLE  
**SECTIONS- WALL**

**A-304**







450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

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**NYS OLYMPIC REGIONAL DEVELOPMENT AUTHORITY**

**BELLEAYRE ADMINISTRATIVE BUILDING & GONDOLA STORAGE BUILDING**

**HIGHMOUNT, NEW YORK 12441**

**PROJECT TRADE**  
**G-CONTRACT**

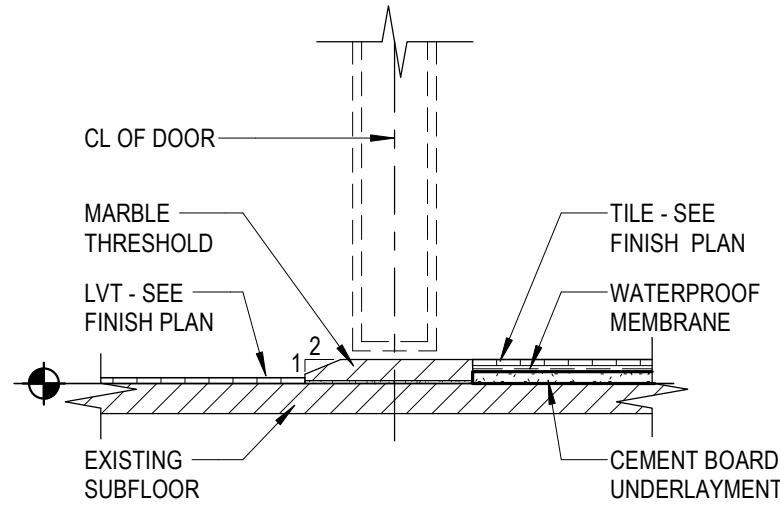
**PROJECT NORTH**

REVISIONS	

PROJECT NUMBER	
221101.00	
DATE	
4/17/23	
SHEET TITLE	
SECTIONS- WOOD DECKS, STAIRS AND RAILS	

A-305





D3 BATHROOM THRESHOLD DET  
SCALE: 3" = 1'-0"

SCHEDULE-ROOM FINISH															
ROOM NUMBER	ROOM NAME	FLOOR			BASE			WALL			CEILING			COMMENTS	ROOM NUMBER
		MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR	MATERIAL	FINISH	COLOR		
101	VESTIBLE	MAT	101		RB	401		PNT	901	GW	PNT	901			101
102	VESTIBULE	MAT	101		RB	401		PNT	901	GW	PNT	901			102
103	HALLWAY	LVT	301		RB	401		PNT	901	GW	PNT	901			103
104	HUMAN RESOURCES	CPT	102		RB	401		PNT	901	GW	PNT	901			104
105	STORAGE	VCT	302		RB	401		PNT	901	GW	PNT	901			105
106	JANITOR	VCT	302		RB	401		PNT	901	GW	PNT	901			106
107	TLT ROOM	PCT	201		CT	402		PNT/CT	901/202/203	GW	PNT	901			107
108	OPEN OFFICES	CPT	103		RB	401		PNT	901/902	GW	PNT	901			108
109	CORR	CPT	103		RB	401		PNT	901	GW	PNT	901			109
110	OFFICE	CPT	102		RB	401		PNT	901/903	GW	PNT	901			110
111	ACCOUNTS PAYABLE	CPT	102		RB	401		PNT	901/903	GW	PNT	901			111
112	ACCOUNTS RECEIVABLE	CPT	102		RB	401		PNT	901/903	GW	PNT	901			112
113	ACCOUNTS RECEIVABLE	CPT	102		RB	401		PNT	901/903	GW	PNT	901			113
114	OPS/RESORT SERVICES	CPT	102		RB	401		PNT	901/903	GW	PNT	901			114
115	HALLWAY	CPT	103		RB	401		PNT	901	GW	PNT	901			115
116	CONFERENCE	CPT	102/103		RB	401		PNT	901/902	GW	PNT	901	SEE PLAN FOR ACCENT CARPET AND PAINT LOCATIONS.		116
117	OPERATIONS MANAGER	CPT	102/103		RB	401		PNT	901/902	GW	PNT	901	SEE PLAN FOR ACCENT CARPET AND PAINT LOCATIONS.		117
118	VESTIBULE	MAT	101		RB	401		PNT	901	GW	PNT	901			118

B1 ROOM SCHEDULE  
SCALE: NO SCALE

100 CARPET (CPT, MAT)

101 (MAT) - TARKETT ASSERTIVE ACTION; COLOR: 26201 CHROMIUM; SIZE: 24" X 24" TILE  
102 (CPT) - TARKETT SHEARED HERRINGBONE; COLOR: TYPESET; SIZE: 18"X36" TILE; INSTALLATION: ASHLAR  
103 (CPT) - TARKETT AIDA CLOTH; COLOR: TYPESET; SIZE: 18"X36" TILE; INSTALLATION: ASHLAR

200 TILE AND STONE (TILE, STN)

201 (PCT) - BEST TILE; RESIDENCE; COLOR: BLACK; SIZE: 12"X24"  
202 (CT) - STONEPEAK AURA GLAZED WALL TILE; COLOR: JET; FINISH: MATTE; SIZE: 4"X12"; INSTALLATION: VERTICAL ASHLAR  
203 (CT) - STONEPEAK AURA GLAZED WALL TILE; COLOR: JET; FINISH: GLOSSY; SIZE: 4"X12"; INSTALLATION: VERTICAL ASHLAR

PROVIDE SCHLUTER DILEX AT FLOOR TO WALL JOINT. FINISH: SATIN BRASS  
PROVIDE DECORATIVE SCHLUTER JOLLY STRIPS AT MIRROR, REFER TO ELEVATIONS FOR LOCATIONS. FINISH: SATIN BRASS

300 RESILIENT FLOORING, RUBBER, AND WOOD (LVT, RUB, WD)

301 (LVT) - TARKETT EVENT ECK CLASSIC PLANK; 30 MIL WEAR LAYER; COLOR: 3309 LIMED OAK; SIZE: 4"X36", .12" THICK  
302 (VCT) - TARKETT; COLOR: 1365 DARK TAUPPE; SIZE: 12"X12", 1/8" THICK  
303 (RUB) - TARKETT STAIR ACCESSORIES; RUBBER TREADS WITH INTEGRATED RISER; BAMBOO SURFACE TEXTURE ON TREADS; COLOR: TO MATCH RB-401

350 RESINOUS FLOORING (EPX) - NOT USED

400 BASE (RB, RBR, TILE)

401 (RB) - JOHNSONITE; 4" THERMOPLASTIC RUBBER BASE; TOELESS AT CARPET, WITH TOE AT RESILIENT; COLOR: BURNT UMBER.

500 PLASTIC LAMINATE, SOLID SURFACE (PLAM, SSM)

501 (SSM) WILSONART - COLOR: AVALANCHE MELANGE  
502 (PLAM) WILSONART - COLOR: LANDMARK WOOD 7981K-12 SOFT GRAIN FINISH  
503 (PLAM) WILSONART - COLOR: BRITANNY BLUE D321-90 MATTE FINISH

700 WALL COVERINGS (VWC, FWC, FRP) - NOT USED

800 JOB SPECIFIC (WOOD, FIBERGLASS PANEL, METAL, WINDOW TREATMENTS, ACOUSTIC WALL TILE)

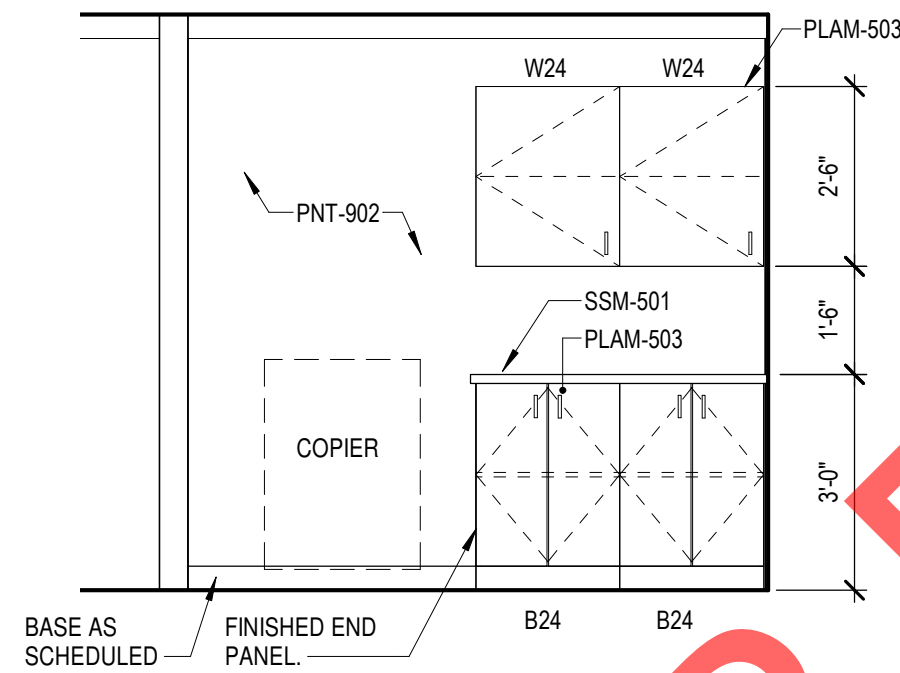
801 (AWT) KIREI ECHOPANEL; ECHOTILE GEOMETRY, DELTA TILE 7.9" X 7.9" X 10.9"; COLOR: 444 GRAY  
802 (AWT) KIREI ECHOPANEL; ECHOTILE GEOMETRY, DELTA TILE 7.9" X 7.9" X 10.9"; COLOR: 468 VANILLA  
803 (AWT) KIREI ECHOPANEL; ECHOTILE GEOMETRY, DELTA TILE 7.9" X 7.9" X 10.9"; COLOR: 349 VINEYARD  
804 (AWT) KIREI ECHOPANEL; ECHOTILE GEOMETRY, DELTA TILE 7.9" X 7.9" X 10.9"; COLOR: 365 NAVY

900 PAINT, STAIN (PNT, STAIN)

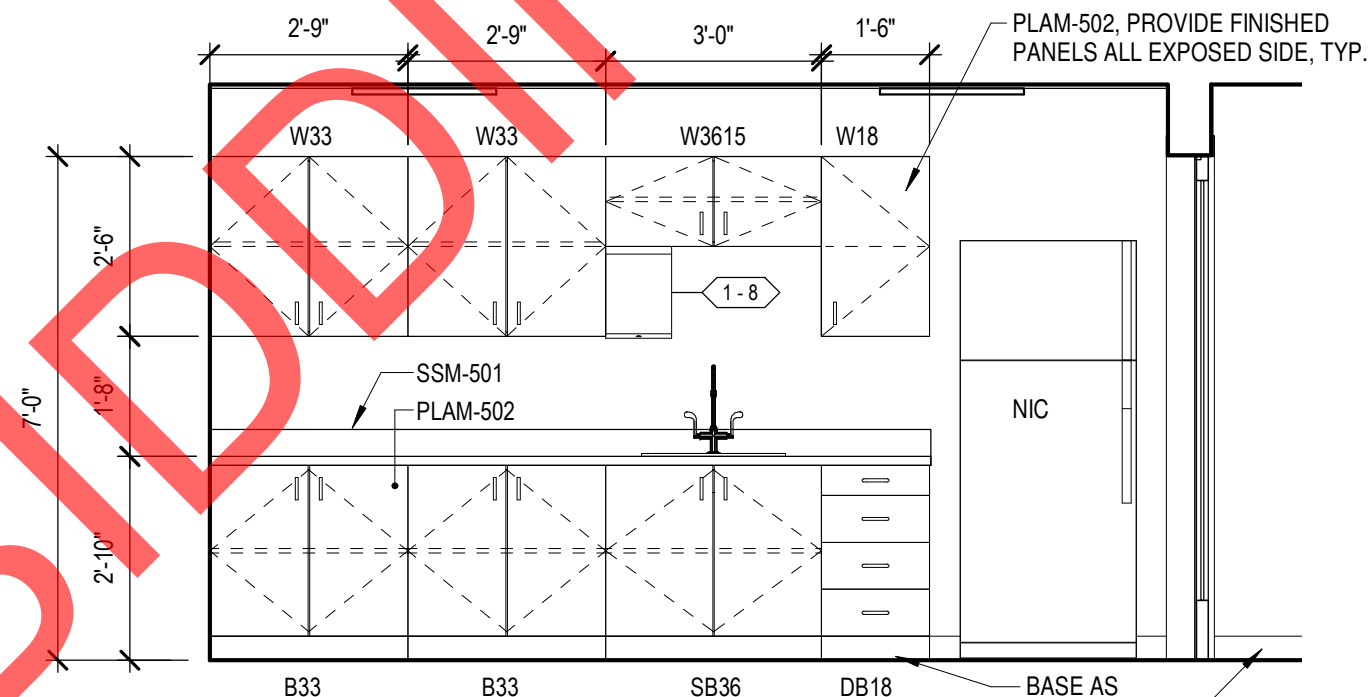
901 (PNT) SHERWIN WILLIAMS, COLOR: SW9581 COTTON (TYP WHITE)  
902 (PNT) SHERWIN WILLIAMS, COLOR: SW9141 WATERLOO  
903 (PNT) SHERWIN WILLIAMS, COLOR: SW7059 UNUSUAL GRAY

FINISH NOTES:  
DOOR/FRAMES - SEMIGLOSS FINISH  
WALLS - EGGSHELL FINISH  
CEILINGS - FLAT FINISH

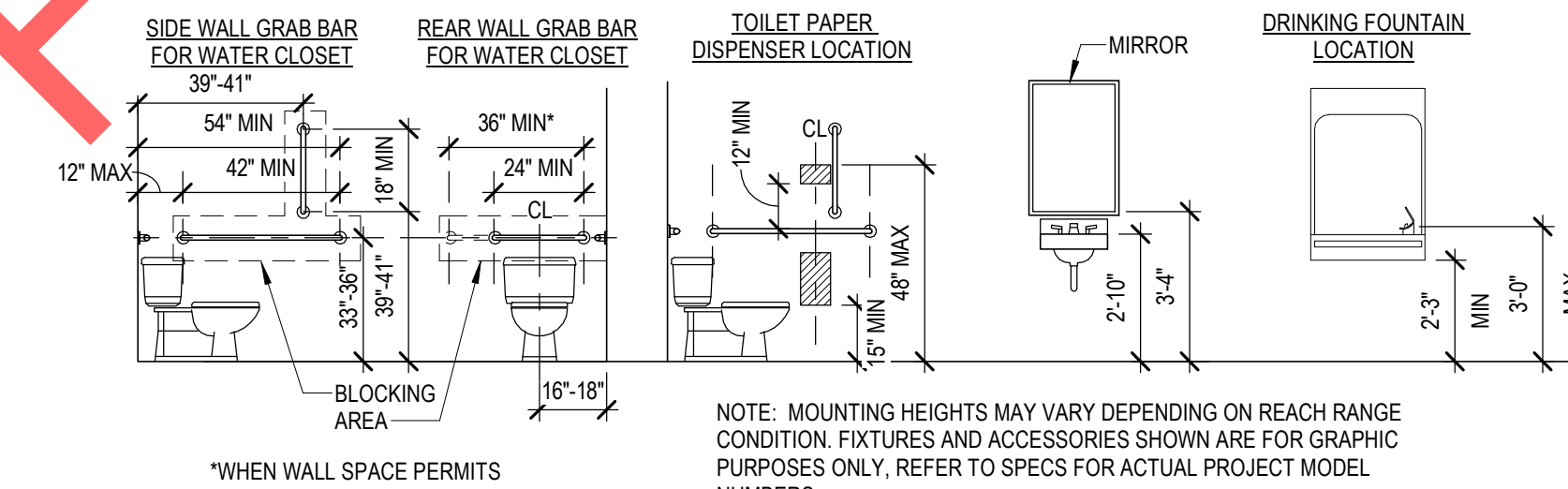
A1 FINISH LEGEND  
SCALE: NO SCALE



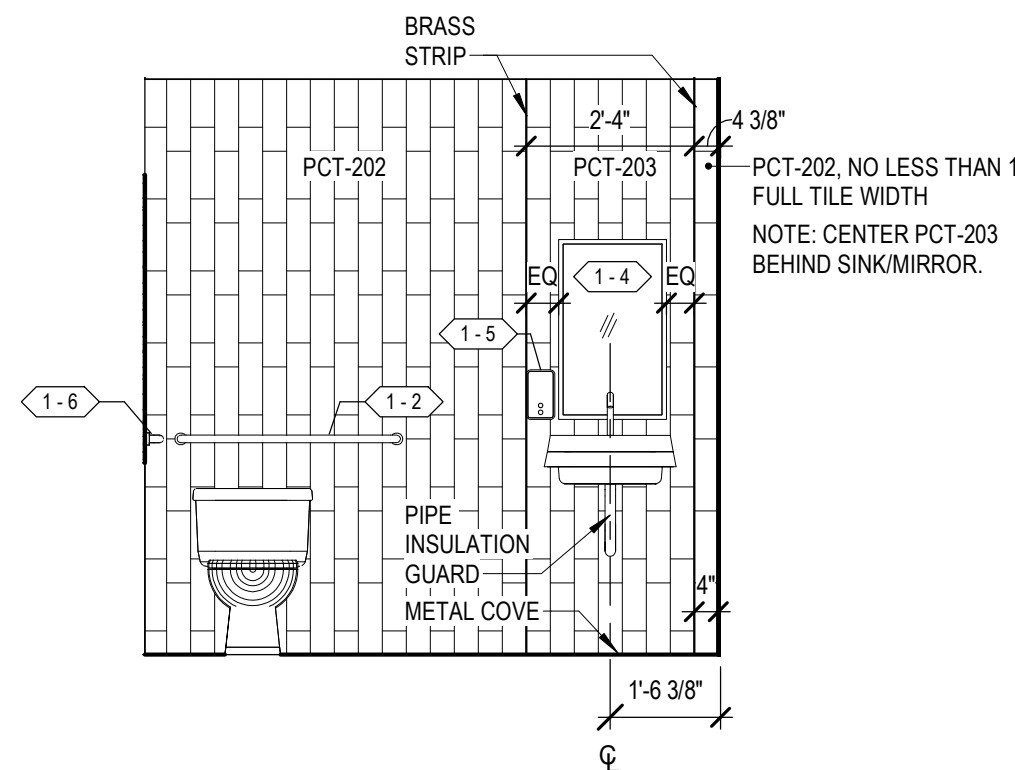
D4 ELEVATION - COPY AREA  
SCALE: 3/8" = 1'-0"



D5 ELEVATION - KITCHENETTE  
SCALE: 3/8" = 1'-0"



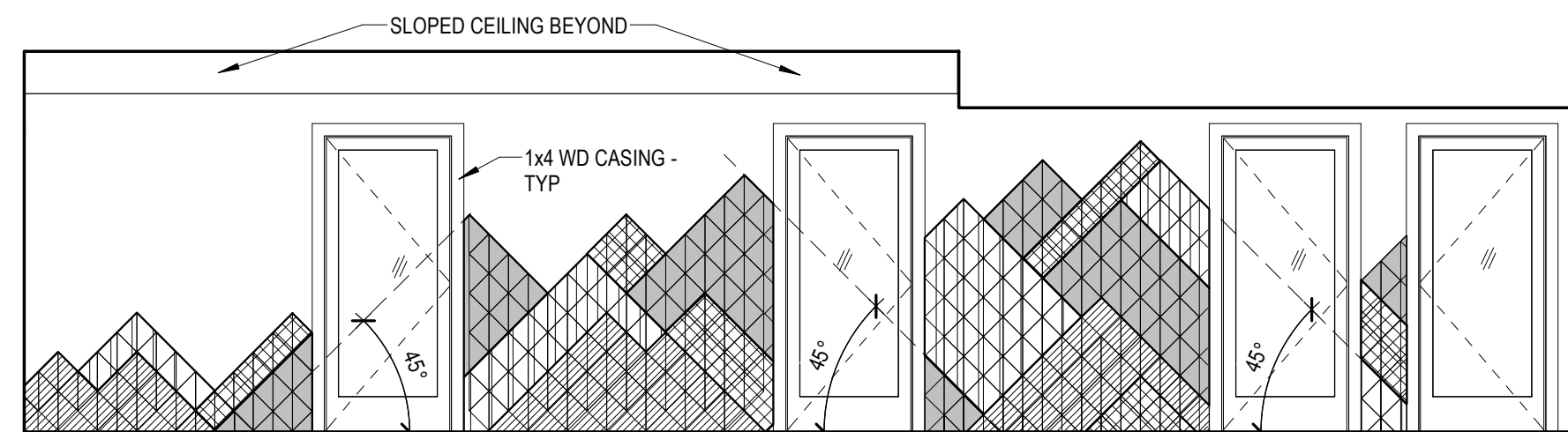
C4 TYPICAL ACCESSORY MOUNTING HEIGHTS  
SCALE: 1/4" = 1'-0"



B4 TOILET ROOM ELEVATION & ACCESSORIES  
SCALE: 3/8" = 1'-0"

SCHEDULE-TOILET ACCESSORIES AND MIRRORS				
TAG PREFIX	MARK	ITEM	MANUFACTURER AND MDL NO.	TYPE REMARKS
1	1	RECESSED HINGED HOOD STACKING ROLLS TOILET PAPER DISPENSER	BRADLEY CORPORATION MDL 5127	
1	2	36" HORIZ 1 1/2" GRAB BAR WITH CONCEALED MOUNTING	BRADLEY CORPORATION 812	
1	3	18" VERT 1 1/2" GRAB BAR WITH CONCEALED MOUNTING	BRADLEY CORPORATION 812	
1	4	SURFACE MOUNTED FRAMELESS MIRROR	BRADLEY CORPORATION	
1	5	SOAP DISPENSER	BRADLEY 646	
1	6	42" HORIZ 1 1/2" GRAB BAR WITH CONCEALED MOUNTING	BRADLEY 812	
1	7	SEMI-RECESSED TOWEL DISPENSER/ TRASH	BRADLEY CORPORATION 2252-10	
1	8	SURFACE MOUNTED TOWEL DISPENSER	BRADLEY 250-15	
1	9	UTILITY SHELF/MOP HOLDER	BRADLEY 9983	

\* PROVIDE BLOCKING FOR ALL ACCESSORIES



A3 OFFICE SOUND ACCENT  
SCALE: 1/4" = 1'-0"

NOTE: INSTALL STARTING AT LEFT MOST WALL AND WORK TO THE RIGHT; ALIGN COLORS ACROSS DOOR OPENINGS.



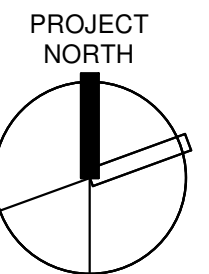
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA  
STORAGE BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
**G-CONTRACT**



R E V I S I O N S

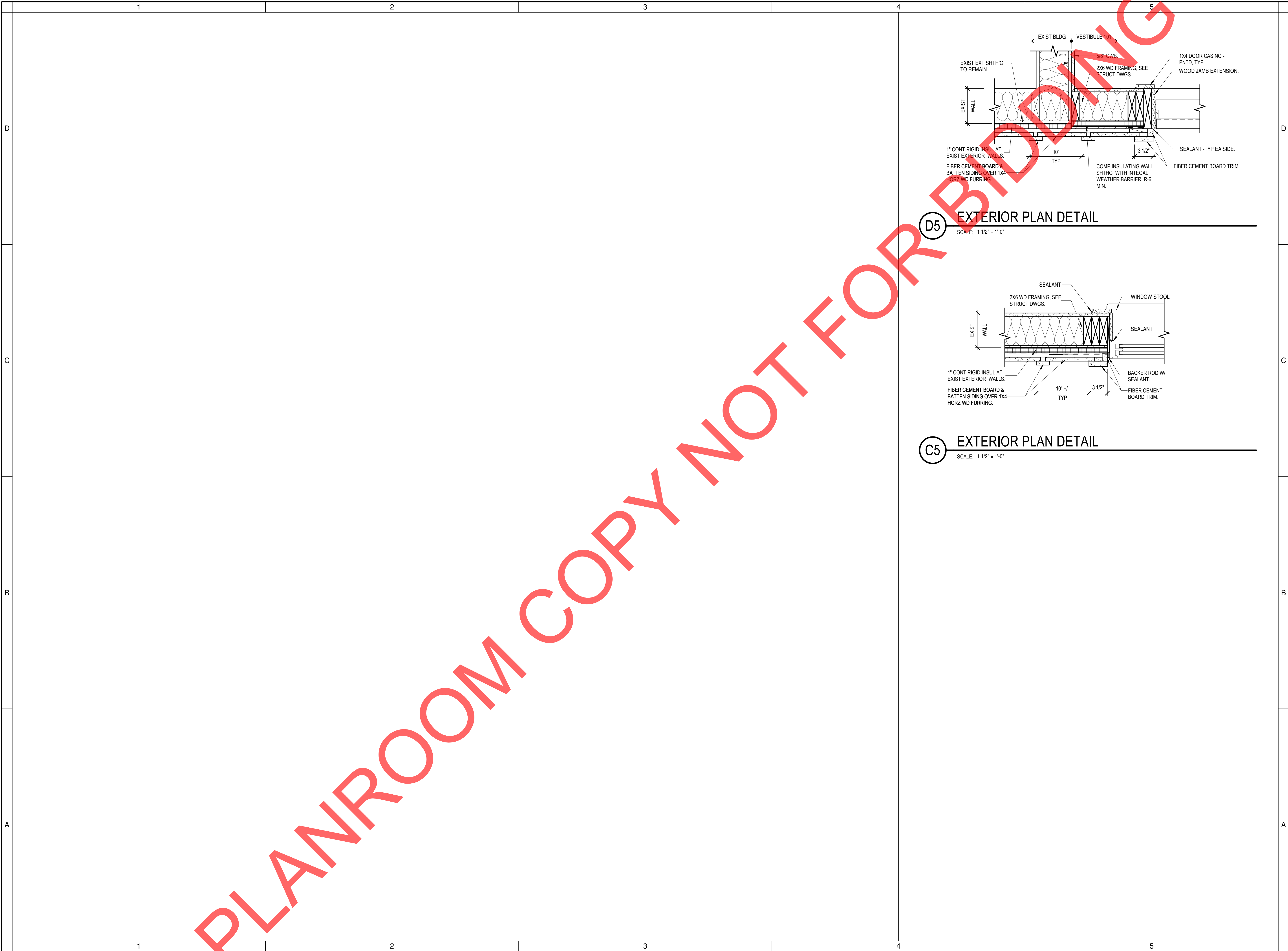

PROJECT NUMBER  
**221101.00**

D A T E  
**4/17/23**

SHEET TITLE  
**ENLARGED PLANS,  
ELEVATIONS,  
ROOM SCHEDULE  
& LEGEND**

**A-401**





450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

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**NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY**

**BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA  
STORAGE BUILDING**

**HIGHMOUNT, NEW YORK  
12441**

**PROJECT TRADE  
G-CONTRACT**

PROJECT  
NORTH

R E V I S I O N S		

PROJECT NUMBER	
221101.00	

D	A	T	E
	4/17/23		

SHEET TITLE	
DETAILS-	EXTERIOR

A-501



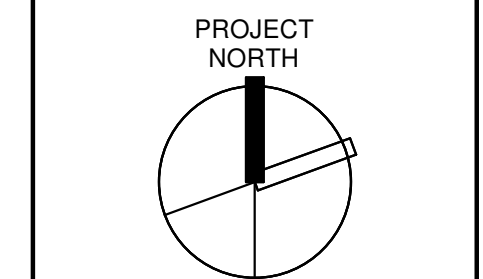
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING, REMOTE RESTROOM  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G - CONTRACT



REVISIONS

ORDA PROJECT NUM

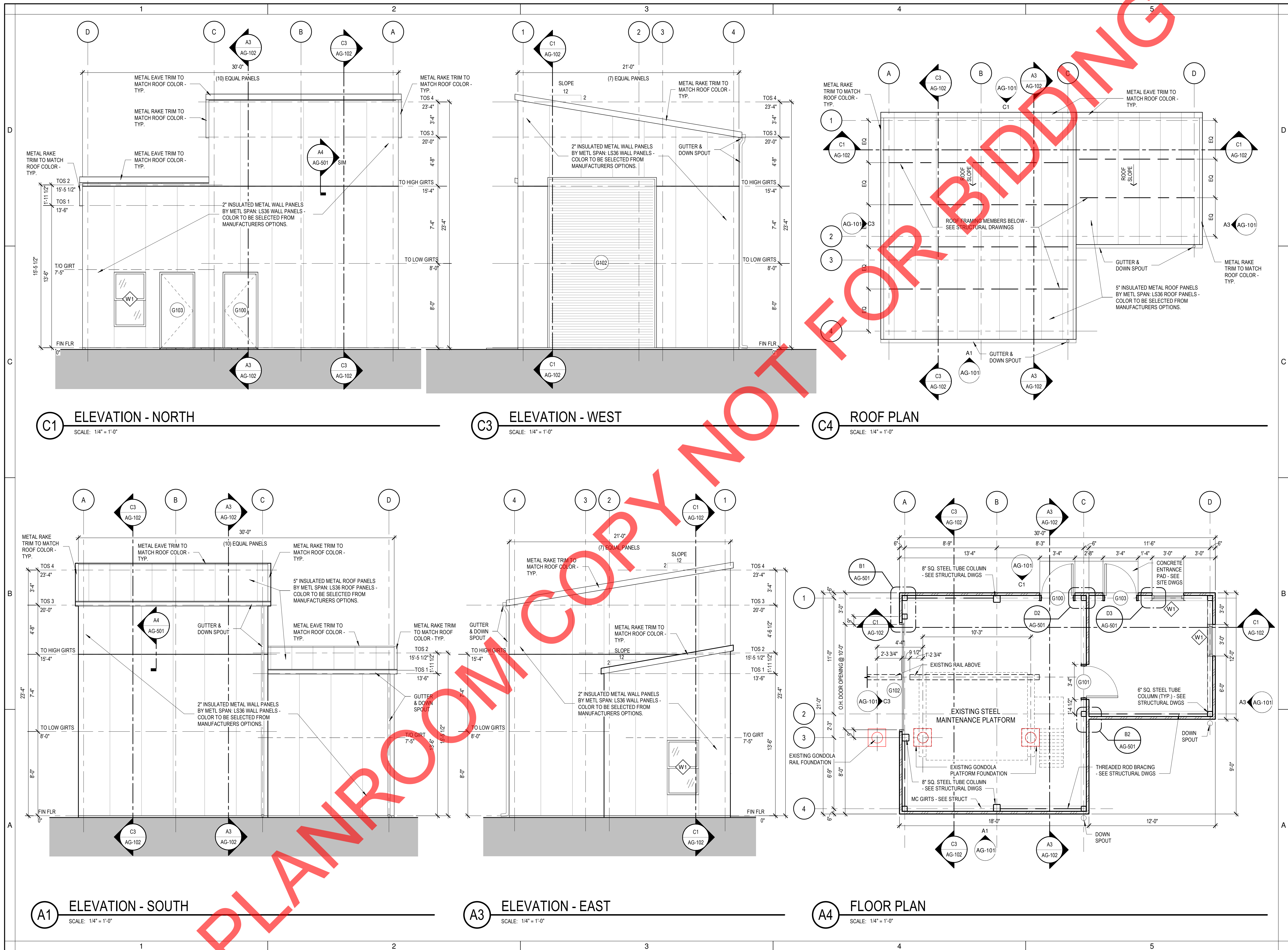
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221101.00

D A T E  
4/17/23

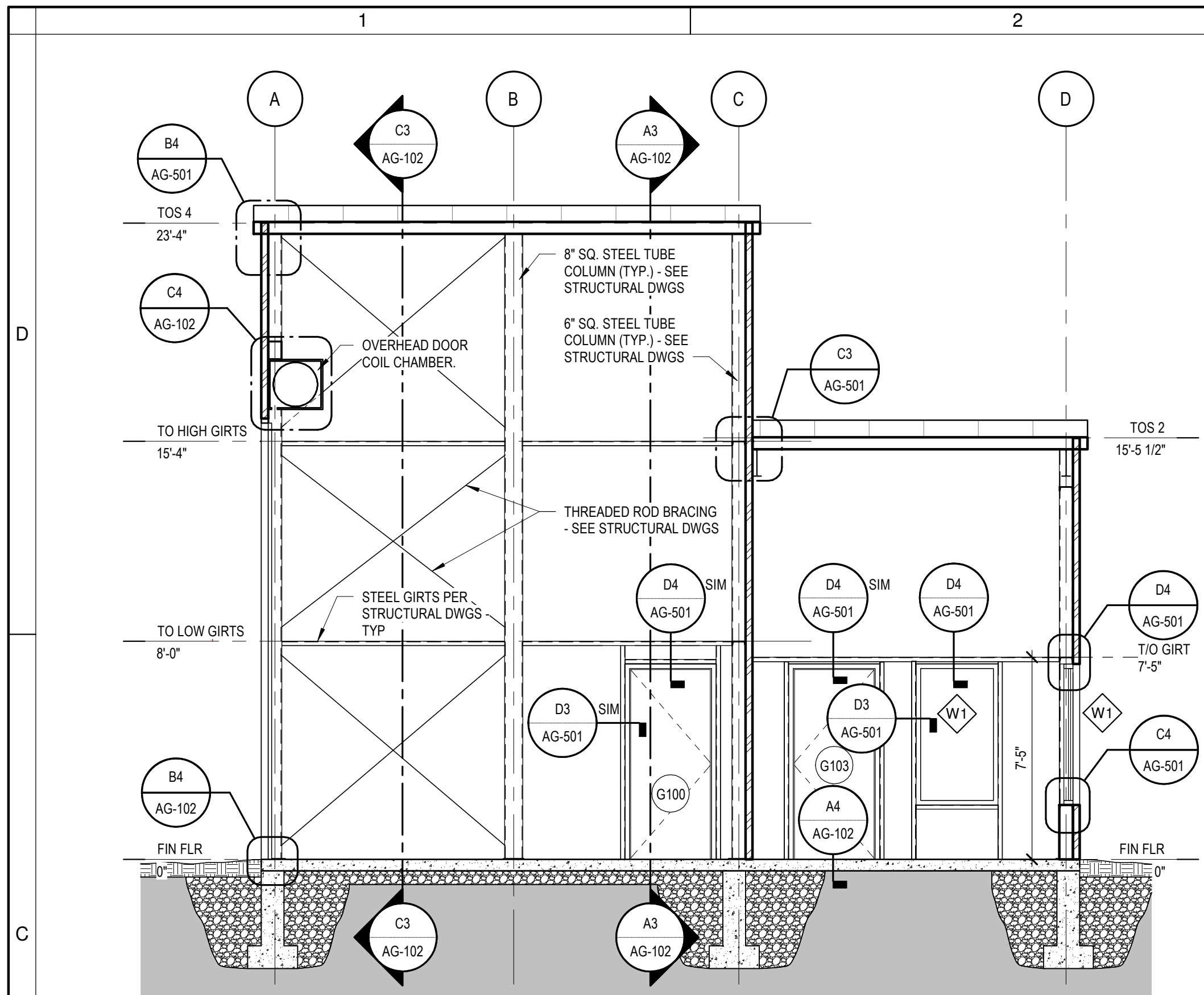
SHEET TITLE

GONDOLA  
STORAGE BLDG  
FLOOR PLAN,  
ELEVATIONS &  
BLDG SECTION

AG-101

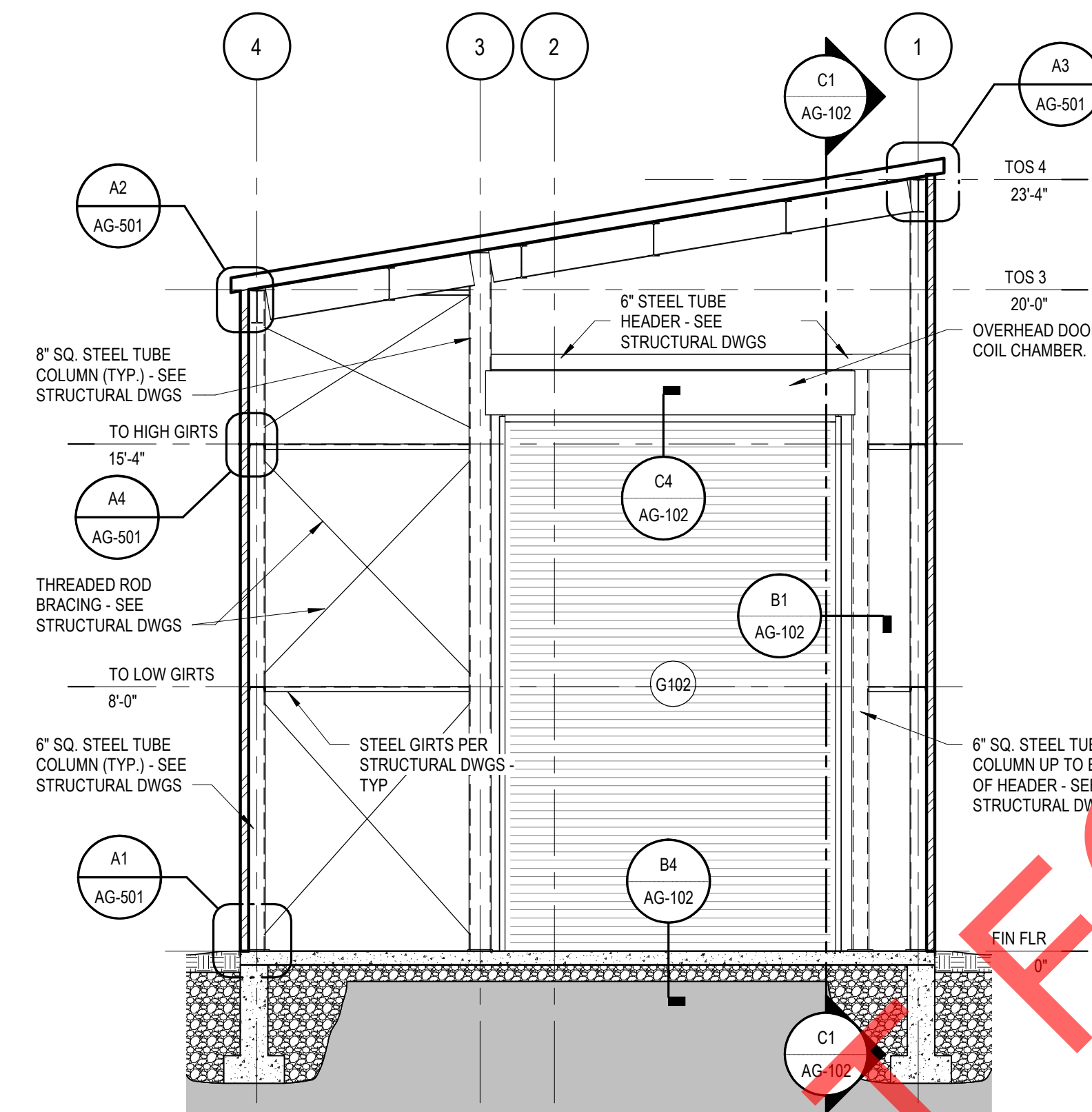






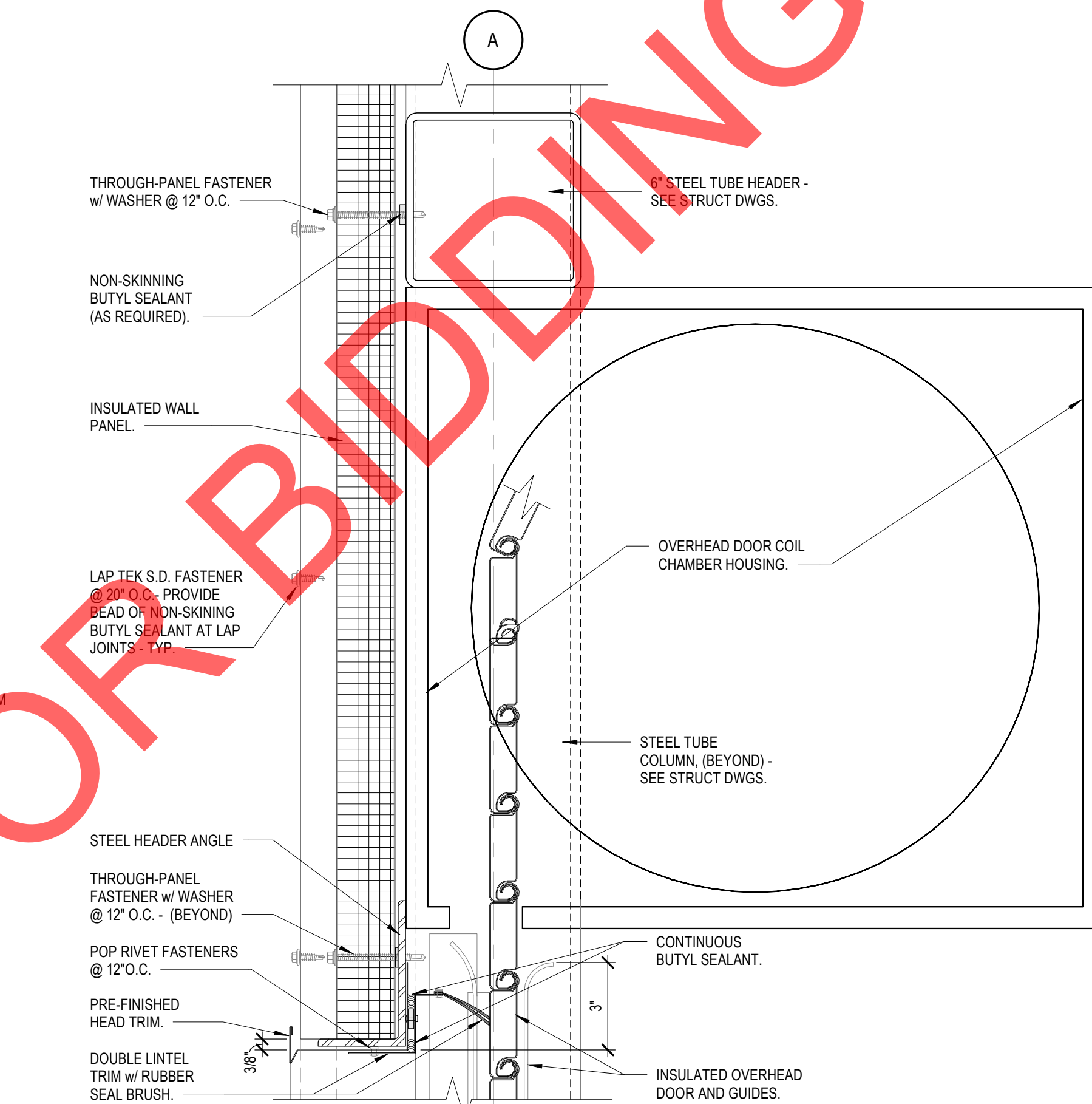
**C1** BLDG SECTION - A

SCALE: 1/4" = 1'-0"



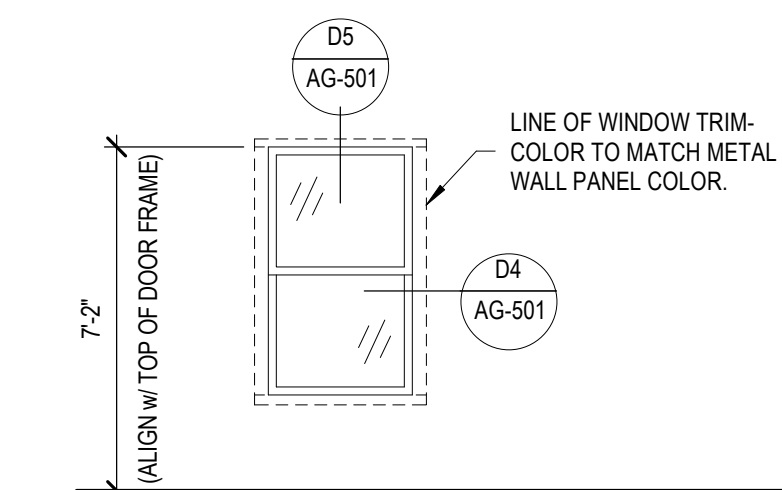
**C3** BLDG SECTION - B

SCALE: 1/4" = 1'-0"



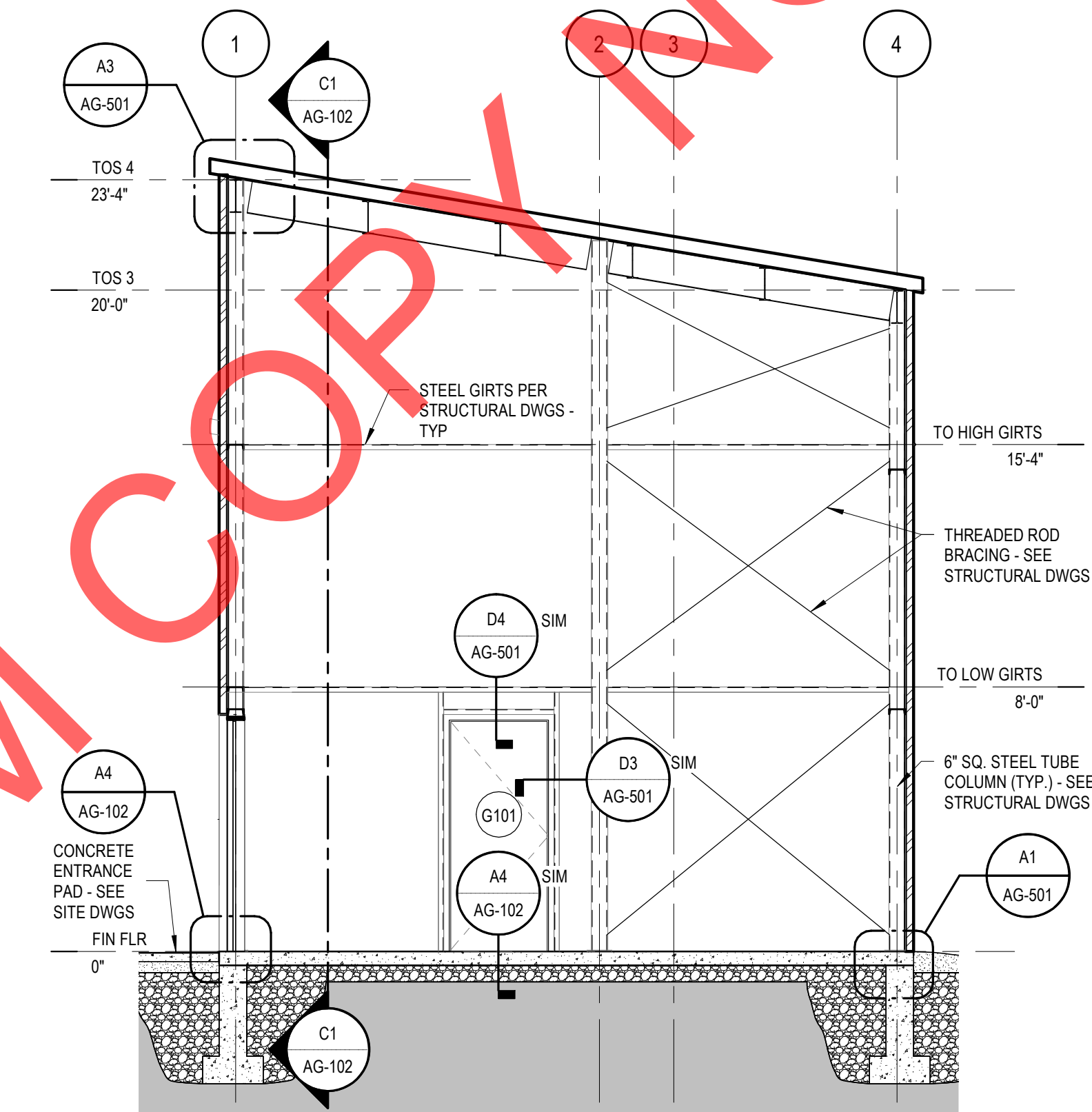
**C4** SECTION - OH DOOR HEAD

SCALE: 3" = 1'-0"



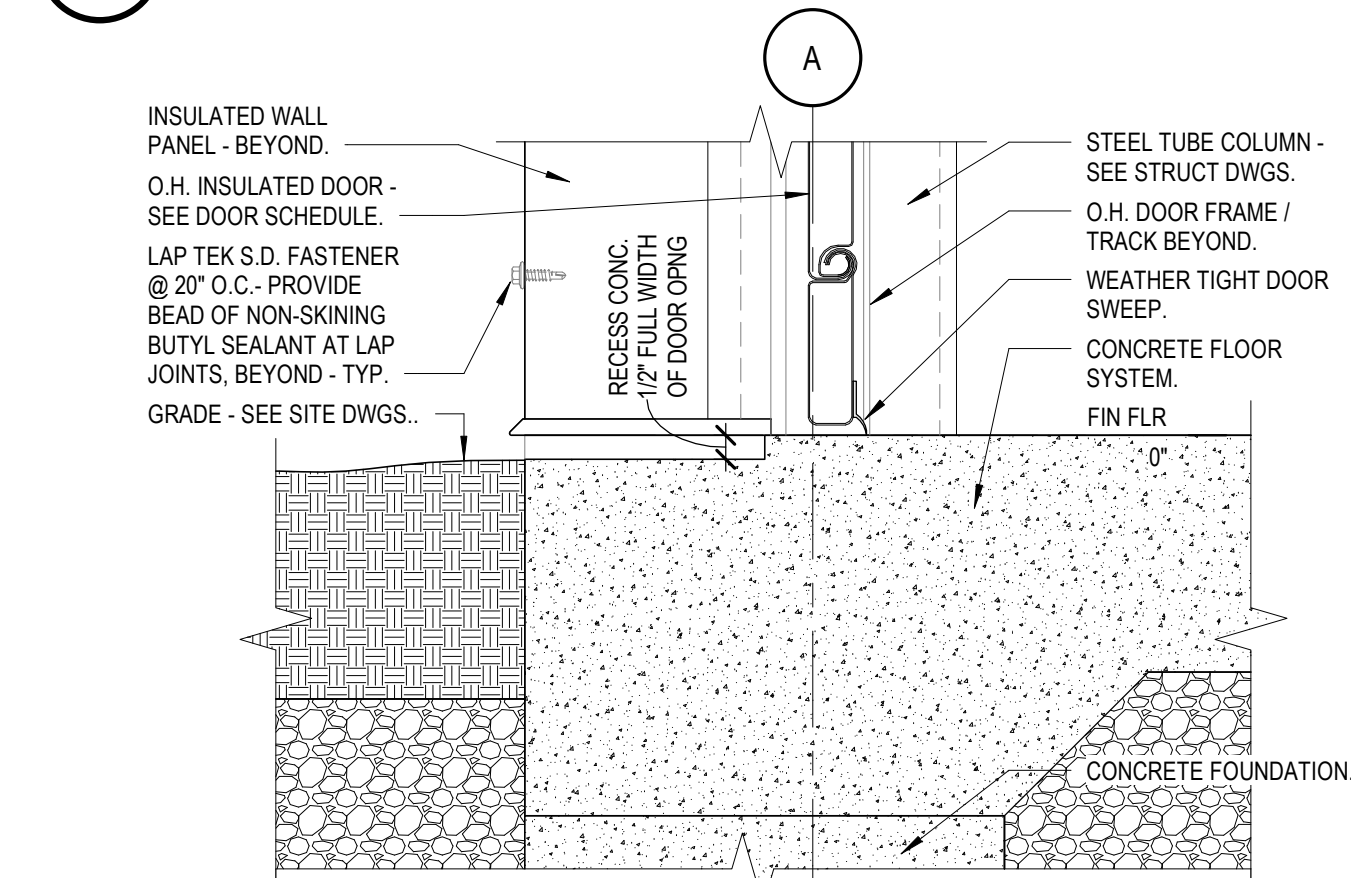
**B1** WINDOW TYPES

SCALE: NO SCALE



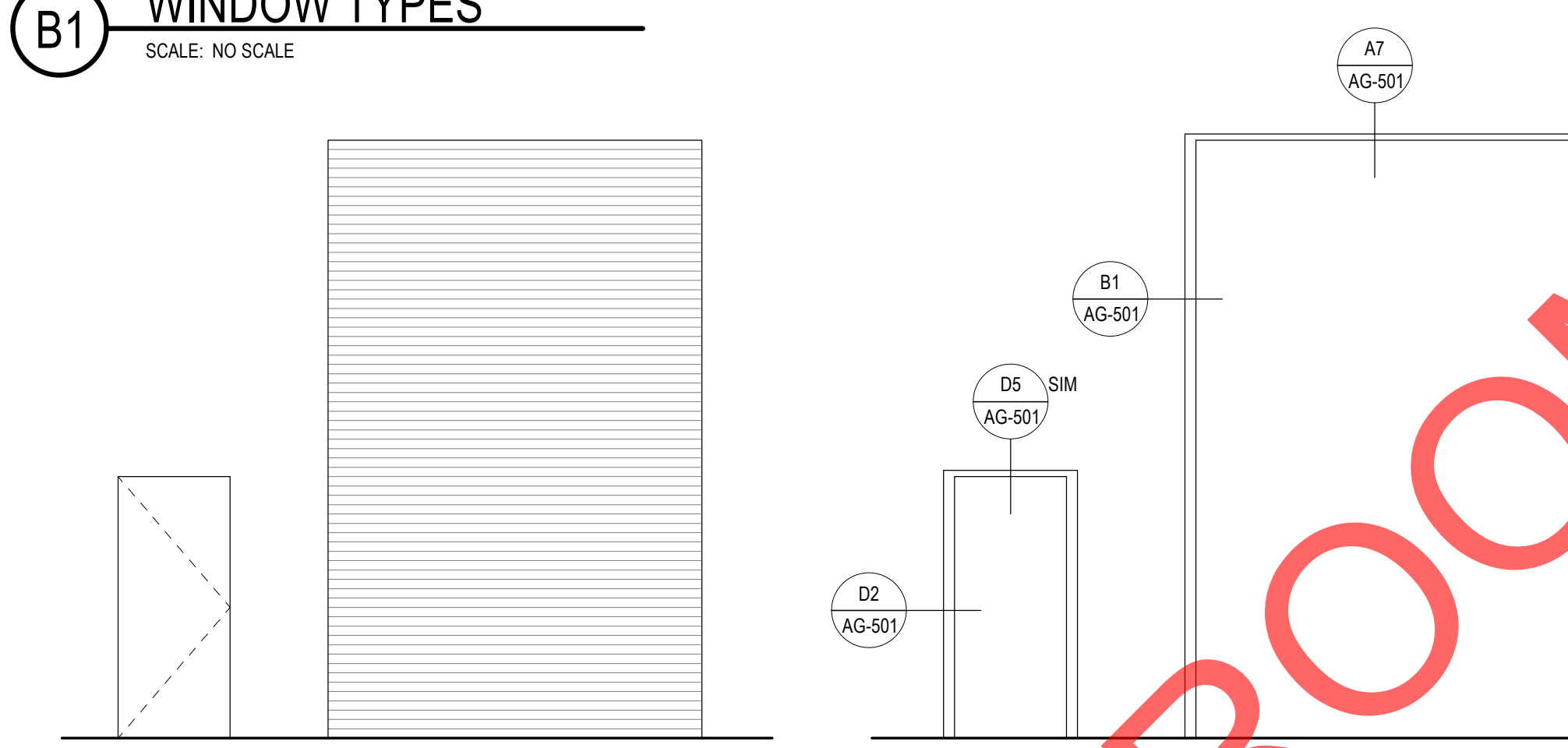
**A3** BLDG SECTION - C

SCALE: 1/4" = 1'-0"



**B4** SECTION - O.H. DOOR SILL

SCALE: 3" = 1'-0"

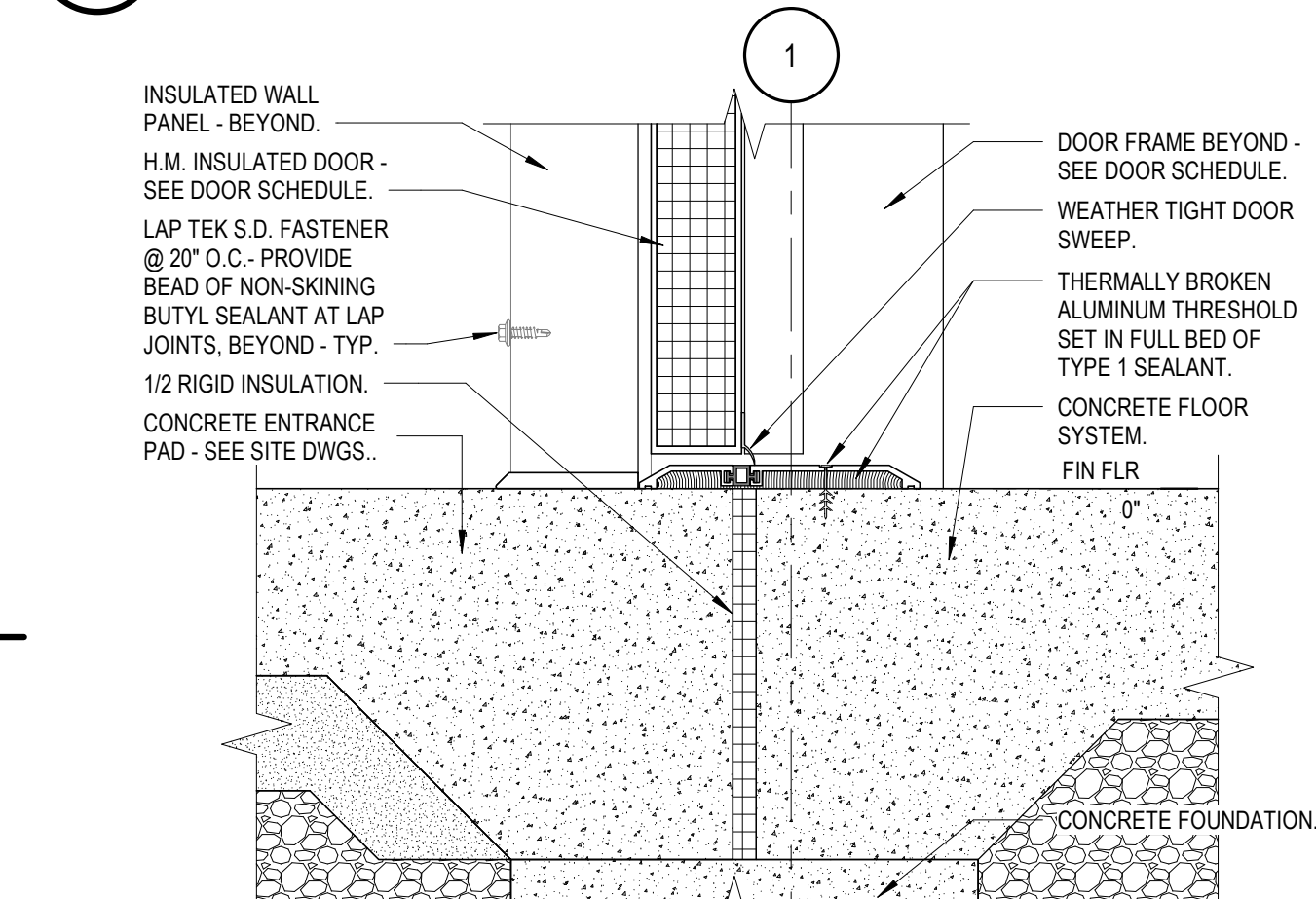


**A2** FRAME / TRIM TYPES

SCALE: NO SCALE

**A1** DOOR TYPES

SCALE: NO SCALE



**A4** SECTION - DOOR THRESHOLD

SCALE: 3" = 1'-0"

SCHEDULE-DOOR													
DOOR							FRAME						
DR NO	DR WIDTH	DR HEIGHT	P1 WIDTH	P1 TYPE	P2 WIDTH	P2 TYPE	MAT	FINISH	COLOR	TYPE	MAT	FINISH	COLOR
G100	3'-0"	7'-0"	3'-0"	F	0"	0"				1	HM	PNT	
G101	3'-0"	7'-0"	3'-0"	F	0"	0"				1	HM	PNT	
G102	10'-0"	16'-0"	10'-0"	COILING	0"	0"				2	HM	PNT	
G103	3'-0"	7'-0"	3'-0"	F	0"	0"				1	HM	PNT	
REMARKS													



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



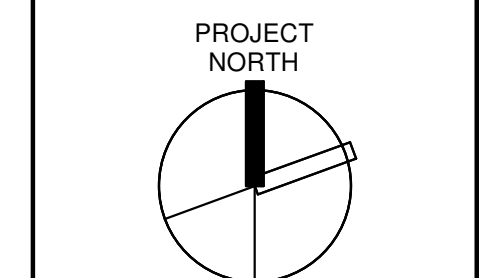
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING, REMOTE RESTROOM  
& GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

CONTRACT  
G - CONTRACT



REVISIONS

NO.	DESCRIPTION

ORDA PROJECT NUM

QPK PROJECT NUM  
221101.00

D A T E  
4/17/23

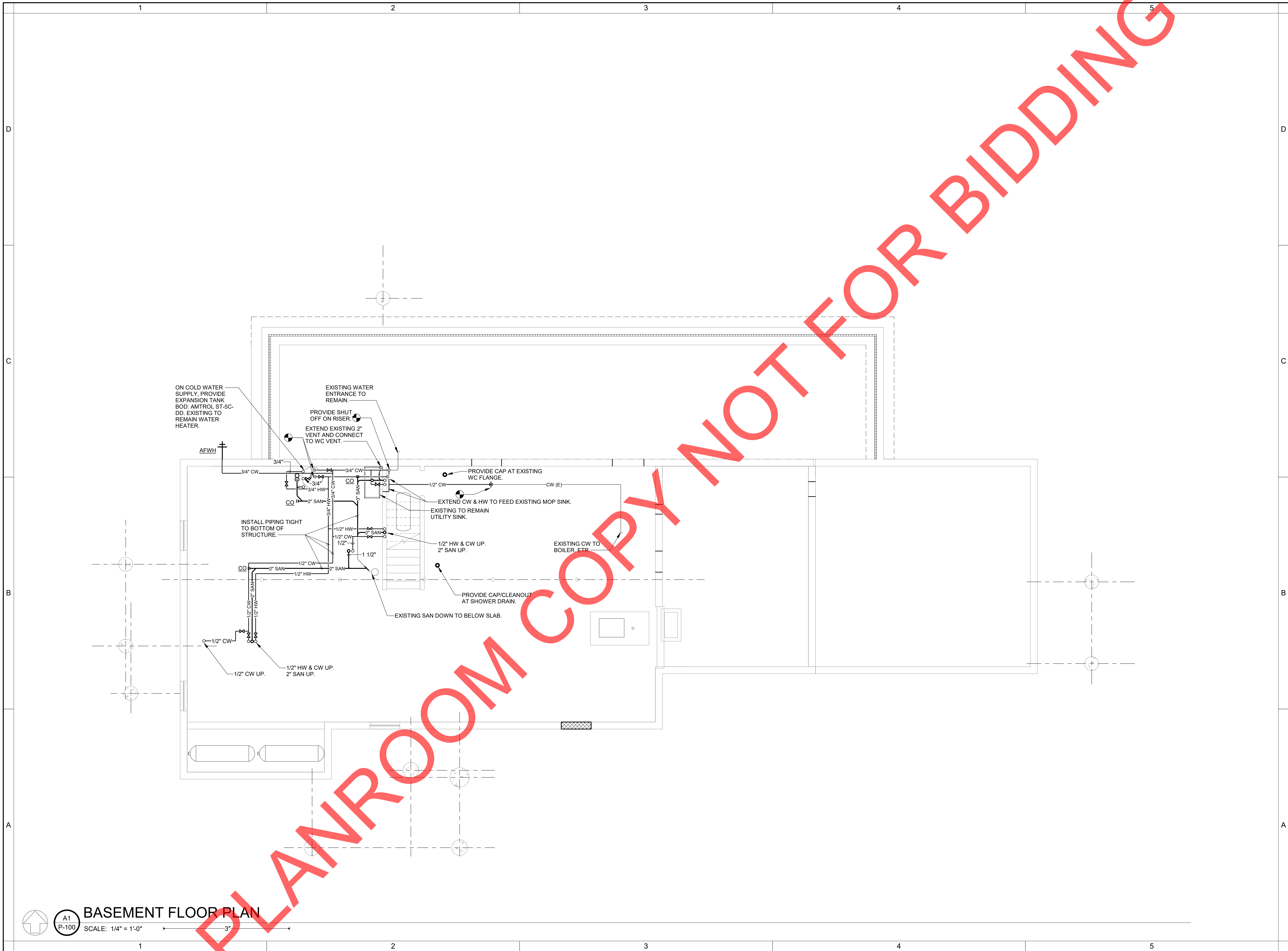
SHEET TITLE

GONDOLA  
STORAGE BLDG -  
BLDG SECTIONS

AG-102







**PK DESIGN**  
450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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**F/S**

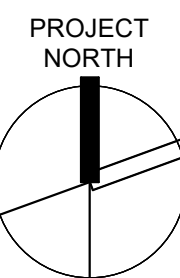
FS ENGINEERING, DPC  
721 E. Genesee Street  
Syracuse, NY 13210  
Tel: 315-471-4013  
Fax: 315-471-4044  
FS# 21056

NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
**P - CONTRACT**



REVISIONS

NO.	DESCRIPTION

PROJECT NUM  
221101.00

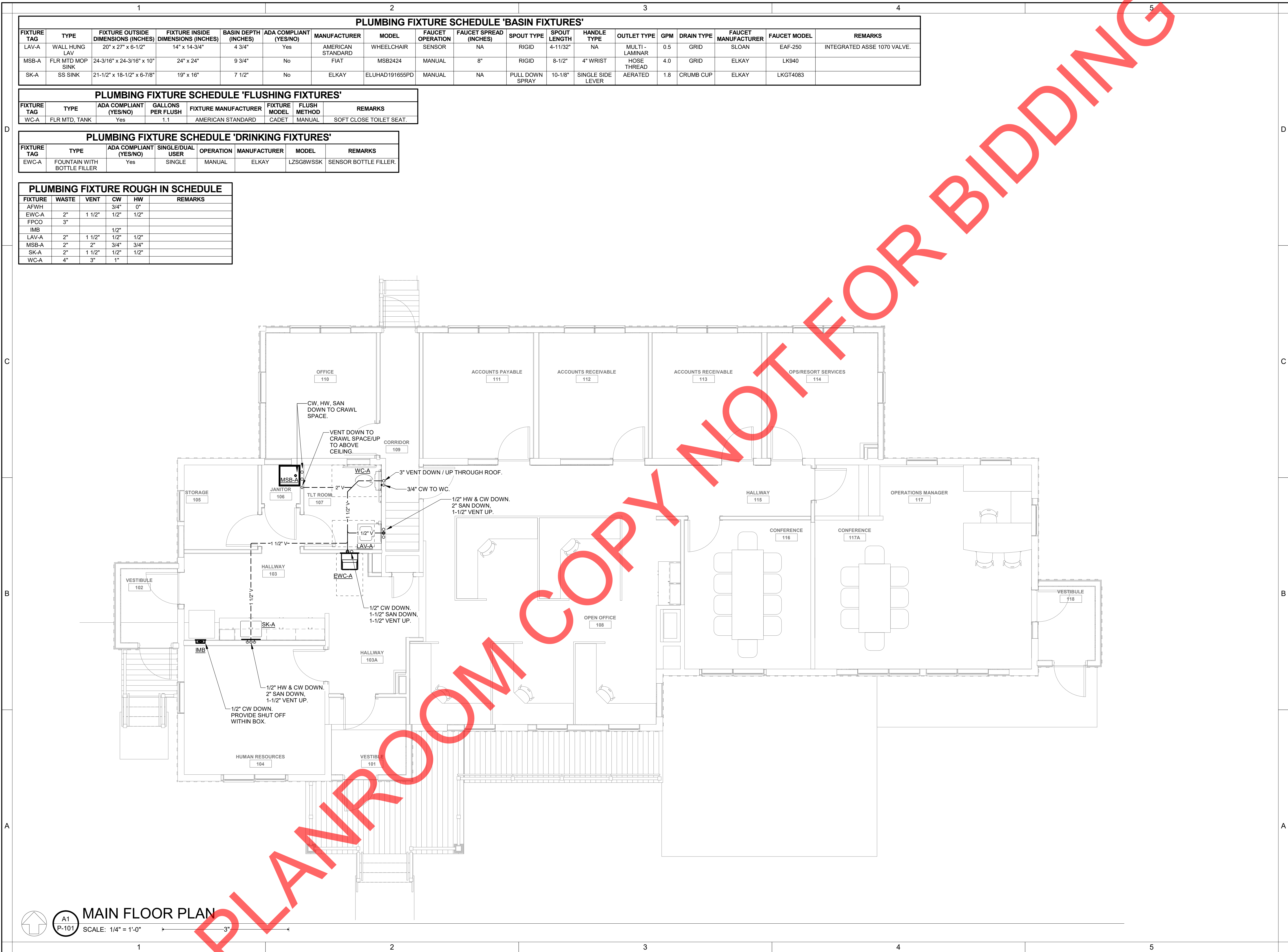
D A T E  
04/17/23


SHEET TITLE  
**BASEMENT FLOOR  
PLAN**

**P-100**

**BASEMENT FLOOR PLAN**  
A1  
P-100  
SCALE: 1/4" = 1'-0"








**PK**  
DESIGN

450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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**F/S**

FS ENGINEERING, DPC  
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
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BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
**P - CONTRACT**

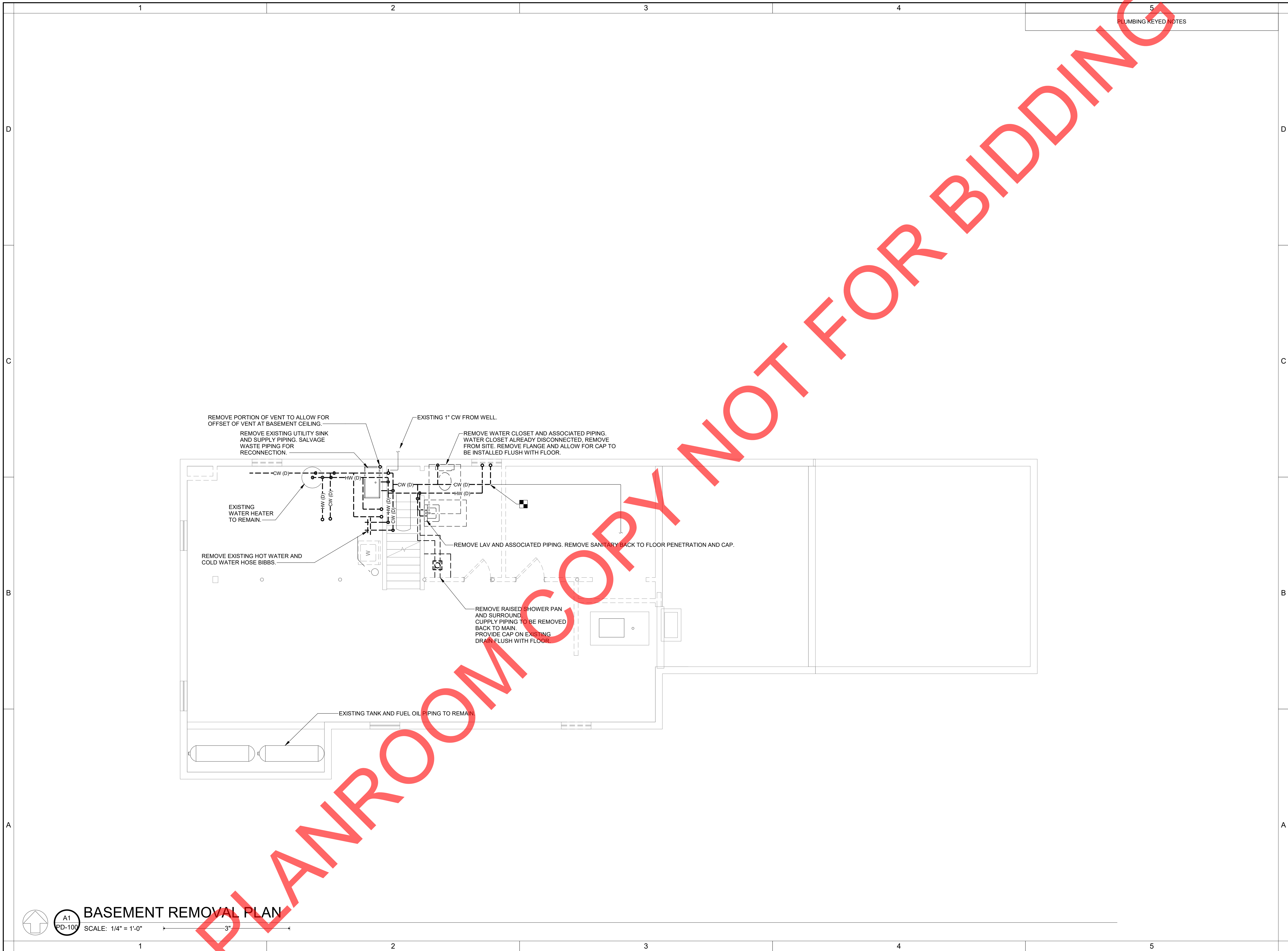
PROJECT  
NORTH

REVISIONS	

PROJECT NUM	
221101.00	
DATE	
04/17/23	
SHEET TITLE	
MAIN FLOOR PLAN & SCHEDULES	

**P-101**





450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029

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Tel: 315-471-4013  
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

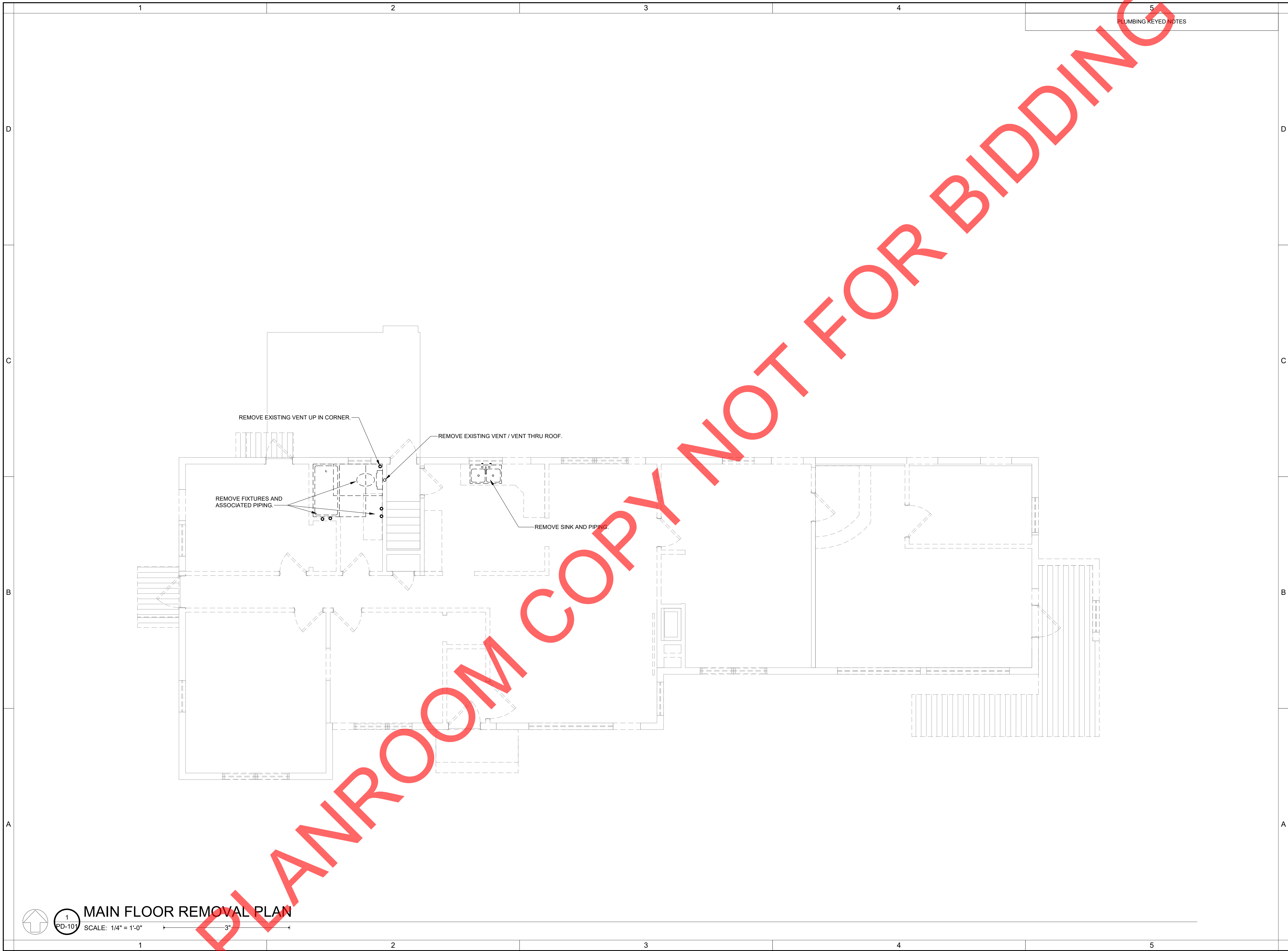
PROJECT TRADE  
**P - CONTRACT**

PROJECT  
NORTH

R E V I S I O N S	

PROJECT NUM	
221101.00	
D	A
04/17/23	
SHEET TITLE	
BASEMENT FLOOR REMOVALS	

PD-100



**PK**  
DESIGN

450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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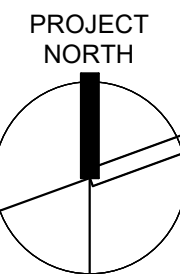
**FS ENGINEERING, DPC**  
721 E. Genesee Street  
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**NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY**

**BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA STORAGE  
BUILDING**

**HIGHMOUNT, NEW YORK  
12441**

**PROJECT TRADE  
P - CONTRACT**



**REVISIONS**


**PROJECT NUM  
221101.00**


**D A T E  
04/17/23**

**SHEET TITLE  
MAIN FLOOR PLAN  
REMOVALS**


**PD-101**




D	1		2		3		4		5	
	GENERAL MECHANICAL NOTES		MECHANICAL PIPING SYMBOLS & ABBREVIATIONS		LOW VELOCITY DUCTWORK SYMBOLS		PLAN SETUP		MECHANICAL DRAWING INDEX	
	A	REFER TO ARCHITECTURAL DRAWINGS FOR CEILING GRID WORK PERFORMED BY OTHERS. IF NOT SHOWN ELSEWHERE INCLUDE IN THIS DIVISIONS WORK AS REQUIRED.	SYMBOL DESCRIPTION		DESCRIPTION SINGLE LINE DOUBLE LINE		DETAIL NUMBER ? EXTENT OF DETAIL PLAN DETAIL		NUMBER NAME REVISIONS # DATE	
	B	WHERE WORK ISN'T SHOWN BY OTHERS, HVAC CONTRACTOR SHALL REMOVE, STORE, AND REINSTALL EXISTING LAY-IN CEILING TILES & TEES AS REQUIRED FOR ALL WORK SHOWN.	SPECIFIC SHUTOFF VALVE TYPES:		DUCT SIZE, FIRST FIGURE IS SIZE SHOWN 12/20 12/20		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		M-001 DRAWING INDEX, SYMBOLS & ABBREVS.	
	C	HVAC CONTRACTOR SHALL COORDINATE LEFT OR RIGHT UNIT CONNECTION ORIENTATION.	GATE VALVE BALL VALVE BUTTERFLY VALVE		SUPPLY DUCT SECTION (POSITIVE) PRESSURE, FIRST FIGURE IS TOP 20/12 20/12		DETAIL NUMBER ? EXTENT OF DETAIL BUILDING SECTION		MD-100 BASEMENT REMOVALS	
	D	HVAC CONTRACTOR SHALL INSTALL UNIT TO ALLOW FOR MAINTENANCE ACCESS TO FILTERS, VALVES, CONTROLS, LUBRICATION POINTS, INCLUDING MOVING EXISTING INTERFERENCES SUCH AS CONDUITS, WIRINGS AND PIPING.	CHECK VALVE CALIBRATED BALANCING VALVE PETCOCK		RETURN / EXHAUST DUCT SECTION 20/12 20/12		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		M-100 BASEMENT PLAN	
	E	HVAC CONTRACTOR SHALL HIRE OWNER APPROVED ROOFING CONTRACTOR AS TO NOT VOID ROOF WARRANTY.	DRAIN VALVE WITH CAPPED AND CHAINED HOSE END TRIPLE DUTY VALVE		ROUND SIDE TAP WITH VOLUME DAMPER (UNLESS OTHERWISE NOTED)		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		M-101 FIRST FLOOR PLAN	
	F	CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS, AND REPORT DISCREPANCIES TO THE ARCHITECT / ENGINEER AND AWAIT CLARIFICATION PRIOR TO PROCEEDING WITH REMOVAL AND RENOVATION WORK.	PRESSURE REDUCING REGULATOR VALVE TEMPERATURE WELL THERMOMETER		90° BRANCH TAKE OFF (45° ENTRY TYPE FOR RECTANGULAR DUCT)		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		M-201 HVAC ZONING	
	G	THE INTENT OF THIS PROJECT IS TO PROVIDE A DDC BASED CONTROL SYSTEM TO REPLACE ALL EXISTING PNEUMATIC CONTROLS. REMOVE ALL EXISTING PNEUMATIC TUBING, THERMOSTATS, VALVES, ACTUATORS, ETC. AND REPLACE W/ DDC. CONFIRM SIZES, QUANTITIES AND LOCATIONS PRIOR TO BID.	TEMPERATURE SENSOR PIPE GUIDE PIPE ANCHOR EXPANSION JOINT		DUAL 90° BRANCH TAKE OFF (45° ENTRY TYPE)		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		M-501 DETAILS	
		GENERAL ABBREVIATIONS			FLEXIBLE DUCT FLEX CONNECTION ACCESS DOOR		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		M-601 SCHEDULES	
C	AAV	AIR ADMITTANCE VALVE	LAT	LEAVING AIR TEMPERATURE	GRILLE REGISTER OR DIFFUSER IN BOTTOM OF DUCT		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		TO THE BEST OF THE ENGINEER'S PROFESSIONAL JUDGEMENT, THE DESIGN OF THIS PROJECT CONFORMS TO ALL APPLICABLE PORTIONS OF THE FOLLOWING:	
	AFF	ABOVE FINISHED FLOOR	LWT	LEAVING WATER TEMPERATURE	DUCT ELBOW UP OR DOWN		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☑ THE 2020 NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE	
	AFG	ABOVE FINISHED GRADE	LVT	LEAVING WATER TEMPERATURE	LONG RADIUS 90 DEGREE ELBOW OR TURNING VANES		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☑ THE 2020 NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE, 2016 ASHRAE 90.1, AND 2007 ASHRAE 183; FOLLOWING THE COMPLIANCE PATH MARKED BELOW:	
	BFF	BELOW FINISHED FLOOR	MAX.	MAXIMUM	TRANSITION: LOCATION OF TRANS. IS DIAGRAMMATICAL CONTRACTOR MAY EXTEND LENGTH OF LARGER DUCT TO ACCOMMODATE STD. LENGTH DUCT SECTIONS.		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ MORE EFFICIENT HVAC PERFORMANCE IN ACCORDANCE WITH SECTION C406.2.	
	BFG	BELOW FINISHED GRADE	MBH	1,000 BTUH	90 DEGREE BRANCH TAKEOFF FROM VERTICAL DUCT-45 DEGREE ENTRY TYPE		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☑ REDUCED LIGHTING POWER DENSITY SYSTEM IN ACCORDANCE WITH SECTION C406.3.	
	BOS	BOTTOM OF STEEL	MGAP	MEDICAL GAS ALARM PANEL	DUCT RISE / DROP TO AVOID OBSTRUCTION ARROW INDICATES AIR FLOW DIRECTION		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ ENHANCED LIGHTING CONTROL IN ACCORDANCE WITH SECTION C406.4.	
	BTUH	BRITISH THERMAL UNIT PER HOUR	MIN.	MINIMUM	SUPPLY DUCT PENETRATION OF FLOOR OR ROOF ABOVE. SEE PLANS FOR DAMPER REQUIREMENTS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ ON-SITE SUPPLY OF RENEWABLE ENERGY IN ACCORDANCE WITH SECTION C406.5.	
	CFM	CUBIC FEET PER MINUTE	MOCP	MAXIMUM OVERCURRENT PROTECTION	RETURN / EXHAUST DUCT PENETRATION OF FLOOR OR ROOF ABOVE. SEE PLANS FOR DAMPER REQUIREMENTS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ PROVISION OF A DEDICATED OUTDOOR AIR SYSTEM FOR CERTAIN HVAC EQUIPMENT IN ACCORDANCE WITH SECTION C406.6.	
	CO	CLEANOUT	MTD	MOUNTED	DUCTWORK SYMBOLS & ABBREVIATIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ HIGH-EFFICIENCY SERVICE WATER HEATING IN ACCORDANCE WITH SECTION C406.7.	
	COP	COEFFICIENT OF PERFORMANCE			HVAC DUCT SYSTEM ABBREVIATIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ ENHANCED ENVELOPE PERFORMANCE IN ACCORDANCE WITH SECTION C406.8.	
B	DB	DRY BULB	NC	NORMALLY CLOSED	HVAC PIPE SYSTEM ABBREVIATIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ REDUCED AIR INFILTRATION IN ACCORDANCE WITH SECTION C406.9.	
	DIA.	DIAMETER	NIC	NOT IN CONTRACT	HVAC EQUIPMENT ABBREVIATIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ TOTAL BUILDING PERFORMANCE PROVISIONS (SECTION C407)	
	"F	DEGREES FARENHEIT	NO	NORMALLY OPEN	HVAC DESIGN CRITERIA		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☑ THE NEW YORK STATE EDUCATION DEPARTMENT ("SED") MANUAL OF PLANNING STANDARDS	
	EA	EXHAUST AIR	NTS	NOT TO SCALE	INTERIOR DESIGN CONDITIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ THE 2014 FGI GUIDELINES FOR DESIGN AND CONSTRUCTION OF HOSPITALS AND OUTPATIENT FACILITIES	
	EAT	ENTERING AIR TEMPERATURE	OA	OUTSIDE AIR	OUTDOOR DESIGN CONDITIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ HOSPITALS	
	EFF.	EFFICIENCY	OAI	OUTDOOR AIR INTAKE	COUNTY / CLIMATE ZONE		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ OUTPATIENT FACILITIES	
	ELEC.	CONTRACTOR FOR ELECTRICAL DIVISION	OED	OPEN-END DUCT	DESIGN LOADS HAVE BEEN DETERMINED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN ANSI / ASHRAE / ACCA STANDARD 183		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		☐ RESIDENTIAL HEALTH, CARE, AND SUPPORT FACILITIES	
	EWT	ENTERING WATER TEMPERATURE	PD	PRESSURE DROP	PROJECT NORTH		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED	
	EXT	EXISTING	PH	PHASE	REVISIONS		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		HVAC DESIGN CRITERIA	
	EXT. PD	EXTERNAL PRESSURE DROP	PLBG.	CONTRACTOR FOR PLUMBING DIVISION	PROJECT NUMBER		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		HEATING 70°F DB	
			PS	PRESSURE REDUCING VALVE	PROJECT TRADE		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		COOLING 75°F DB / 45% RH	
A	FF	FINISHED FLOOR	PS	PRESSURE SWITCH / SENSOR	M - CONTRACT		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		OUTDOOR DESIGN CONDITIONS	
	FL	FAIL LAST	PSI	POUNDS PER SQUARE INCH	HIGHMOUNT, NEW YORK 12441		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		SUMMER 88°F DB / 72°F WB	
	FLA	FULL LOAD AMPACITY	PSI	POUNDS PER SQUARE INCH	Belleayre Administrative Building & Gondola Storage Building		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		WINTER -3°F DB	
	FLR	FLOOR	RA	RETURN AIR	PROJECT TITLE		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		COUNTY / CLIMATE ZONE ONONDAGA / 5	
	FP	CONTRACTOR FOR FIRE PROTECTION	RH	RELATIVE HUMIDITY	DRAWING INDEX, SYMBOLS & ABBREVS.		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		DESIGN LOADS HAVE BEEN DETERMINED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN ANSI / ASHRAE / ACCA STANDARD 183	
	FPM	FEET PER MINUTE	RV	RELIEF VALVE	M-001		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		HVAC DESIGN CRITERIA	
	FS	FLOW SWITCH	SA	SUPPLY AIR	221101.00		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		HEATING 70°F DB	
	FSD	FIRE / SMOKE DAMPER	SENS.	SENSIBLE	DATE		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		COOLING 75°F DB / 45% RH	
	FT	FEET	SPL	SOUND PRESSURE LEVEL	04/17/23		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		OUTDOOR DESIGN CONDITIONS	
	FT-HD	FEET OF HEAD (PRESSURE)	SWL	SOUND POWER LEVEL	SHEET TITLE		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		SUMMER 88°F DB / 72°F WB	
					M-001		SHEET NUMBER WHERE DETAIL IS LOCATED ? EXTENT OF DETAIL BUILDING SECTION		WINTER -3°F DB	



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SUITE 500 PO BOX 29  
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FS ENGINEERING, DPC  
721 E. Genesee Street  
Syracuse, NY 13210  
Tel: 315-471-4013  
Fax: 315-471-4044  
F98 21058

NYS OLYMPIC REGIONAL DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE BUILDING & GONDOLA STORAGE BUILDING

HIGHMOUNT, NEW YORK 12441

PROJECT TRADE  
**M - CONTRACT**

PROJECT NORTH

REVISIONS

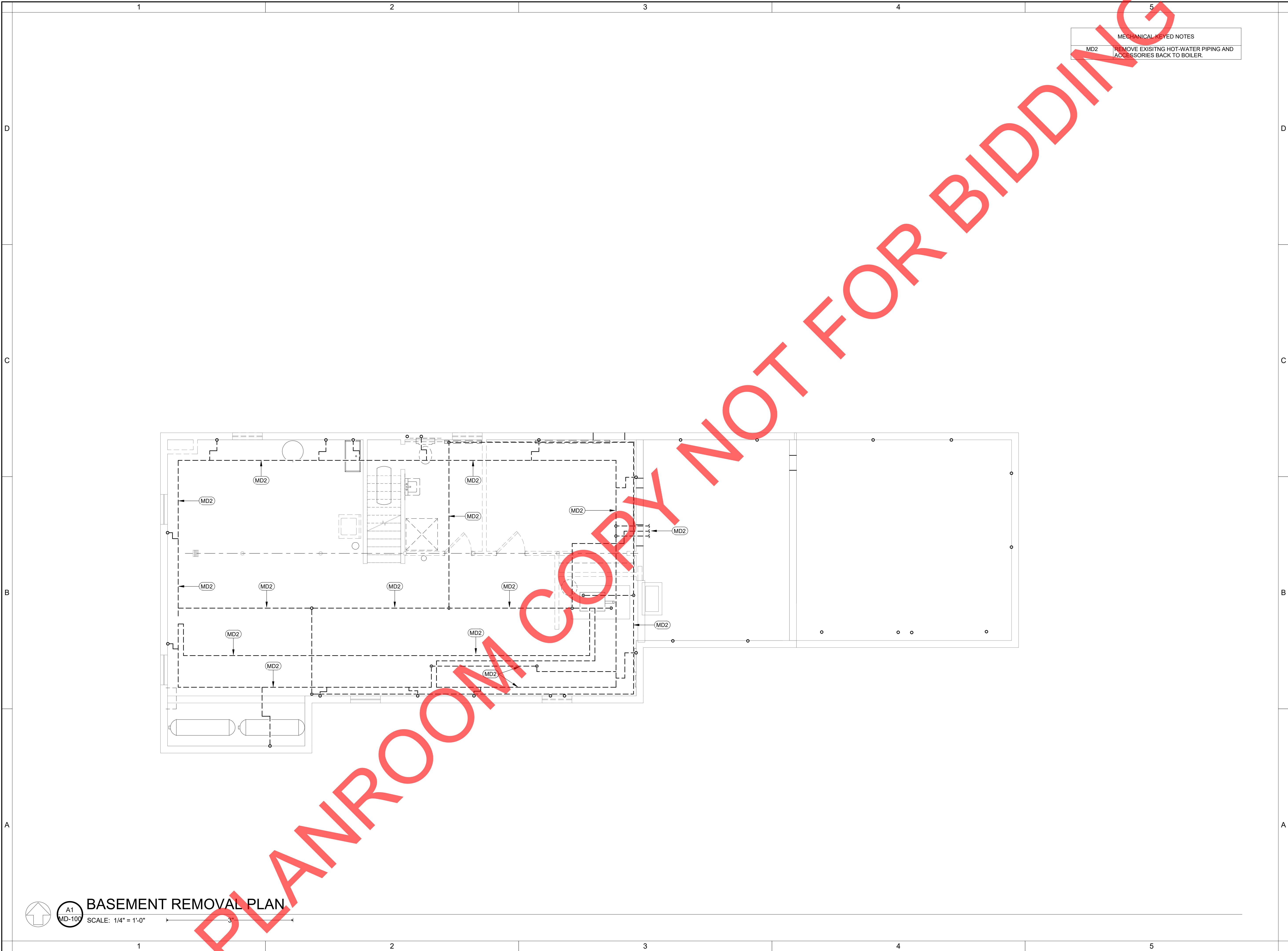
PROJECT NUMBER  
221101.00

DATE  
04/17/23

SHEET TITLE  
**DRAWING INDEX, SYMBOLS & ABBREVS.**

**M-001**






MECHANICAL KEYED NOTES	
MD2	REMOVE EXISTING HOT-WATER PIPING AND ACCESSORIES BACK TO BOILER.




BASEMENT REMOVAL PLAN


SCALE: 1/4" = 1'-0"



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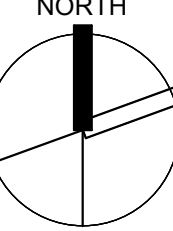
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12441

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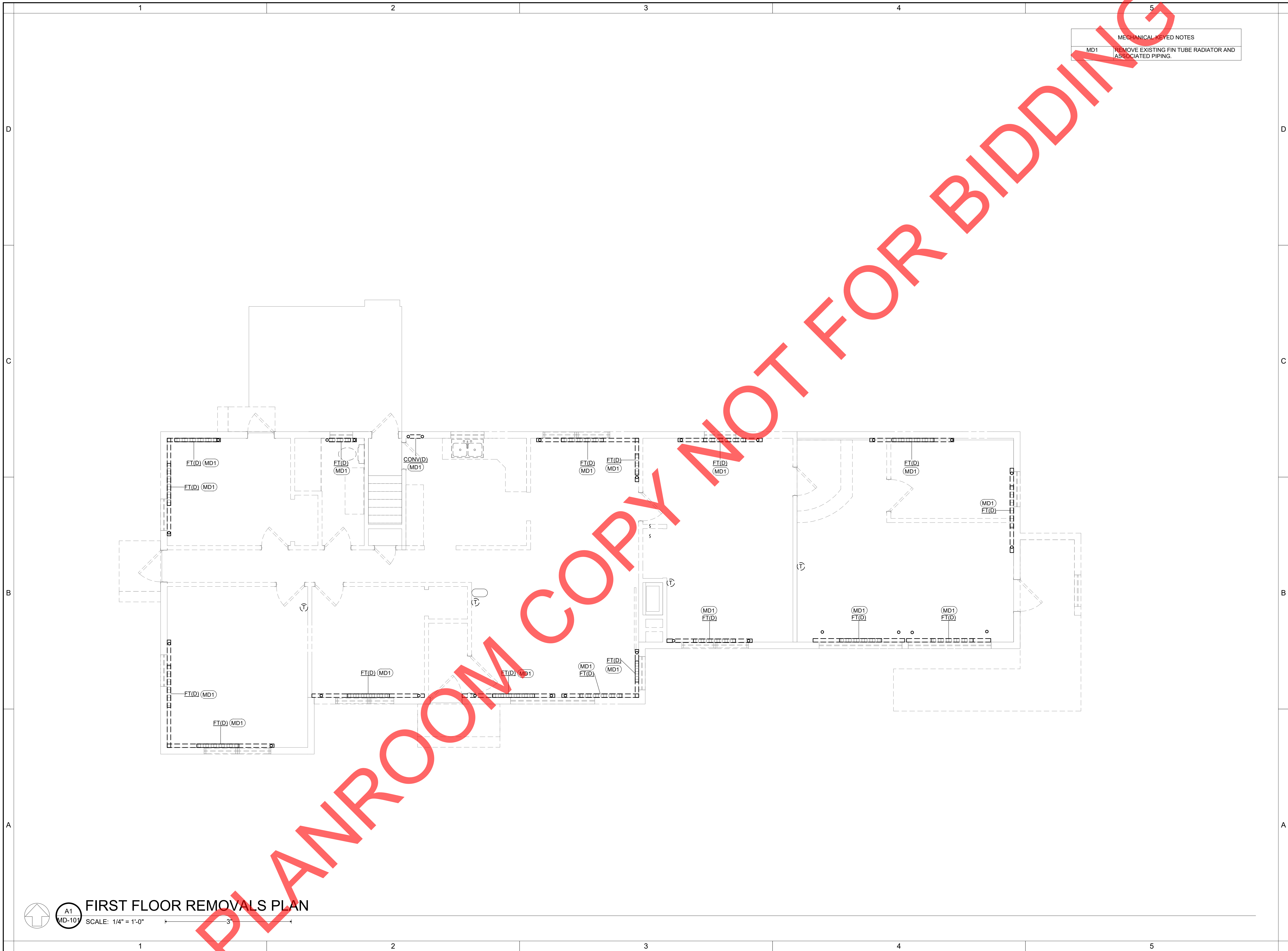
PROJECT  
NORTH



REVISIONS	

PROJECT NUM	
221101.00	
DATE	
04/17/23	
SHEET TITLE	
BASEMENT REMOVALS	

MD-100



MECHANICAL KEYED NOTES	
MD1	REMOVE EXISTING FIN TUBE RADIATOR AND ASSOCIATED PIPING.

**PK DESIGN**  
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**HIGHMOUNT, NEW YORK 12441**

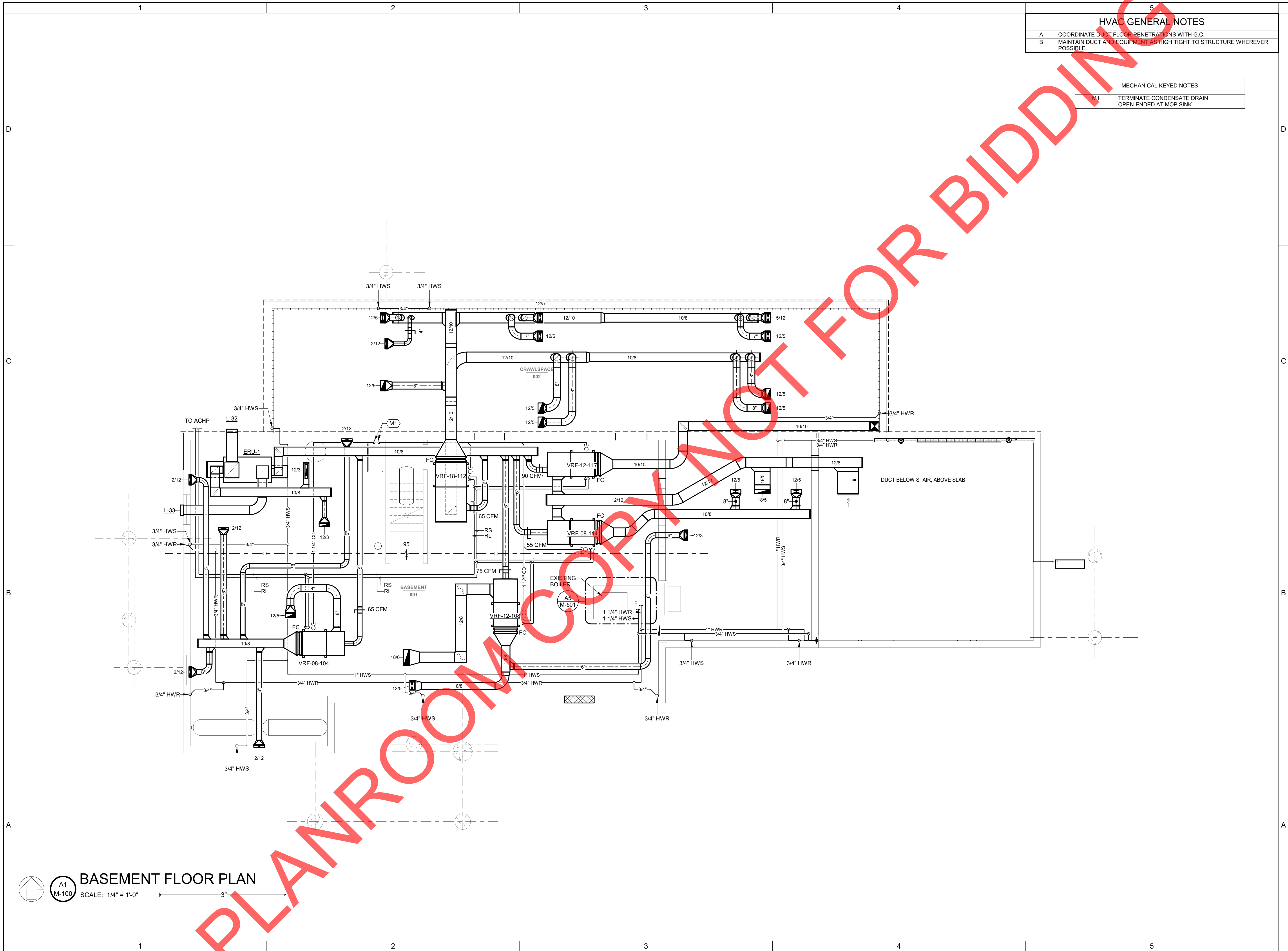
**PROJECT TRADE**  
**M - CONTRACT**

**PROJECT NORTH**

REVISIONS	

PROJECT NUMBER	
221101.00	
DATE	
04/17/23	
SHEET TITLE	
FIRST FLOOR REMOVALS	

**MD-101**



HVAC GENERAL NOTES	
A	COORDINATE DUCT FLOOR PENETRATIONS WITH G.C.
B	MAINTAIN DUCT AND EQUIPMENT AS HIGH TIGHT TO STRUCTURE WHEREVER POSSIBLE.

MECHANICAL KEYED NOTES	
M1	TERMINATE CONDENSATE DRAIN OPEN-ENDED AT MOP SINK.

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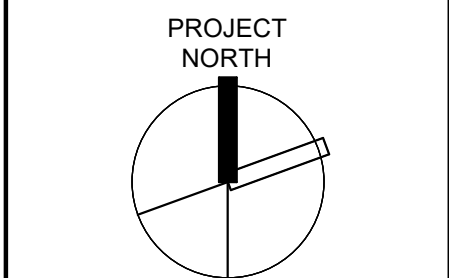
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R E V I S I O N S	

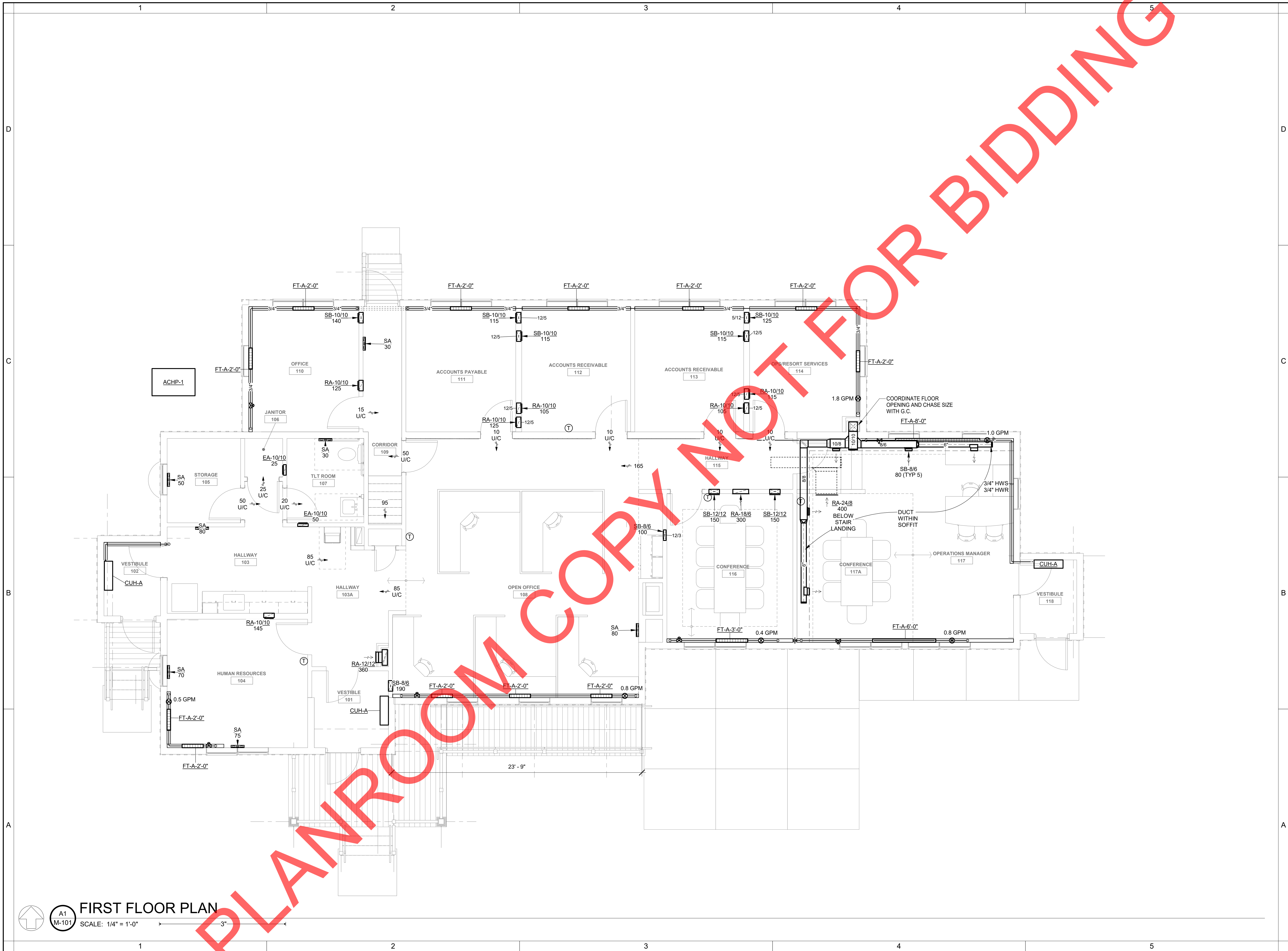
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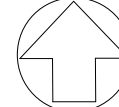
D A T E  
04/17/23

SHEET TITLE  
BASEMENT PLAN

M-100





 **A1**  
**M-101** **FIRST FLOOR PLAN**  
SCALE: 1/4" = 1'-0" 3"

**PK**  
DESIGN  
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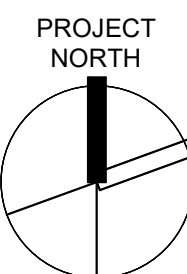
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12441**

**PROJECT TRADE  
M - CONTRACT**



**REVISIONS**

NO.	DESCRIPTION	DATE

**PROJECT NUM  
221101.00**

**D A T E  
04/17/23**

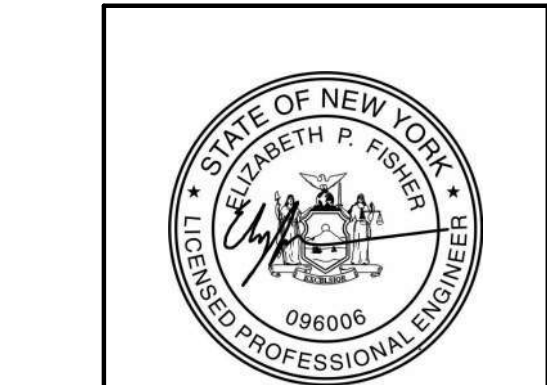
**SHEET TITLE  
FIRST FLOOR PLAN**

**M-101**






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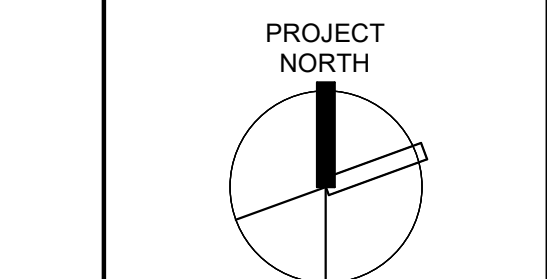
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PROJECT TRADE  
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R E V I S I O N S		

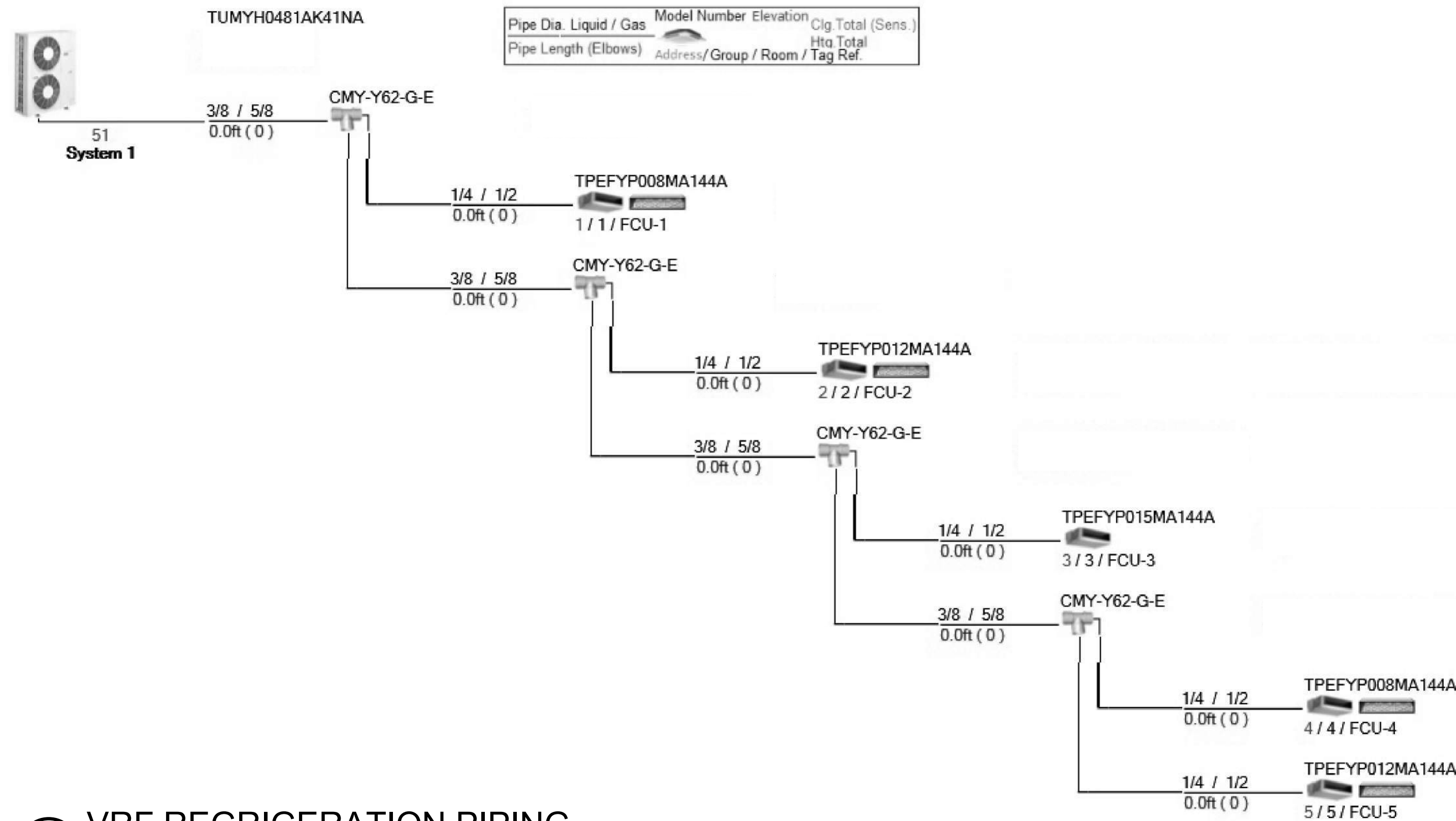
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D A T E  
04/17/23

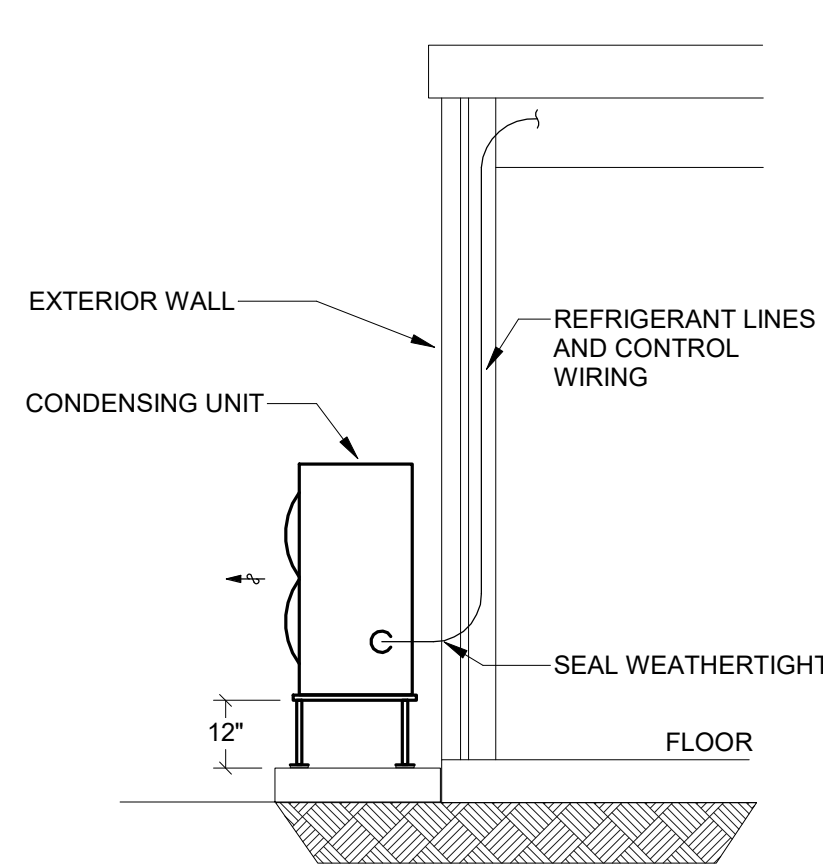
SHEET TITLE  
HVAC ZONING

M-201

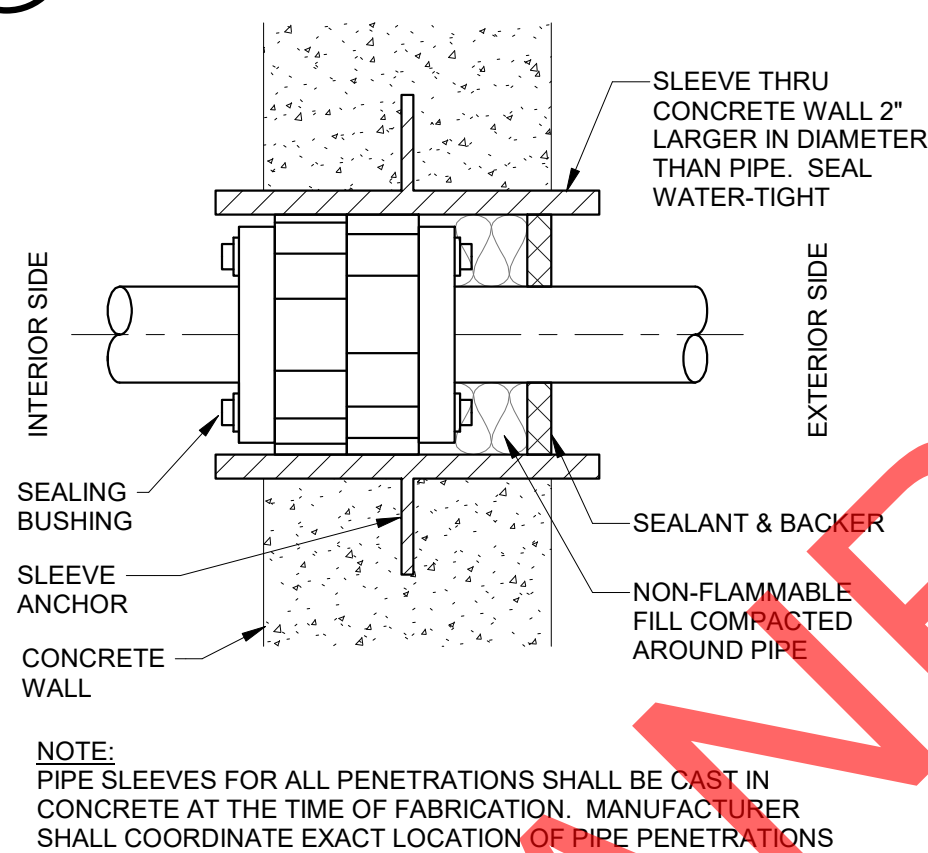




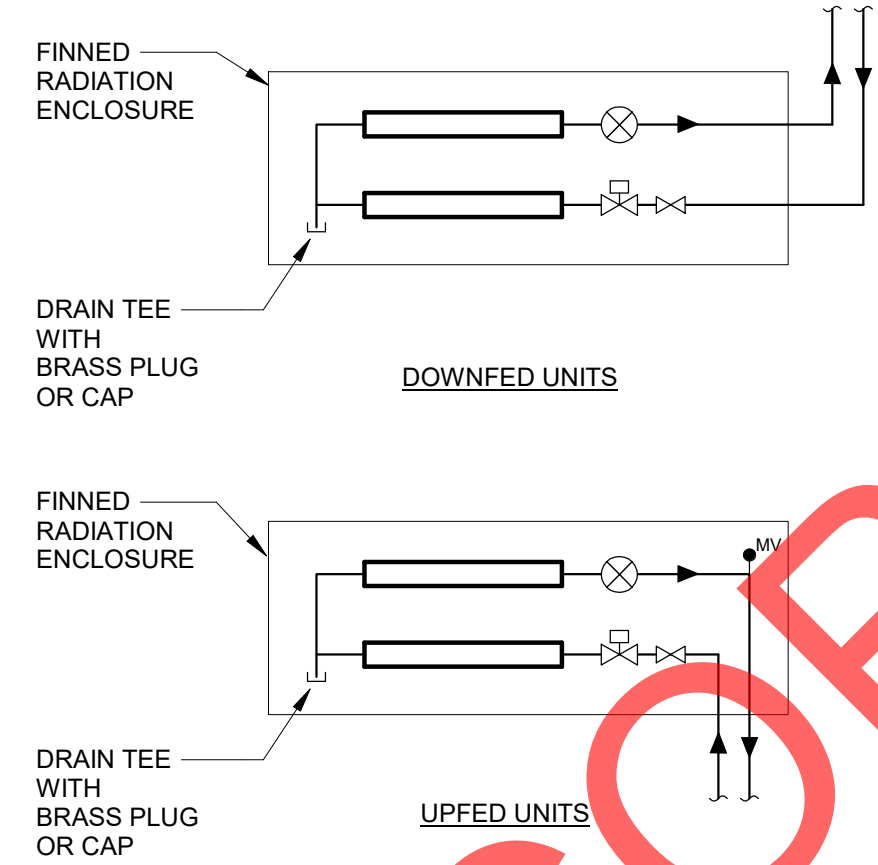
C1 VRF REGRIGERATION PIPING  
M-501 SCALE: NOT TO SCALE



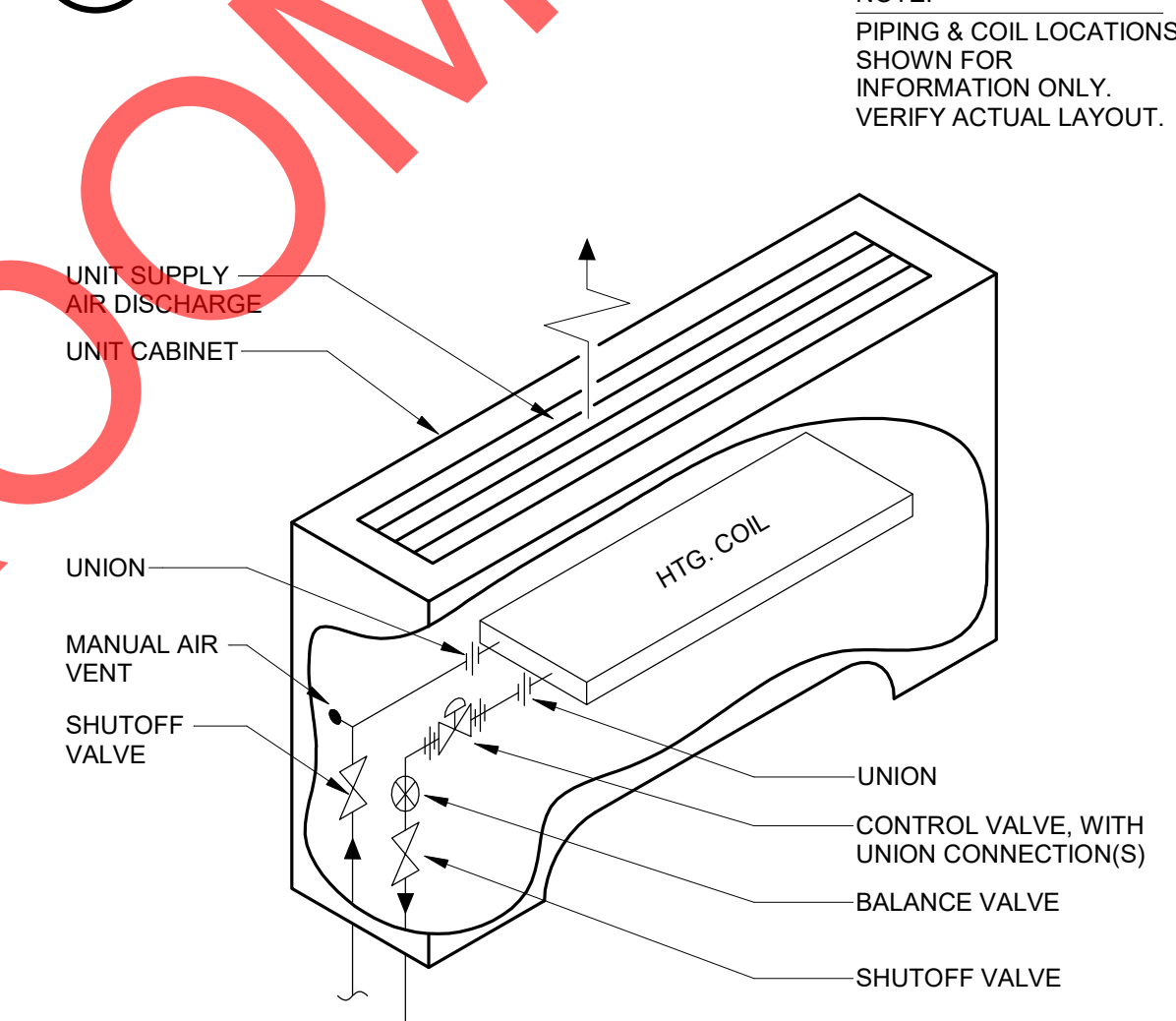
4 CONDENSING UNIT PIPING  
M-501 SCALE: NOT TO SCALE



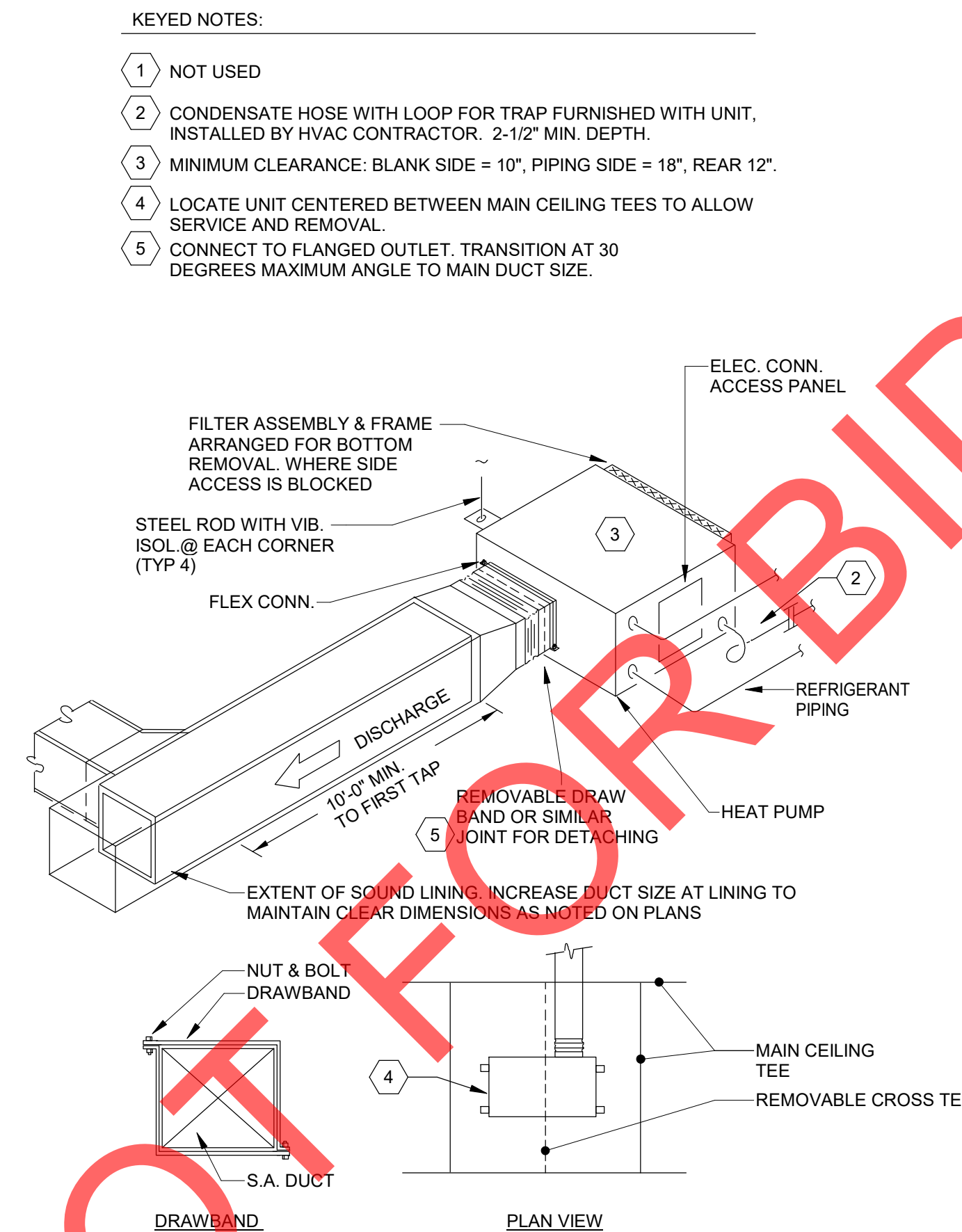
A1 FOUNDATION WALL PIPE PENETRATION  
M-501 SCALE: NOT TO SCALE



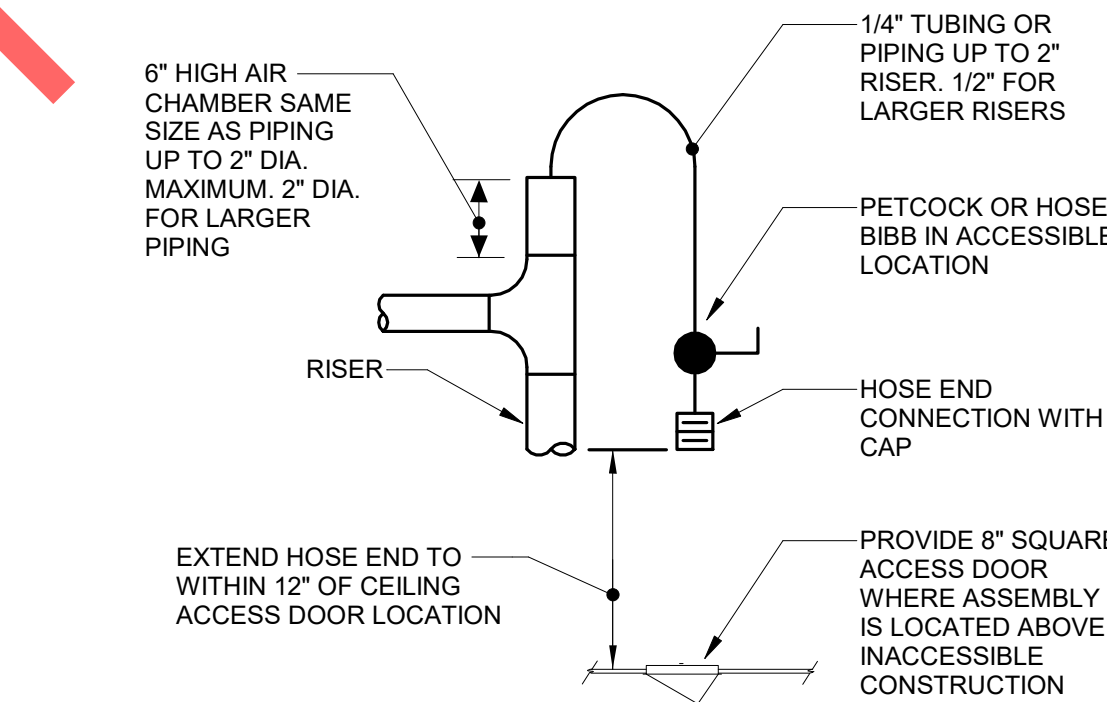
B2 FINNED RADIATION, HOT WATER  
M-501 SCALE: NOT TO SCALE



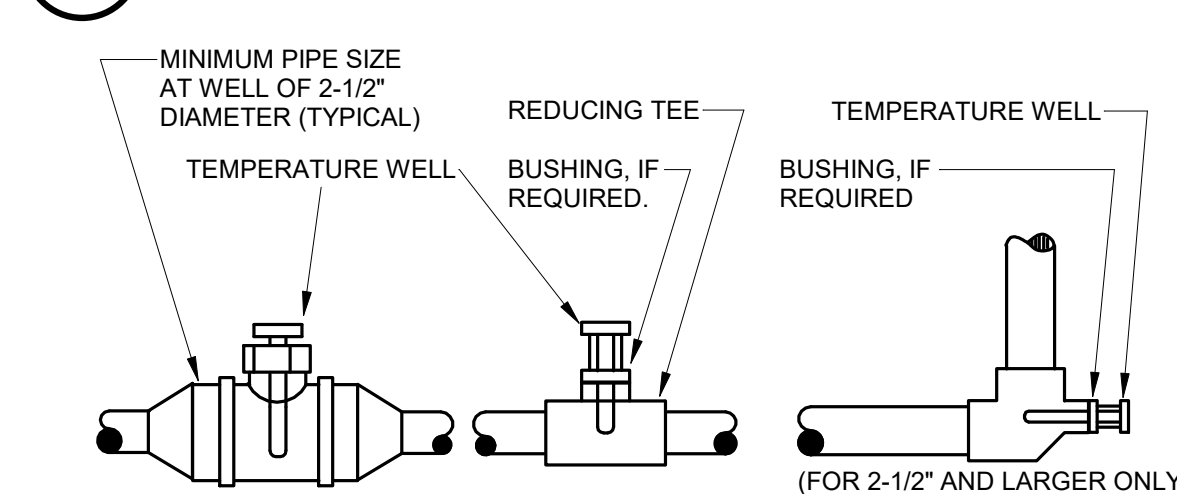
A2 CABINET UNIT HEATER PIPING  
M-501 SCALE: NOT TO SCALE



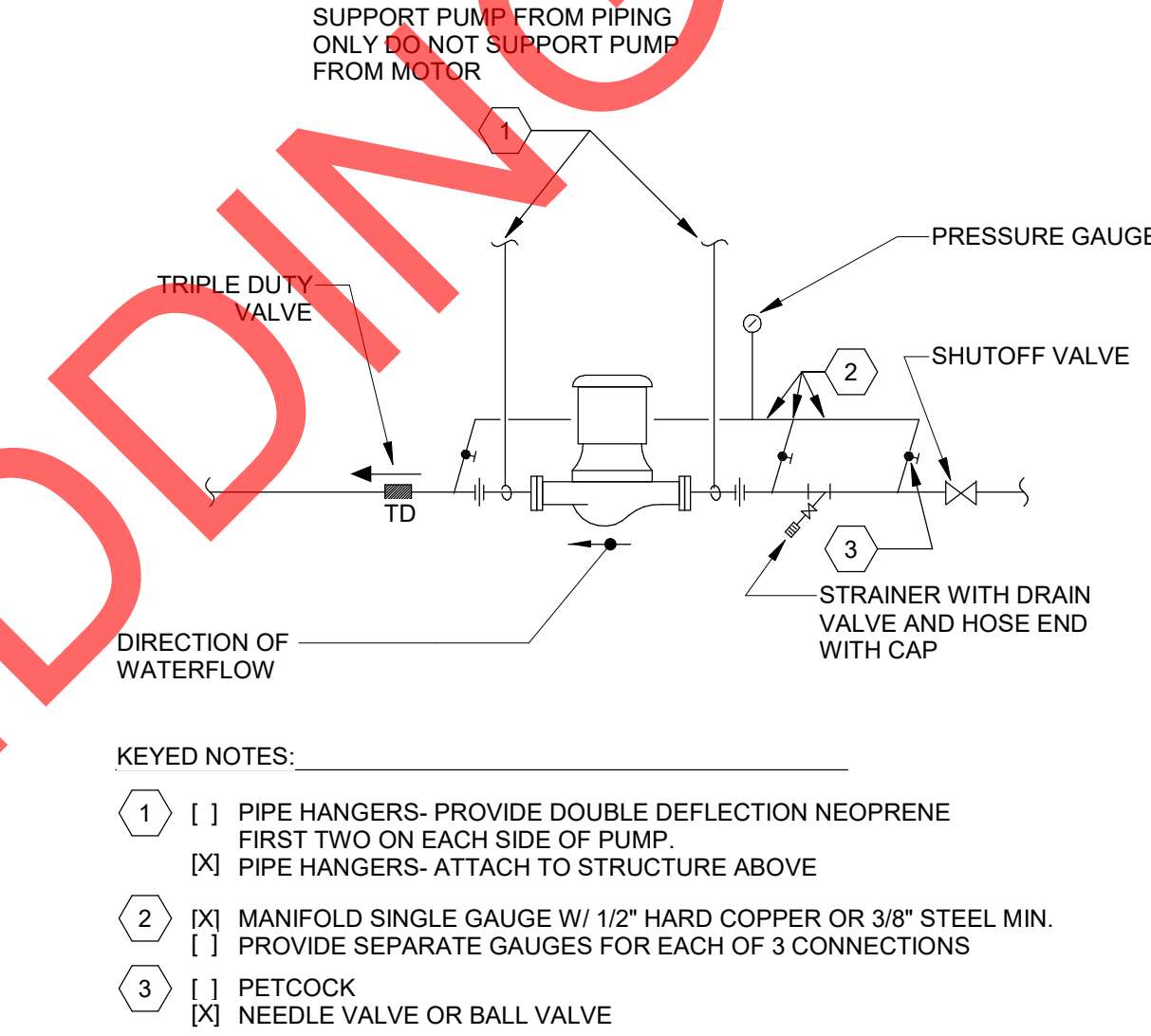
C3 HEAT PUMP - CONCEALED CEILING TYPE  
M-501 SCALE: NOT TO SCALE



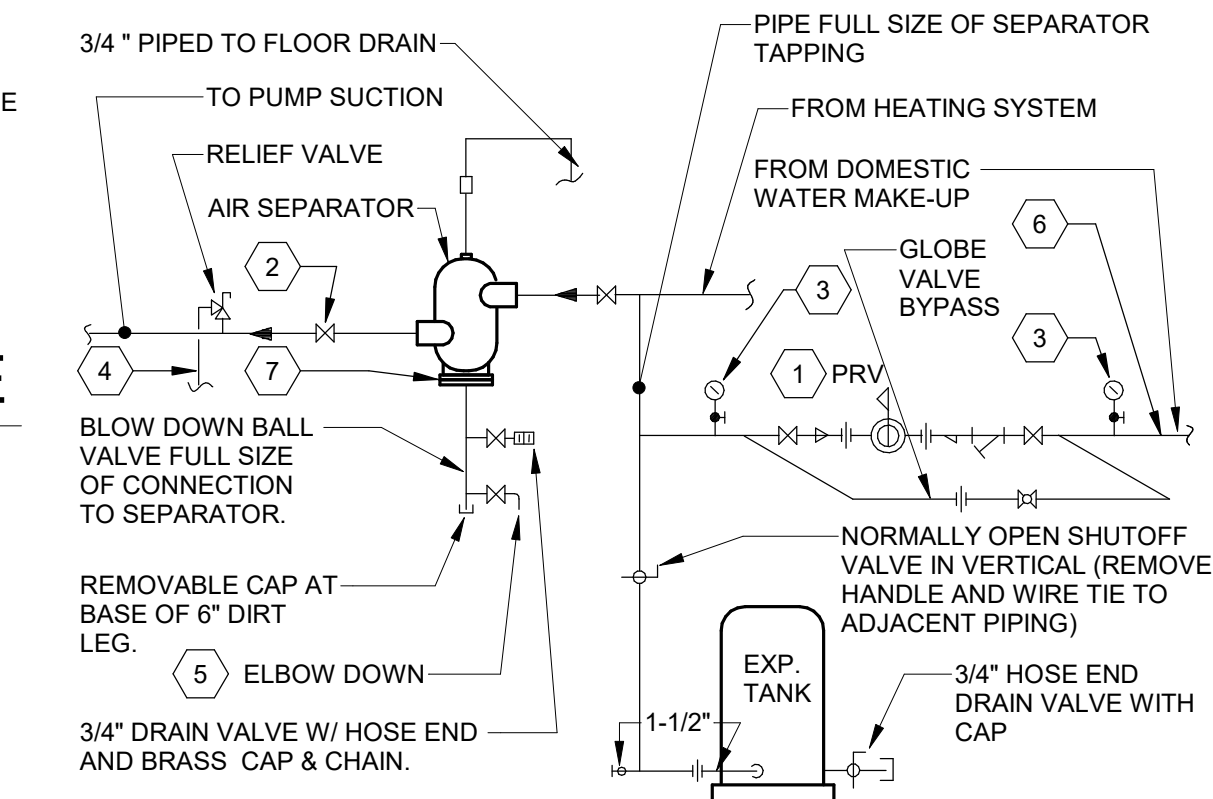
B3 MANUAL AIR VENT  
M-501 SCALE: NOT TO SCALE



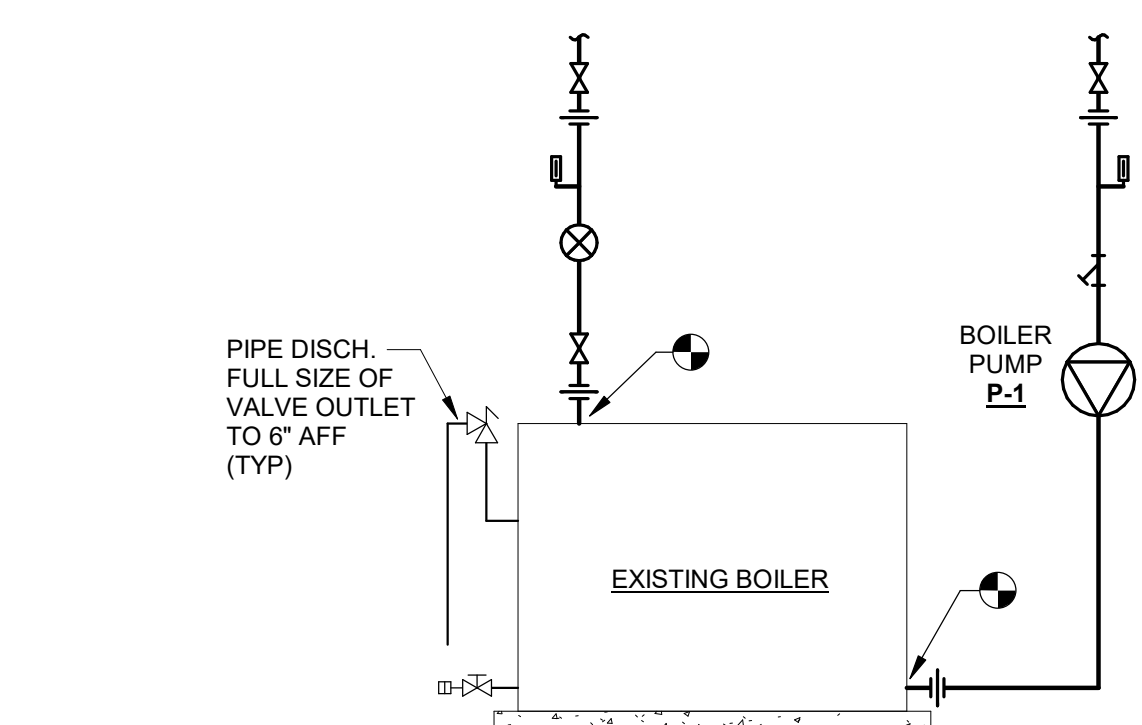
A3 TEMPERATURE WELL  
M-501 SCALE: NOT TO SCALE



C5 IN-LINE PUMP  
M-501 SCALE: NOT TO SCALE



B5 MAKE-UP WATER ASSEMBLY  
M-501 SCALE: NOT TO SCALE



A5 EXISTING BOILER PIPING  
M-501 SCALE: NOT TO SCALE

KEYED NOTES:

- 1 NOT USED
- 2 CONDENSATE HOSE WITH LOOP FOR TRAP FURNISHED WITH UNIT, INSTALLED BY HVAC CONTRACTOR. 2-1/2" MIN. DEPTH.
- 3 MINIMUM CLEARANCE: BLANK SIDE = 10", PIPING SIDE = 18", REAR 12".
- 4 LOCATE UNIT CENTERED BETWEEN MAIN CEILING TEES TO ALLOW SERVICE AND REMOVAL.
- 5 CONNECT TO FLANGED OUTLET. TRANSITION AT 30 DEGREES MAXIMUM ANGLE TO MAIN DUCT SIZE.

KEYED NOTES:

- 1 [ ] PIPE HANGERS- PROVIDE DOUBLE DEFLECTION NEOPRENE FIRST TWO ON EACH SIDE OF PUMP.  
[X] PIPE HANGERS- ATTACH TO STRUCTURE ABOVE
- 2 [X] MANIFOLD SINGLE GAUGE W/ 1/2" HARD COPPER OR 3/8" STEEL MIN.  
[ ] PROVIDE SEPARATE GAUGES FOR EACH OF 3 CONNECTIONS
- 3 [ ] PETCOCK  
[X] NEEDLE VALVE OR BALL VALVE

KEYED NOTES:

- 1 SET PRESSURE REDUCING VALVE TO MAINTAIN PRESSURE AT HIGH POINT IN SYSTEM AT MINIMUM OF 4 PSIG.
- 2 VALVE NOT REQUIRED IF SEPARATOR IS WITHIN 10 FEET OF MAIN VALVES FOR PUMPS.
- 3 [X] PRESSURE GAUGE AND PETCOCK.  
[ ] PRESSURE GAUGE AND NEEDLE VALVE.
- 4 [X] RELIEF LINE FULL SIZE OF OUTLET TO FLOOR DRAIN.  
[ ] RELIEF LINE FULL SIZE OF OUTLET TO 6" A.F.F.
- 5 [X] EXTEND TO FLOOR DRAIN.  
[ ] TERMINATE 18" A.F.F.
- 6 [X] CONNECT TO DOMESTIC WATER SUPPLY WITH REDUCED PRESSURE BACKFLOW PREVENTOR.  
[ ] CONNECT TO MAKE-UP WATER VALVE PROVIDED BY PLBG. DIVISION 22.
- 7 ARRANGE PIPING AND PROVIDE UNIONS TO ALLOW STRAINER REMOVAL AS APPROPRIATE.

NOTE:

- A. PROVIDE TEMPERATURE WELLS WHERE REQUIRED BY SPECIFICATIONS. TEMPERATURE CONTROL, SUB-CONTRACTOR AND/OR AS NOTED ON PLANS, AND DETAILS.



SYSTEM	FLUID TEMPERATURE RANGE (°F)
STEAM (5 PSIG TO 30 PSIG)	220 - 275
STEAM CONDENSATE	130 - 225
HIGH TEMPERATURE HOT WATER	351 - 450
MEDIUM TEMPERATURE HOT WATER	251 - 350
LOW TEMPERATURE HOT WATER	201 - 250
	141 - 200
	110 - 140
GEO THERMAL HEAT PUMP	20 - 110
HEAT PUMP	65 - 90
CHILLED WATER	40 - 60
BRINE	
COLD WATER MAKE-UP	40 - 55
COIL CONDENSATE DRAINAGE	
REFRIGERANT SUCTION	45 - 55

PIPE INSULATION SCHEDULE				
FLUID TEMP RANGE (°F)	PIPE SIZE (IN)	CONDUCTIVITY BTU/IN/(hr°FT2°F)	MEAN RATING TEMP (°F)	INSULATION THICKNESS (IN)
141 - 200	< 1-1/2	0.25 - 0.29	125	1.5
	1-1/2 to <= 8	0.25 - 0.29	125	2.0
105 - 140	< 1-1/2	0.21 - 0.28	100	1.0
	1-1/2 to <= 8	0.21 - 0.28	100	1.5
61 - 104	ALL	N/A	N/A	N/A
40 - 60	< 1-1/2	0.21 - 0.27	75	0.5
	1-1/2 to <= 8	0.21 - 0.27	75	1.0
< 40	< 1	0.20 - 0.26	75	0.5
	1 to <= 8	0.20 - 0.26	75	1.0
	> 8	0.20 - 0.26	75	1.5

- NOTES:
- FOR EXTERIOR PIPING, PROVIDE ADDITIONAL PROTECTIVE JACKET, MATERIAL AS SPECIFIED.
  - PROVIDE HEAT TRACING WHERE NOTED, AND INSULATION FOR HEAT-PUMP PIPING SERVING ROOFTOP UNITS.
  - PROVIDE FACTORY APPLIED ASJ FOR ALL FIBERGLASS PIPE INSULATION.
  - PROVIDE VAPOR BARRIER ON ALL SYSTEMS OPERATING BELOW AMBIENT TEMPERATURE.
  - PROVIDE DOUBLE THICKNESS INSULATION FOR EXTERIOR, ABOVE-GRADE PIPING.
  - PROVIDE PVC JACKET ON ALL INTERIOR, INSULATED, EXPOSED PIPING. PIPING EXPOSED IN MECHANICAL ROOM DOES NOT REQUIRE A PVC JACKET UNLESS NOTED ON PLANS.
  - PIPE INSULATION SHALL BE PAINTABLE.

VRF INDOOR UNIT																				
UNIT NO.	TYPE	ELECTRICAL				CAPACITY (MBH)				SUPPLY AIR				MOTOR POWER (W)	SOUND PRESSURE H/M/L (dBA)	WEIGHT (LBS)	ACC MARK	BASIS OF DESIGN		NOTES
		VOLT	PH	MCA	MOP	CLG	HTG	CLG	HTG	SPEED	CFM	ESP ("WC)	MFGR					MODEL		
VRF-08-104	HORIZ.	230	1	1.75	15	7.9	7.4	7.2	6.6	H	300	0.6	42	24-28-30	50	ACHP-1	Mitsubishi Electric	TPEFYP008MA144A		
VRF-12-108	HORIZ.	230	1	2.13	15	10.2	9.4	10.8	9.9	H	371	0.6	52	26-30-34	50	ACHP-1	Mitsubishi Electric	TPEFYP012MA144A		
VRF-18-112	HORIZ.	230	1	2.88	15	12.9	12.7	13.6	12.5	H	600	0.6	82	29-33-37	50	ACHP-1	Mitsubishi Electric	TPEFYP018MA144A		
VRF-08-114	HORIZ.	230	1	1.75	15	5.7	5.8	7.2	6.6	H	300	0.6	42	24-28-30	50	ACHP-1	Mitsubishi Electric	TPEFYP008MA144A		
VRF-12-117	HORIZ.	230	1	2.13	15	10.3	11.3	10.8	9.9	H	371	0.6	52	26-30-34	50	ACHP-1	Mitsubishi Electric	TPEFYP012MA144A		

VRF OUTDOOR UNIT SCHEDULE																	
UNIT NO.	LOCATION	SERVICE	ELECTRICAL				MIN EER	MIN SEER	MIN COP (@ 47°F)	CORRECTED CAPACITY		SOUND PRESSURE H/M/L (dBA)	REFRIG PIPE DIA HIGH/LOW (IN)	WEIGHT (LBS)	BASIS OF DESIGN		NOTES
			VOLT	PH	MCA	MOP				COOLING (MBH)	HEATING (MBH)				MFGR	MODEL	
ACHP-1	GRADE	HEAT/COOL	240	1	36	44	12.2	19.55	4.08	50.4	45.8	51.0-54.0	3/8 / 5/8	300	MITSUBISHI	NTXMSH48A142AA	

CORRECTED CAPACITY BASED ON DESIGN COOLING OUTDOOR TEMPERATURE OF 91.0 DEG F  
CORRECTED CAPACITY BASED ON DESIGN HEATING OUTDOOR TEMPERATURE OF -7 DEG F

FINNED TUBE RADIATION SCHEDULE												
UNIT NO.	BTU/LF	AWT (F)	ELEMENT	ENCLOSURE			MOUNTING		DAMPER TYPE	BASIS OF DESIGN		REMARKS
				TYPE	GAUGE	HEIGHT (IN)	ARRANGEMENT	BOTTOM AFF (IN)		MFGR	MODEL	
FT-A	656	175.0	3/4"x3.25x3.25-32	SLOPE TOP	16"		FULL		NONE	RITTLING	FS	

CABINET UNIT HEATER SCHEDULE																		
UNIT NO.	TYPE	INLET	DISCHARGE	FAN				HEATING COIL				BASIS OF DESIGN				NOTES		
				CFM	ESP ("WC)	MOTOR HP	VOLT	PH	MBH	EAT (°F)	LAT (°F)	GPM	EWI (°F)	LWT (°F)	WPD (FT)		MFRG	MODEL
CUH-A	VERTICAL	BOTTOM	SLOPED	240	0.00	1/30	120	1	16	60.0	125.0	1.0	180.0	150.0	5.00	TRANE	FORCEFLO 02	

ENERGY RECOVERY UNIT SCHEDULE																											
UNIT NO.	SERVICE	ELECTRICAL			RECOVERY	OUTDOOR AIR	EXHAUST AIR	SUMMER CONDITIONS								WINTER CONDITIONS											
		VOLTS	PH	MCA				TYPE	MATERIAL	CFM	APD ("WC)	CFM	APD ("WC)	OA - EAT (DB °F)	OA - EAT (WB °F)	OA - LAT (DB °F)	OA - LAT (WB °F)	EA - EAT (DB °F)	EA - EAT (WB °F)	ENTHALPY RATIO	OA - EAT (DB °F)	OA - EAT (WB °F)	OA - LAT (DB °F)	OA - LAT (WB °F)	EA - EAT (DB °F)	EA - EAT (WB °F)	ENTHALPY RECOVERY
ERU-1	VENTILATION	208 V	1	3.8	CORE	FIBER	350	0.5	350	0.5	31.0	71.0	79.4	66.0	75.0	62.4	61%	-7.0	-8.1	46.2	38.1	72.0	55.7	63%	GREENHECK	MINICORE-S-VG-FM	1, 2, 3, 4

- NOTES:
- PROVIDE NON-FUSED DISCONNECT SWITCH.
  - PROVIDE TIMED EXHAUST FROST CONTROL.
  - PROVIDE 7-DAY TIMECLOCK.
  - PROVIDE HANGING ISOLATION KIT.

EQUIPMENT INSULATION SCHEDULE		
SERVICE	INSULATION THICKNESS (IN)	INSULATION
CHILLED-WATER PUMPS, AIR SEPARATOR, BUFFER TANK AND ACCESSORIES	1	FIBERGLASS OR FLEXIBLE ELASTOMERIC SHEET
HEATING-WATER PUMPS AND ACCESSORIES	N/A	UNINSULATED
HEATING-WATER EXPANSION OR COMPRESSION TANKS	1-1/2	FIBERGLASS OR FLEXIBLE ELASTOMERIC SHEET
HEATING-WATER EXPANSION OR COMPRESSION TANKS	N/A	UNINSULATED
GENERATOR EXHAUST PIPING AND HOUSING	2-1/2	CALCIUM SILICATE
HUMIDIFIER HOUSING		FIBERGLASS
HEAT EXCHANGER AND BOILER FEED TANKS	1	FIBERGLASS
REPEAT COIL CASINGS	1	FIBERGLASS

- NOTES:
- PUMP INSULATION MAY BE INSTALLED ON GALVANIZED METAL BOX OR SIMILAR ENCLOSURE THAT FULLY ENCOMPASSES PUMP AND SEALS REASONABLY RIGHT TO PIPING AND FLOOR.

DUCT INSULATION SCHEDULE MINIMUM INSTALLED "R" VALUE ( CLIMATE ZONES 5 THROUGH 8)					
SERVICE	INSIDE BUILDING ENVELOPE			WITHIN BUILDING ENVELOPE	OUTSIDE BUILDING ENVELOPE (NOTE 4)
	UNCONDITIONED SPACE	INDIRECTLY CONDITIONED SPACE	CONDITIONED SPACE		
HEATING AND/OR AIR-CONDITIONING SUPPLY AIR	R-6	SEE NOTE 1	SEE NOTE 1	R-12	R-12
HEATING AND/OR AIR-CONDITIONING RETURN AIR	R-6	NONE	NONE	R-12	R-12
HEAT PUMP SUPPLY AIR	R-6	SEE NOTE 1	SEE NOTE 1	R-12	R-12
TRANSFER AIR DUCTS	R-6	NONE	NONE	R-12	R-12
OUTSIDE-AIR DUCTS, PLENUMS, MIXING BOXES	R-6	R-5	R-5	R-12	R-12
LOUVER BLANK-OFFS	R-12	R-12	R-12	R-12	N/A
RELIEF-AIR DUCTS AND PLENUMS	NONE (NOTE 3)	NONE	NONE	NONE (NOTE 2)	N/A (NOTE 2)
EXHAUST AIR DUCTS	NONE (NOTE 3)	NONE	NONE	NONE (NOTE 2)	N/A (NOTE 2)
EXHAUST AIR DUCTS LEAVING ENERGY RECOVERY UNIT	R-6	R-5	R-5	R-12	N/A
VENTILATION SUPPLY AIR BELOW 60 DEG F	R-6	R-5	R-5	R-12	R-12
VENTILATION SUPPLY AIR ABOVE 60 DEG F	R-6	NONE	NONE	R-12	R-12
AIR-CONDITIONING SUPPLY AND RETURN AIR THROUGH POOL AREAS	R-6	R-1.3	R-1.3	R-12	R-12
VENTILATION SUPPLY AIR BELOW 60 DEG F, THROUGH POOL AREAS	R-6	R-6	R-6	R-12	R-12
VENTILATION SUPPLY AIR ABOVE 60 DEG F, THROUGH POOL AREAS	R-6	R-1.3	R-1.3	R-12	R-12
CONCEALED KITCHEN EXHAUST DUCTWORK	R-6	R-6	R-6	R-12	R-12

- NOTES:
- ENERGY CODE DOES NOT REQUIRE INSULATION, HOWEVER INSULATION IS REQUIRED TO PREVENT CONDENSATION ON DUCTWORK. PROVIDE A MINIMUM THICKNESS.
  - PROVIDE R-12 IF DUCTED TO AN ENERGY RECOVERY UNIT.
  - PROVIDE R-6 IF DUCTED TO AN ENERGY RECOVERY UNIT.
  - PROVIDE FIELD APPLIED JACKET.

- DEFINITIONS:
- UNCONDITIONED SPACE:** INCLUDES SPACES NOT DIRECTLY HEATED OR COOLED SUCH AS VENTED AND UNVENTED ATTICS, SHAFTS AND VENTED CRAWLSPACES.
  - INDIRECTLY CONDITIONED SPACE:** SPACES THAT ARE NOT CONDITIONED DIRECTLY BUT HAVE UNINSULATED SURFACES SEPARATING THEM FROM CONDITIONED SPACES AND ARE INCLUDED WITHIN THE INSULATED ENVELOPE OF THE BUILDING.
  - CONDITIONED SPACE:** AN AREA OR ROOM WITHIN A BUILDING BEING HEATED OR COOLED, OR WITH A FIXED OPENING DIRECTLY INTO AN ADJACENT CONDITIONED SPACE.

GRILLE AND DIFFUSER SCHEDULE				
MARK	MANUFACTURER	MODEL	DESCRIPTION	REMARKS
EA	TITUS	350RL	STEEL RETURN/EXHAUST GRILLE, 3/4" BLADE SPACING, 35 DEGREE DEFLECTION, BLADES PARALLEL TO LONG DIMENSION	1
RA	TITUS	350RL	STEEL RETURN/EXHAUST GRILLE, 3/4" BLADE SPACING, 35 DEGREE DEFLECTION, BLADES PARALLEL TO LONG DIMENSION	1
SA	EVERBILT	E115SW	STEEL BASEBOARD DIFFUSER, REMOVEABLE FACE, WHITE FINISH	1
SB	TITUS	300RL	STEEL LOUVERED SUPPLY GRILLE, DOUBLE DEFLECTION	1

- NOTES:
- SELECTIONS BASED ON MAXIMUM NC-20.



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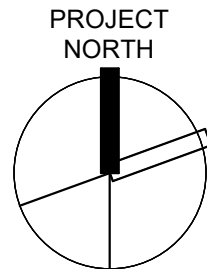
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Tel: 315-471-4013  
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
M - CONTRACT



REVISIONS

NO.	DESCRIPTION	DATE

PROJECT NUM  
221101.00

D A T E  
04/17/23

SHEET TITLE  
SCHEDULES

M-601







ELECTRICAL KEYED NOTES	
ED1	DISCONNECT, REMOVE AND REPLACE EXISTING MAIN DISTRIBUTION PANEL MDP. PROVIDE ADDITIONAL CONDUIT, WIRE AND HARDWARE AS REQUIRED TO EXTEND EXISTING FEEDER TO REPLACEMENT PANEL MDP-AB, AS INDICATED ON NEW WORK PLANS. MAINTAIN EXISTING BRANCH CIRCUITS THAT ARE TO REMAIN AFTER RENOVATION WORK IS COMPLETE AND EXTEND TO SIMILAR SIZE CIRCUIT BREAKER IN REPLACEMENT PANEL "MDP-AB". ESTIMATED CIRCUITS TO BE EXTENDED INCLUDE: (1) 20A-2P, (1) 30A-2P & (6) 20A-1P. PROVIDE ADDITIONAL CONDUIT, WIRE AND HARDWARE AS REQUIRED TO EXTEND EXISTING BRANCH CIRCUITS TO REPLACEMENT PANEL.
ED2	DISCONNECT AND REMOVE EXISTING LOAD CENTER AND ASSOCIATED FEEDER BACK TO SOURCE. MAINTAIN EXISTING BRANCH CIRCUITS THAT ARE TO REMAIN AFTER RENOVATION WORK IS COMPLETE AND EXTEND TO SIMILAR SIZE CIRCUIT BREAKER IN LOAD CENTER "LC-1". ESTIMATED CIRCUITS TO BE EXTENDED INCLUDE: (7) 20A-1P. PROVIDE ADDITIONAL CONDUIT, WIRE AND HARDWARE AS REQUIRED TO EXTEND EXISTING BRANCH CIRCUITS TO LOAD CENTER "LC-1".
ED4	DISCONNECT EXISTING SECURITY PANEL, VERIFY EXACT REQUIREMENTS WITH OWNER.

ELECTRICAL DEMOLITION NOTES	
A	COORDINATE SCHEDULING OF DEMOLITION WITH CONSTRUCTION MANAGER PHASING DRAWINGS AND REQUIREMENTS.
B	VERIFY LOCATIONS AND SCHEDULE OF REMOVAL WORK AT ALL AREAS PRIOR TO STARTING WORK. PROVIDE ALL REQUIRED WIRING AND TEMPORARY CONNECTIONS NECESSARY TO MAINTAIN CONTINUITY OF SERVICES DURING ALL STAGES OF WORK.
C	MAINTAIN ELECTRICAL CONTINUITY OF EXISTING ELECTRICAL EQUIPMENT, OUTLETS AND DEVICES THAT ARE TO REMAIN.
D	UNLESS OTHERWISE INDICATED, DISCONNECT EXISTING ELECTRICAL (AND/OR MECHANICAL) EQUIPMENT AND CONTROL ITEMS INDICATED. REMOVE ALL ASSOCIATED WIRING AND CONDUIT BACK TO SOURCE. ON THIS PLAN, EXISTING MECHANICAL/ELECTRICAL EQUIPMENT ITEMS ARE INDICATED BY
E	UNLESS OTHERWISE INDICATED, ON THIS FLOOR DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES, FIRE ALARM SYSTEM (DEVICES/APPLIANCES), FIXTURES AND EQUIPMENT AND ASSOCIATED CIRCUITING BACK TO SOURCE.
F	DEVICES/EQUIPMENT WITH SUBSCRIPT "EX" ARE EXISTING TO REMAIN.



 **A1**  
**ED-101** **BASEMENT REMOVAL PLAN**  
SCALE: 1/4" = 1'-0" 



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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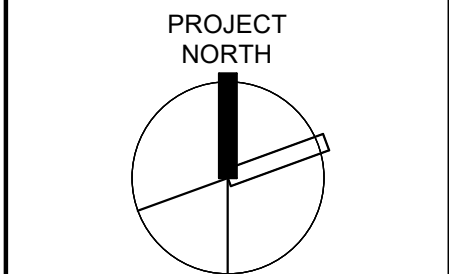
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NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY

BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA STORAGE  
BUILDING

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
**E - CONTRACT**



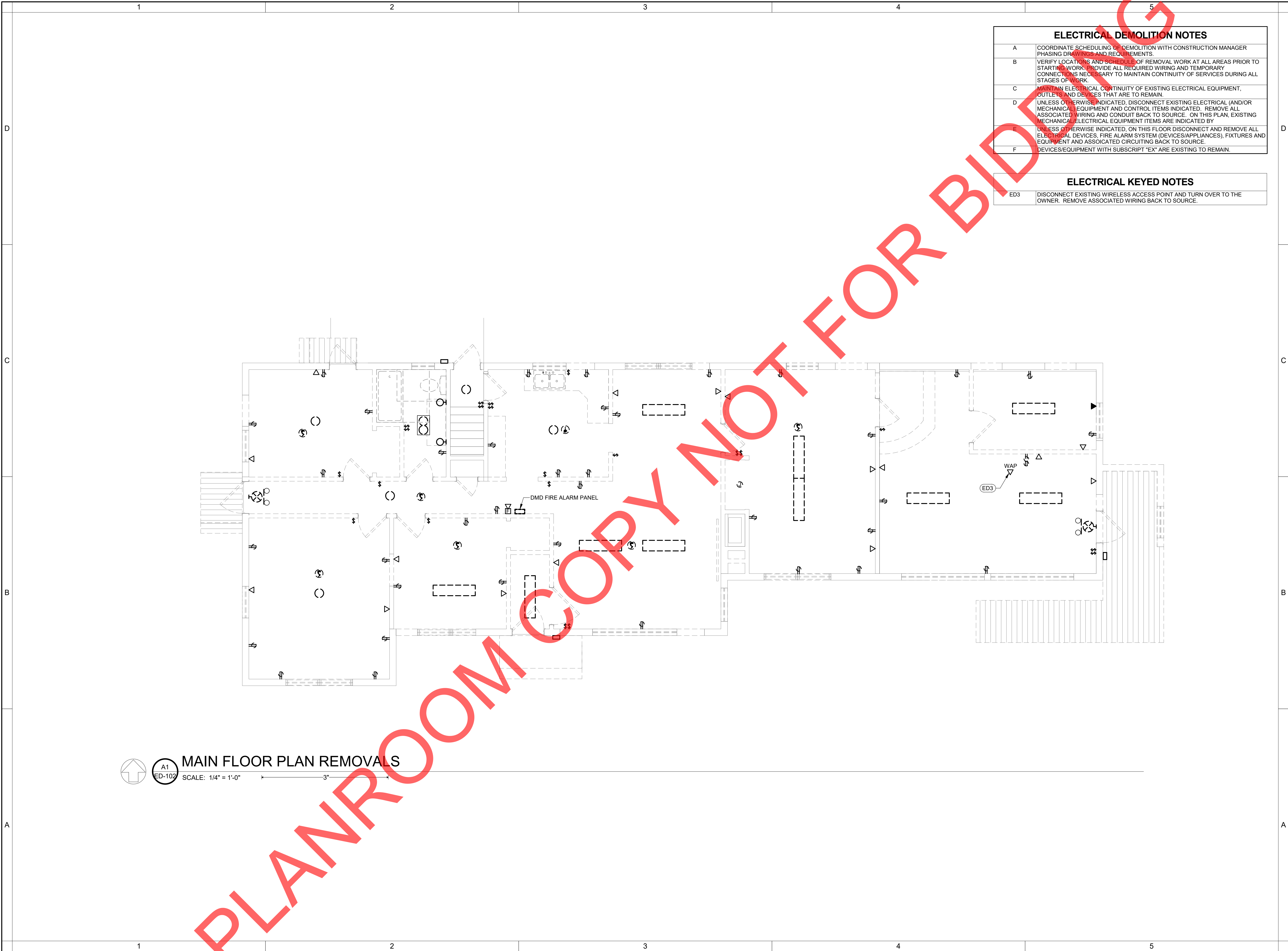
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PROJECT NUM  
221101.00  
DATE  
04/17/23

SHEET TITLE  
**BASEMENT FLOOR  
REMOVALS**

**ED-101**





ELECTRICAL DEMOLITION NOTES	
A	COORDINATE SCHEDULING OF DEMOLITION WITH CONSTRUCTION MANAGER PHASING DRAWINGS AND REQUIREMENTS.
B	VERIFY LOCATIONS AND SCHEDULE OF REMOVAL WORK AT ALL AREAS PRIOR TO STARTING WORK. PROVIDE ALL REQUIRED WIRING AND TEMPORARY CONNECTIONS NECESSARY TO MAINTAIN CONTINUITY OF SERVICES DURING ALL STAGES OF WORK.
C	MAINTAIN ELECTRICAL CONTINUITY OF EXISTING ELECTRICAL EQUIPMENT, OUTLETS AND DEVICES THAT ARE TO REMAIN.
D	UNLESS OTHERWISE INDICATED, DISCONNECT EXISTING ELECTRICAL (AND/OR MECHANICAL) EQUIPMENT AND CONTROL ITEMS INDICATED. REMOVE ALL ASSOCIATED WIRING AND CONDUIT BACK TO SOURCE. ON THIS PLAN, EXISTING MECHANICAL/ELECTRICAL EQUIPMENT ITEMS ARE INDICATED BY:
E	UNLESS OTHERWISE INDICATED, ON THIS FLOOR DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES, FIRE ALARM SYSTEM (DEVICES/APPLIANCES), FIXTURES AND EQUIPMENT AND ASSOCIATED CIRCUITING BACK TO SOURCE.
F	DEVICES/EQUIPMENT WITH SUBSCRIPT "EX" ARE EXISTING TO REMAIN.

ELECTRICAL KEYED NOTES	
ED3	DISCONNECT EXISTING WIRELESS ACCESS POINT AND TURN OVER TO THE OWNER. REMOVE ASSOCIATED WIRING BACK TO SOURCE.

 **A1**  
**ED-102** MAIN FLOOR PLAN REMOVALS  
SCALE: 1/4" = 1'-0" 



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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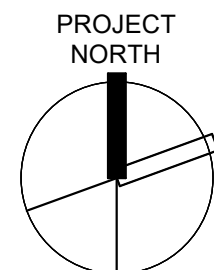
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12441

PROJECT TRADE  
**E - CONTRACT**



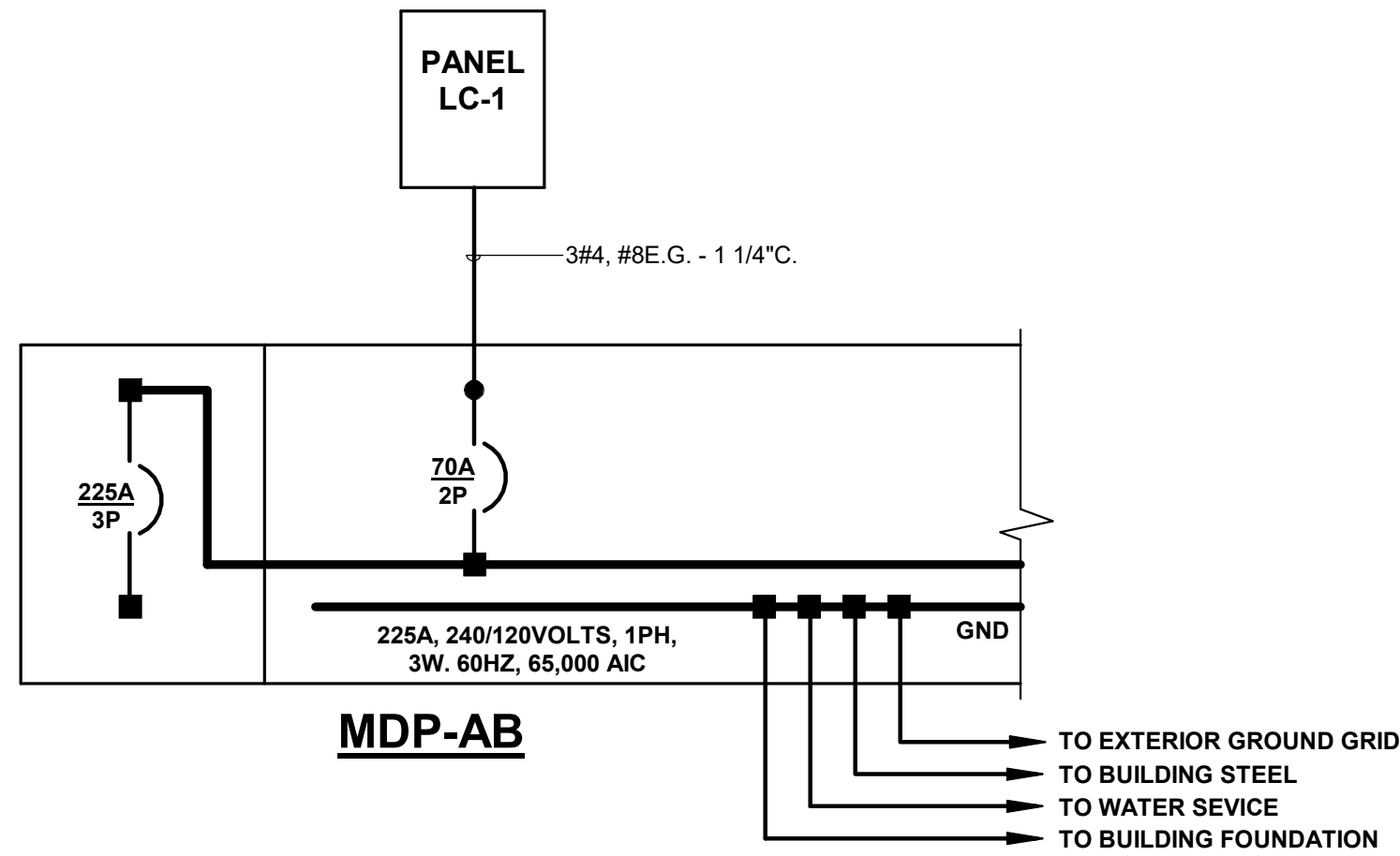
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PROJECT NUM  
221101.00

D A T E  
04/17/23

SHEET TITLE  
**MAIN FLOOR PLAN  
REMOVALS**

**ED-102**

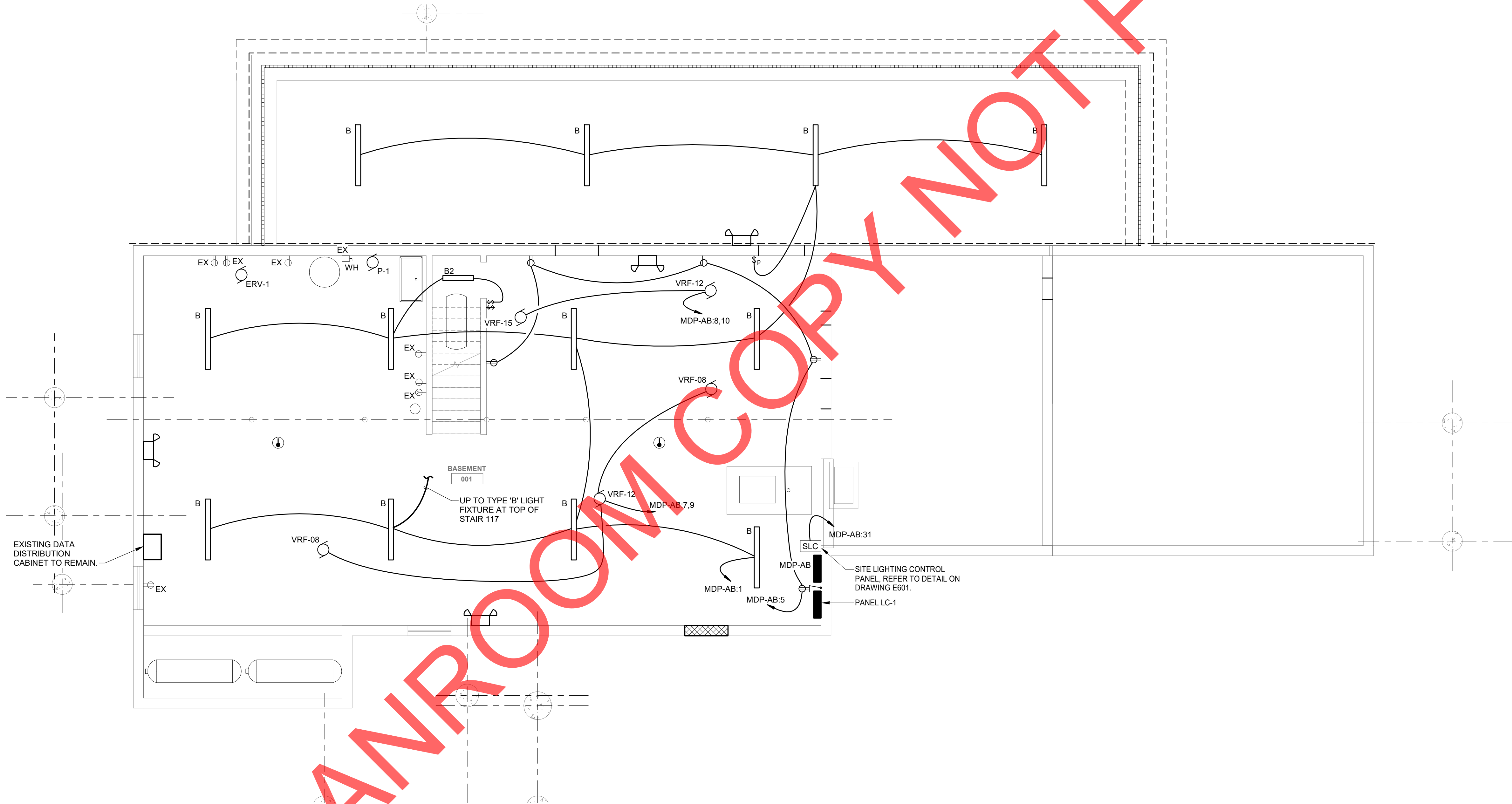


C1  
E-101  
POWER ONE LINE DIAGRAM  
SCALE: NOT TO SCALE

PANELBOARD SCHEDULE									
PANEL IDENTIFICATION	LOCATION	MAINS	VOLTAGE	BRANCHES					REMARKS
				1 POLE	2 POLE	3 POLE	SPARES	SPACES	
MDP-AB	BASEMENT	225A MCB	240/120	6 - 20A	3 - 20A 1 - 30A 1 - 50A 1 - 70A	-	4 - 20A/1P	5	A, B
LC-1	BASEMENT	100A MLO	240/120	12 - 20A	-	-	8 - 20A/1P	10	A

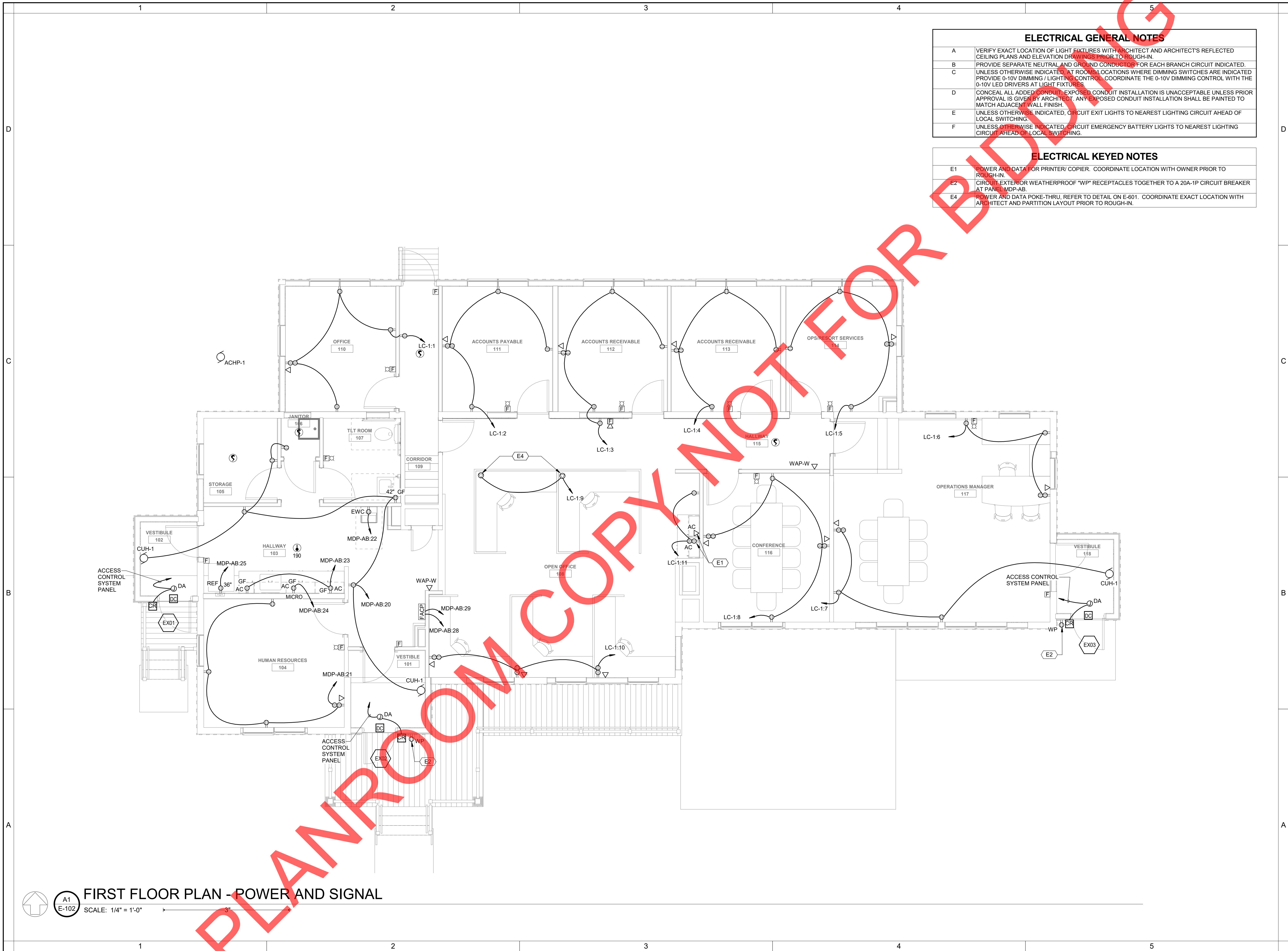
NOTES: PANELBOARD SCHEDULE  
A. PANELBOARD WITH HINGED TRIM/DOOR-IN-DOOR COVER. PROVIDE LUGS TO ACCOMMODATE WIRE SIZES INDICATED.  
B. PROVIDE SERVICE ENTRANCE RATED PANELBOARD.

ELECTRICAL GENERAL NOTES	
A	VERIFY EXACT LOCATION OF LIGHT FIXTURES WITH ARCHITECT AND ARCHITECT'S REFLECTED CEILING PLANS AND ELEVATION DRAWINGS PRIOR TO ROUGH-IN.
B	PROVIDE SEPARATE NEUTRAL AND GROUND CONDUCTOR FOR EACH BRANCH CIRCUIT INDICATED.
C	UNLESS OTHERWISE INDICATED, AT ROOMS/LOCATIONS WHERE DIMMING SWITCHES ARE INDICATED PROVIDE 0-10V DIMMING / LIGHTING CONTROL. COORDINATE THE 0-10V DIMMING CONTROL WITH THE 0-10V LED DRIVERS AT LIGHT FIXTURES.
D	CONCEAL ALL ADDED CONDUIT. EXPOSED CONDUIT INSTALLATION IS UNACCEPTABLE UNLESS PRIOR APPROVAL IS GIVEN BY ARCHITECT. ANY EXPOSED CONDUIT INSTALLATION SHALL BE PAINTED TO MATCH ADJACENT WALL FINISH.
E	UNLESS OTHERWISE INDICATED, CIRCUIT EXIT LIGHTS TO NEAREST LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING.
F	UNLESS OTHERWISE INDICATED, CIRCUIT EMERGENCY BATTERY LIGHTS TO NEAREST LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING.



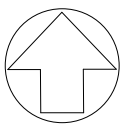
A1  
E-101  
BASEMENT PLAN  
SCALE: 1/4" = 1'-0"





ELECTRICAL GENERAL NOTES	
A	VERIFY EXACT LOCATION OF LIGHT FIXTURES WITH ARCHITECT AND ARCHITECT'S REFLECTED CEILING PLANS AND ELEVATION DRAWINGS PRIOR TO ROUGH-IN.
B	PROVIDE SEPARATE NEUTRAL AND GROUND CONDUCTOR FOR EACH BRANCH CIRCUIT INDICATED.
C	UNLESS OTHERWISE INDICATED, AT ROOM LOCATIONS WHERE DIMMING SWITCHES ARE INDICATED PROVIDE 0-10V DIMMING / LIGHTING CONTROL. COORDINATE THE 0-10V DIMMING CONTROL WITH THE 0-10V LED DRIVERS AT LIGHT FIXTURES.
D	CONCEAL ALL ADDED CONDUIT. EXPOSED CONDUIT INSTALLATION IS UNACCEPTABLE UNLESS PRIOR APPROVAL IS GIVEN BY ARCHITECT. ANY EXPOSED CONDUIT INSTALLATION SHALL BE PAINTED TO MATCH ADJACENT WALL FINISH.
E	UNLESS OTHERWISE INDICATED, CIRCUIT EXIT LIGHTS TO NEAREST LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING.
F	UNLESS OTHERWISE INDICATED, CIRCUIT EMERGENCY BATTERY LIGHTS TO NEAREST LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING.

ELECTRICAL KEYED NOTES	
E1	POWER AND DATA FOR PRINTER/ COPIER. COORDINATE LOCATION WITH OWNER PRIOR TO ROUGH-IN.
E2	CIRCUIT EXTERIOR WEATHERPROOF "WP" RECEPTACLES TOGETHER TO A 20A-1P CIRCUIT BREAKER AT PANEL MDP-AB.
E4	POWER AND DATA POKE-THRU, REFER TO DETAIL ON E-601. COORDINATE EXACT LOCATION WITH ARCHITECT AND PARTITION LAYOUT PRIOR TO ROUGH-IN.



**FIRST FLOOR PLAN - POWER AND SIGNAL**  
A1  
E-102  
SCALE: 1/4" = 1'-0"



450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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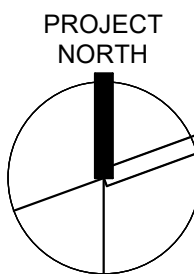
**FS ENGINEERING, DPC**  
721 E. Genesee Street  
Syracuse, NY 13210  
Tel: 315-471-4013  
Fax: 315-471-4044  
FSE 21056

**NYS OLYMPIC REGIONAL  
DEVELOPMENT AUTHORITY**

**BELLEAYRE ADMINISTRATIVE  
BUILDING & GONDOLA STORAGE  
BUILDING**

**HIGHMOUNT, NEW YORK  
12441**

**PROJECT TRADE  
E - CONTRACT**



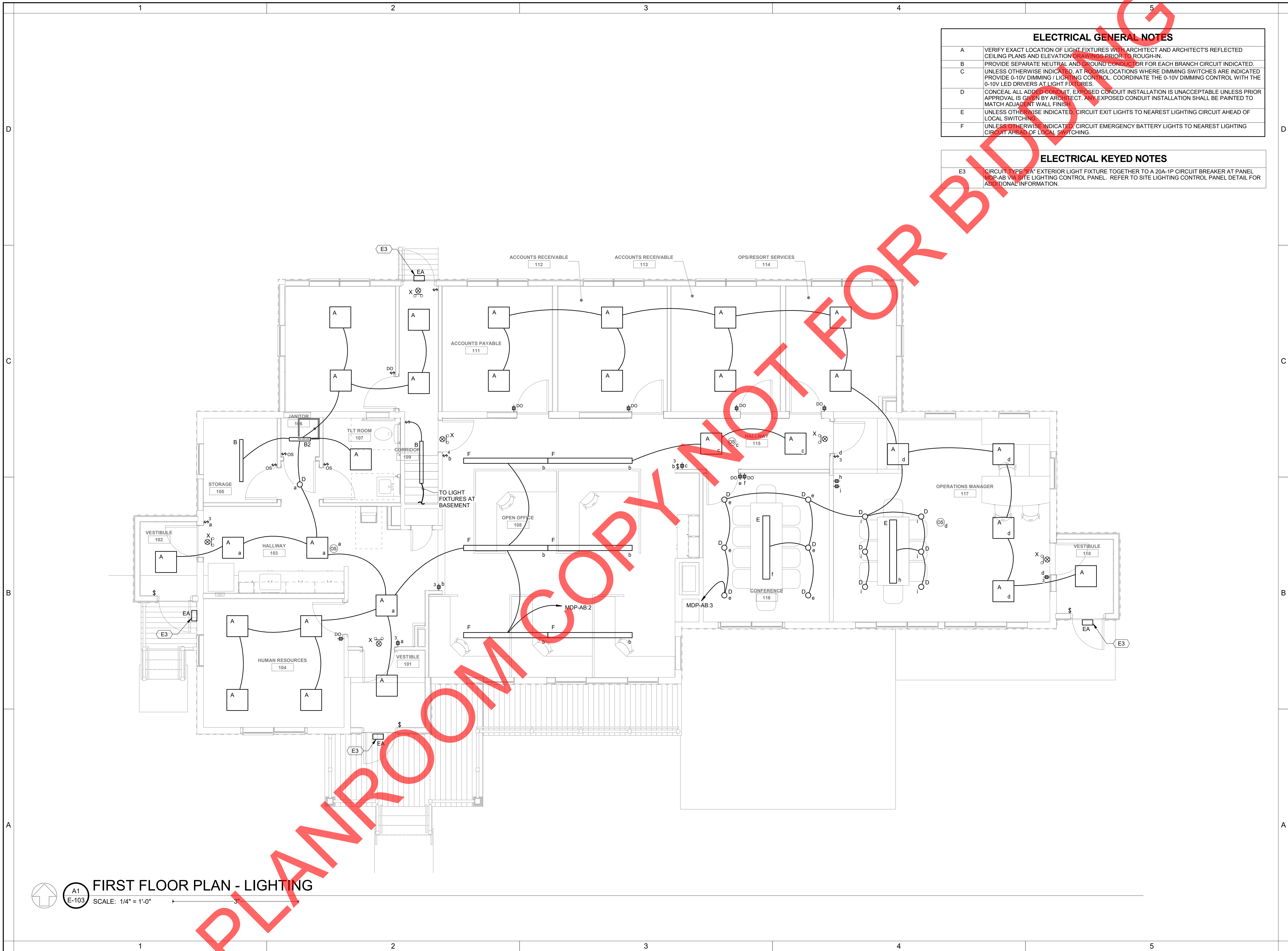
REVISIONS

NO.	DESCRIPTION	DATE

**PROJECT NUM  
221101.00**

**D A T E  
04/17/23**

**SHEET TITLE  
FIRST FLOOR PLAN -  
POWER AND SIGNAL**



ELECTRICAL GENERAL NOTES	
A	VERIFY EXACT LOCATION OF LIGHT FIXTURES WITH ARCHITECT AND ARCHITECT'S REFLECTED CEILING PLANS AND ELEVATION DRAWINGS PRIOR TO ROUGH-IN.
B	PROVIDE SEPARATE NEUTRAL AND GROUND CONDUCTOR FOR EACH BRANCH CIRCUIT INDICATED.
C	UNLESS OTHERWISE INDICATED, AT ROOMS/LOCATIONS WHERE DIMMING SWITCHES ARE INDICATED PROVIDE 0-10V DIMMING / LIGHTING CONTROL. COORDINATE THE 0-10V DIMMING CONTROL WITH THE 0-10V LED DRIVERS AT LIGHT FIXTURES.
D	CONCEAL ALL ADDED CONDUIT. EXPOSED CONDUIT INSTALLATION IS UNACCEPTABLE UNLESS PRIOR APPROVAL IS GIVEN BY ARCHITECT. ANY EXPOSED CONDUIT INSTALLATION SHALL BE PAINTED TO MATCH ADJACENT WALL FINISH.
E	UNLESS OTHERWISE INDICATED, CIRCUIT EXIT LIGHTS TO NEAREST LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING.
F	UNLESS OTHERWISE INDICATED, CIRCUIT EMERGENCY BATTERY LIGHTS TO NEAREST LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING.

ELECTRICAL KEYED NOTES	
E3	CIRCUIT TYPE "EA" EXTERIOR LIGHT FIXTURE TOGETHER TO A 20A-1P CIRCUIT BREAKER AT PANEL MDP-AB VIA SITE LIGHTING CONTROL PANEL. REFER TO SITE LIGHTING CONTROL PANEL DETAIL FOR ADDITIONAL INFORMATION.

**FIRST FLOOR PLAN - LIGHTING**  
A1  
E-103  
SCALE: 1/4" = 1'-0"

**PK DESIGN**  
450 SOUTH SALINA STREET  
SUITE 500 PO BOX 29  
SYRACUSE, NY 13201-0029



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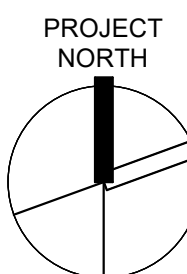
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**BELLEAYRE ADMINISTRATIVE  
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12441**

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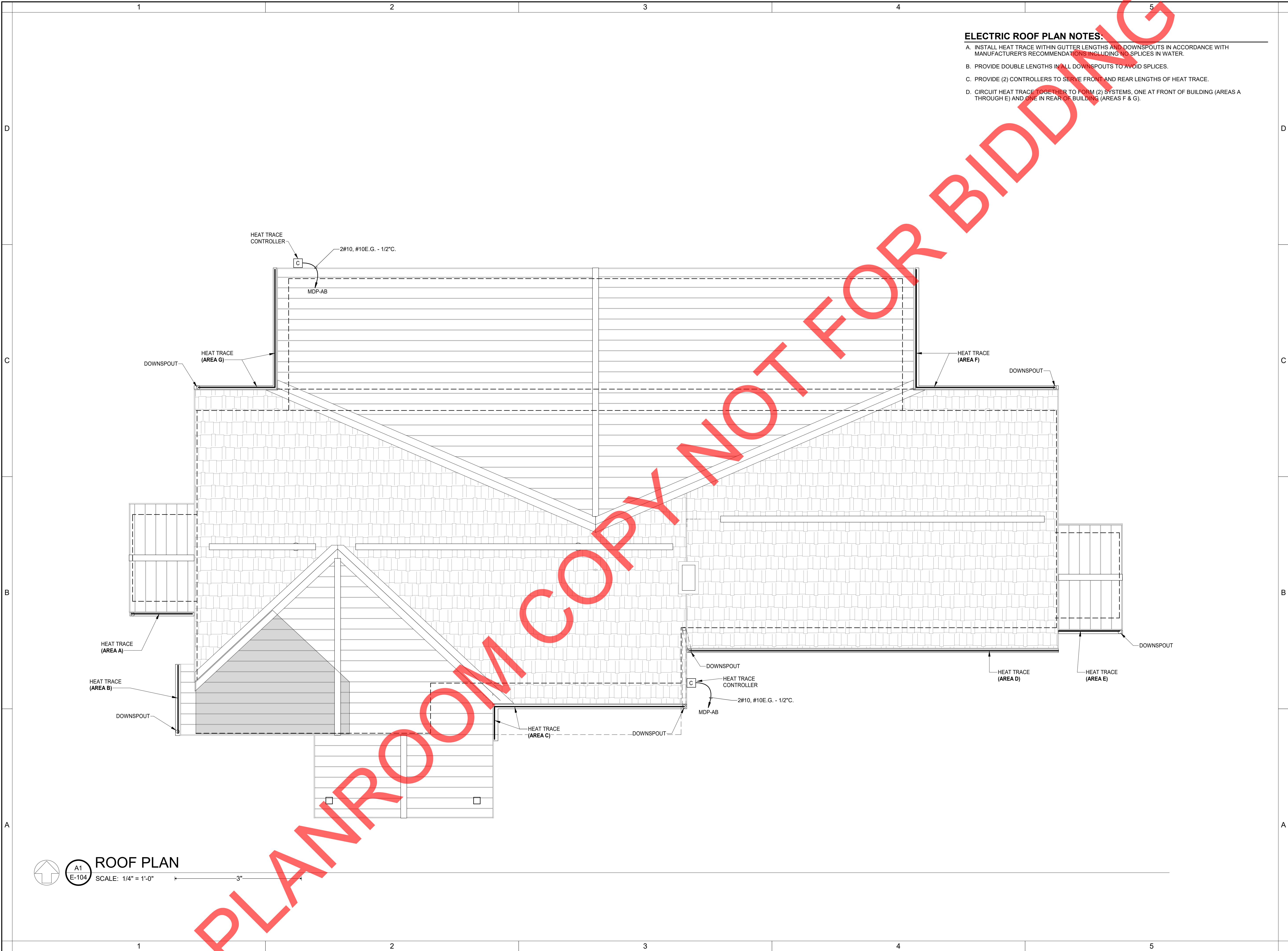
**PROJECT NUM  
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**D A T E  
04/17/23**

**SHEET TITLE  
FIRST FLOOR PLAN -  
LIGHTING**

**E-103**





- ELECTRIC ROOF PLAN NOTES:**
- A. INSTALL HEAT TRACE WITHIN GUTTER LENGTHS AND DOWNSPOUTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS INCLUDING NO SPLICES IN WATER.
  - B. PROVIDE DOUBLE LENGTHS IN ALL DOWNSPOUTS TO AVOID SPLICES.
  - C. PROVIDE (2) CONTROLLERS TO SERVE FRONT AND REAR LENGTHS OF HEAT TRACE.
  - D. CIRCUIT HEAT TRACE TOGETHER TO FORM (2) SYSTEMS, ONE AT FRONT OF BUILDING (AREAS A THROUGH E) AND ONE IN REAR OF BUILDING (AREAS F & G).

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BUILDING & GONDOLA STORAGE  
BUILDING

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12441

PROJECT TRADE  
**E - CONTRACT**

PROJECT  
NORTH

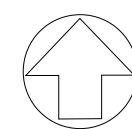
R E V I S I O N S	

PROJECT NUM			
221101.00			
D	A	T	E
04/17/23			
SHEET TITLE			
ROOF PLAN			

E-104







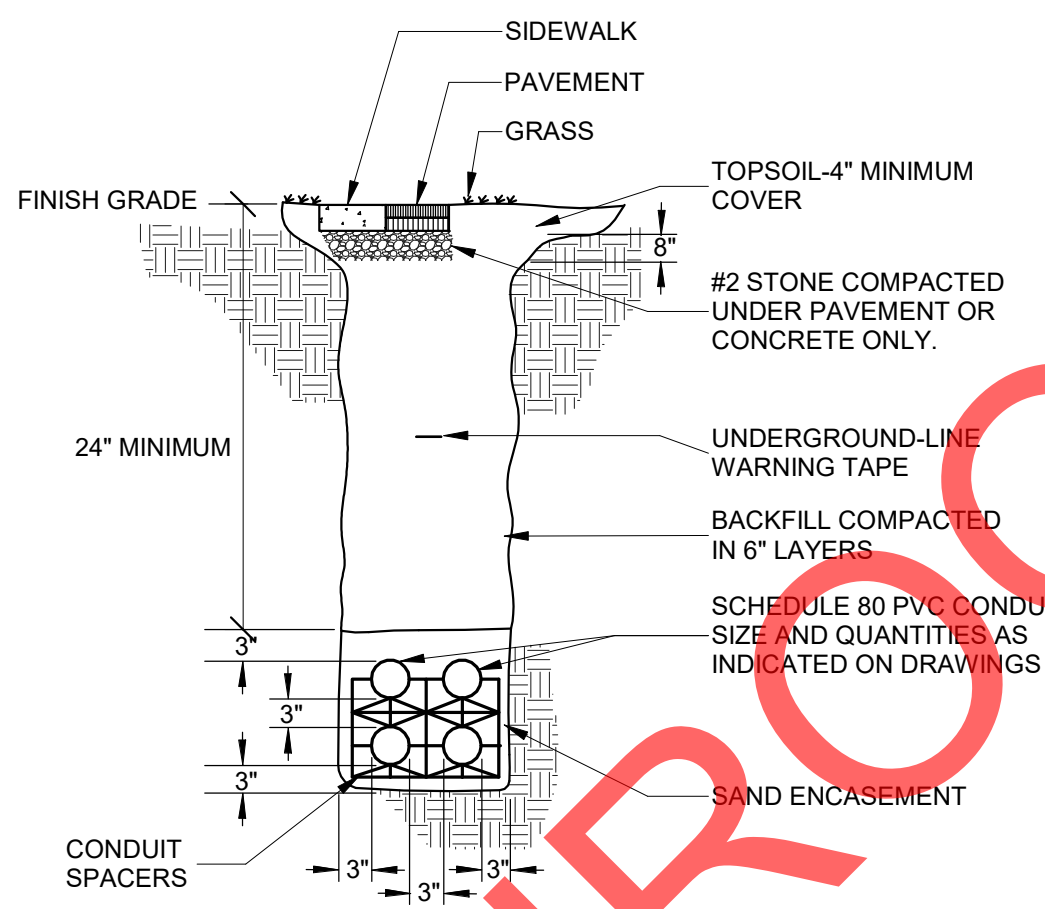
C1  
EG-101

### SITE - GONDOLA BUILDING

SCALE: 1" = 20'-0"

3"

3"



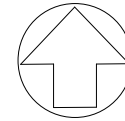
#### NOTES:

- TIE ALL CONDUIT DOWN.
- 3" HORIZONTAL AND VERTICAL SPACING BETWEEN CONDUITS.
- QUANTITY OF CONDUITS AND CONDUCTORS AS CALLED FOR.
- PROVIDE A PULLROPE IN EACH CONDUIT.

A1  
EG-101

### DIRECT BURIED DUCTBANK DETAIL

SCALE: NOT TO SCALE



C3  
EG-101

### FLOOR PLAN - GONDOLA

SCALE: 1/4" = 1'-0"

3"

PANELBOARD SCHEDULE										
PANEL IDENTIFICATION	LOCATION	MAINS	VOLTAGE	BRANCHES					MOUNTING	INTERRUPTING CAPACITY
				1 POLE	2 POLE	3 POLE	INACTIVE SPARES	SPACES		
GSBP	GONDOLA STOR BLDG	100A MCB	208/120	6 - 20A	-	2 - 20A	6 - 20A/1P	12	SURFACE	10,000

#### NOTES: PANELBOARD SCHEDULE

- PANELBOARD WITH HINGED TRIM/DOOR-IN-DOOR COVER. PROVIDE LUGS TO ACCOMMODATE WIRE SIZES INDICATED.
- PROVIDE SERVICE ENTRANCE RATED PANELBOARD.
- PROVIDE PANELBOARD WITH NEMA 4 ENCLOSURE.

A4  
EG-101

### POWER ONE LINE DIAGRAM

SCALE: NOT TO SCALE

#### ELECTRICAL GENERAL NOTES

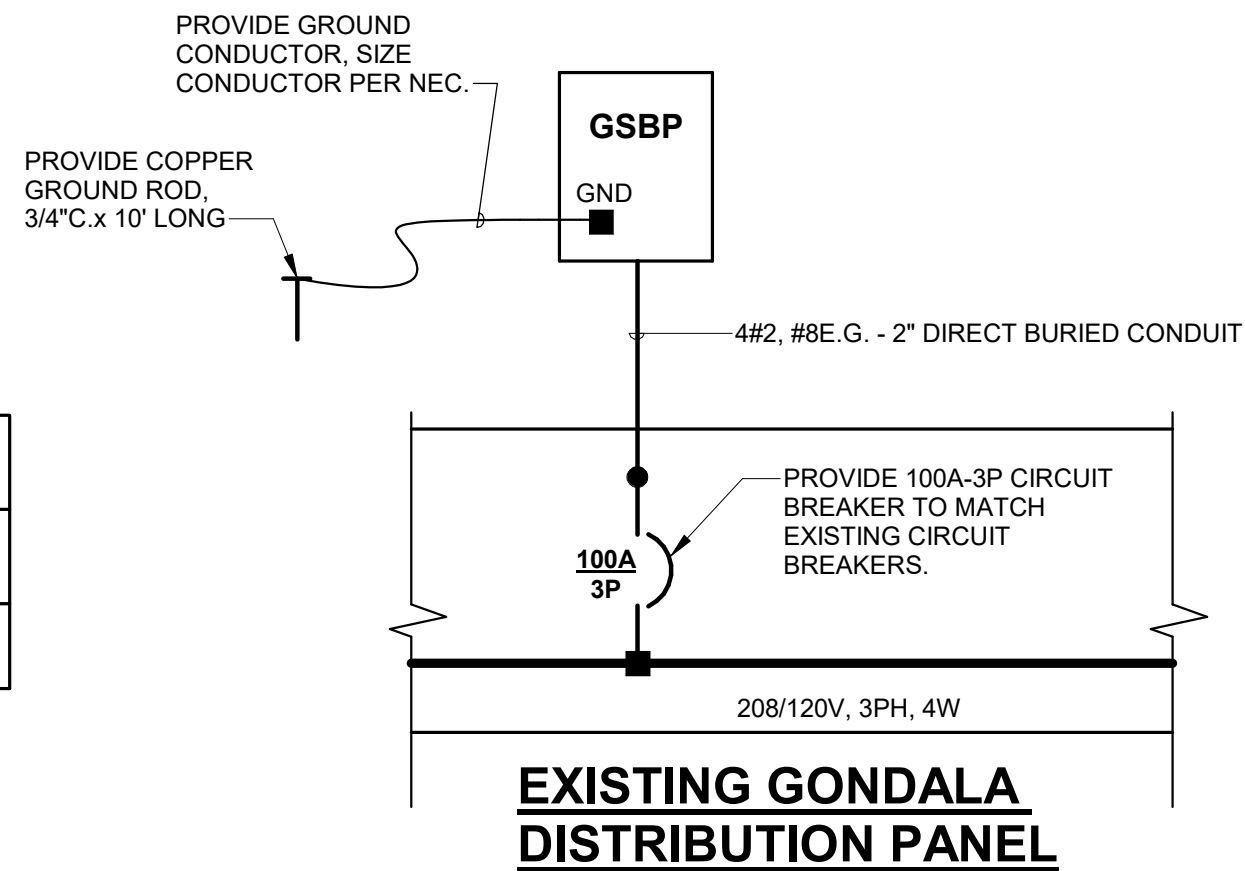
- VERIFY EXACT LOCATION OF LIGHT FIXTURES WITH ARCHITECT AND ARCHITECT'S REFLECTED CEILING PLANS AND ELEVATION DRAWINGS PRIOR TO ROUGH-IN.
- PROVIDE SEPARATE NEUTRAL AND GROUND CONDUCTOR FOR EACH BRANCH CIRCUIT INDICATED.

#### ELECTRICAL KEYED NOTES

- OVERHEAD DOOR CONTROLS PROVIDED BY GC AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN. PROVIDE LOW VOLTAGE WIRING FROM OVERHEAD DOOR CONTROLS TO OVERHEAD DOOR OPERATOR AS RECOMMENDED BY EQUIPMENT MANUFACTURER.
- PROVIDE WALL-MOUNTED ELECTRIC UNIT HEATER ABOVE DOOR, QMARK UH-520 OR SIMILAR. 5KW CAPACITY, 208V/3PH, 13.8 MCA, 270 CFM.
- PROVIDE WALL-MOUNTED ELECTRIC UNIT HEATER WITH BOTTOM INLET, FRONT DISCHARGE CONFIGURATION, QMARK CU935 OR SIMILAR. 5KW CAPACITY, 208V/3PH, 15.0 MCA, 250 CFM. PROVIDE UNIT WITH BUILT-IN THERMOSTAT. MOUNT UNIT 18" AFF.

#### ELECTRIC EQUIPMENT NOTES:

- MAKE FINAL CONNECTIONS TO EQUIPMENT LISTED AS REQUIRED BY FIELD CONDITIONS AND THE NATIONAL ELECTRIC CODE. EQUIPMENT QUANTITIES AS INDICATED ON THE CONTRACT DOCUMENTS.
- PROVIDE DISCONNECT SWITCH AND/OR MOTOR STARTERS AS INDICATED.
- PROVIDE THERMAL OVERLOADS IN STARTER SIZED TO MOTOR NAMEPLATE RATING.
- VERIFY EXACT FUSE SIZE WITH EQUIPMENT MANUFACTURER, PRIOR TO ORDERING.
- PROVIDE LOW VOLTAGE WIRING FOR OVERHEAD DOOR CONTROLS AS RECOMMENDED BY EQUIPMENT MANUFACTURER.



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DEVELOPMENT AUTHORITY

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REPAIRS

HIGHMOUNT, NEW YORK  
12441

PROJECT TRADE  
**E - CONTRACT**

PROJECT  
NORTH

REVISIONS

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221101.00

D A T E  
04/17/2023

SHEET TITLE  
**GONDOLA ELECTRIC**

**EG-101**