

**ADDENDUM NO. 2**

*to*

**CONTRACT DOCUMENTS**

*for*

**AUBURN LEWISTON MUNICIPAL AIRPORT  
COUNTY OF ANDROSCOGGIN  
AUBURN, MAINE**

**CONSTRUCT NEW T-HANGAR AND TAXILANE**

FAA Project No. 3-23-0002-XXX-2024  
MJ Project No. 19186.01

**December 16, 2024**

## **ADDENDUM NO. 2**

### **AUBURN LEWISTON MUNICIPAL AIRPORT COUNTY OF ANDROSCOGGIN AUBURN, MAINE**

### **CONSTRUCT NEW T-HANGAR AND TAXILANE**

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## **1. INSTRUCTIONS TO ALL HOLDERS OF CONTRACT DOCUMENTS**

### **TO ALL HOLDERS OF CONTRACT DOCUMENTS**

Your attention is directed to the following interpretations of, changes and additions to the Contract Documents for the project, "Construct New T-Hangar and Taxilane" at Auburn Lewiston Municipal Airport (LEW) in Auburn, Maine.

This Addendum constitutes part of the Contract Documents. Should conflicts occur between the Specifications or Drawings with items in the Addendum, the Addendum shall govern. Bidders shall examine carefully all items and determine for themselves what sub-bidders are affected, and notify all bidders or sub-bidders of clarifications, interpretations, or revisions affecting their work. Work described in this Addendum shall be in accordance with specifications for like items unless stated otherwise.

**Please indicate receipt of this addendum (including date) on sheet P-3 of your Bid Proposal.**

## **2. REVISIONS/CLARIFICATIONS TO CONTRACT DOCUMENTS**

### **I. Contract Document Updates**

#### **A. Table of Contents**

REMOVE page TOC-1 through TOC-8 and REPLACE with the attached pages TOC-1 through TOC-8.

Clarification: Updated specification information.

#### **B. Proposal Documents**

DELETE existing Proposal Documents Pages P-1 through P-28 and REPLACE with Proposal Documents Pages P-1 through P-30 revised attached.

Clarification: Updated item numbers and quantities.

#### **C. REMOVE Page 1 of MJ Form 109 and REPLACE with the attached Page 1 of MJ Form 109.**

Clarification: Fixing typo in the form.

#### **D. Award of Contract and Execution of Contract Bonds**

DELETE existing Award of Contract and Execution of Contract Bonds Page 2 AC-2 and REPLACE with Award of Contract and Execution of Contract Bonds Page AC -2 attached.

Clarification: Removal of Maintenance Bond Requirement.

#### **E. Contract**

REMOVE Section 8 INDEMNIFICATION, Subsections A and B on page C-8.

#### **F. FAA Required Contract Provisions for AIP Projects**

REMOVE page RCP-39 and REPLACE with the attached page RCP-39.

Clarification: Fixing typo in the form.

#### **G. Wage Rate Cover Sheet**

REMOVE page RCP-39 and REPLACE with the attached page RCP-39.

Clarification: Fixing typo in the form.

#### **H. Supplemental General Provisions**

REMOVE pages SGP-1 through SGP-38 and REPLACE with the attached SGP-1 through SGP-38.

Clarification: Updated Supplemental General Provisions.

#### **I. Construction Safety and Phasing Plan**

REMOVE pages SP1-1 and 32 and SP1-56 REPLACE with the attached pages SP1-1 and SP-56.

Clarification: Updates to CSPP per FAA Comments.

### **3. REVISIONS/CLARIFICATIONS TO TECHNICAL SPECIFICATIONS**

- I. ITEM C-105 – MOBILIZATION**  
REMOVE existing text in section 105-4 Engineer/RPR field office and REPLACE with “Not Required.” The Engineer/RPR will utilize a space provided by the OWNER.
- II. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
REMOVE 3<sup>rd</sup> paragraph in section 001-1.2 *PROJECT DESCRIPTION* that states, “The Project is contingent upon the receipt of funding assistance from the Federal Aviation Administration (FAA), under the Airport Improvement Program (AIP), Federal Congressional Discretionary Funding, and the city of Auburn.” and REPLACE with “The project contract award is contingent upon the receipt of funding assistance from the Federal Aviation Administration (FAA), state and local government funding.”
- III. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
In last sentence in section 001-1.10 *CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)*, REMOVE “M-120” and replace with “M-200”.
- IV. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
In the last paragraph in section 001-1.20 *CONTRACTOR’S AUTHORIZED AREA*, REMOVE “Runway 14-32” and REPLACE with “Airport”.
- V. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
REMOVE existing page M-001-5 and REPLACE with the attached page M-001-5. Section 001-1.19 *ADDITIONAL RESIDENT ENGINEER/PROJECT REPRESENTATIVE SERVICES* revised to clarify the purpose of the liquidated damages.
- VI. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
In section 001-1.37 *ENGINEER’S FIELD OFFICE AND EQUIPMENT*, REMOVE “M-110” and REPLACE with “C-105”.
- VII. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
In section 001-1.40 *WASTE REDUCTION AND RECYCLE PLAN*. REMOVE all text in and REPLACE with “Not used.”
- VIII. ITEM M-001 – SPECIAL WORK REQUIREMENTS**  
In section 001-1.43 *LIGHTED RUNWAY CLOSURE MARKERS AND BARRICADES*, REMOVE all text in first paragraph and REPLACE with “Airfield lighted runway closure markers are not required.”
- IX. ITEM M-150 – FIELD SURVEY AND STAKEOUT**  
In section 150-1.1 REMOVE text that states, “All survey fieldwork and computations shall be performed under the direction of a Licensed Land Surveyor, licensed in the State in which the project is located.”
- X. ITEM M-150 – FIELD SURVEY AND STAKEOUT**  
In section 150-2.4 *SUBMITTALS* REMOVE text in paragraph entitled “Postconstruction:” and REPLACE with “Reference specification M-001, Section 001-1.42 “AS-BUILT DRAWINGS” (RECORD DRAWINGS) AND FINAL SURVEY.”
- XI. ITEM M-150 – FIELD SURVEY AND STAKEOUT**  
In section 150-3.2 *DATA COLLECTION* REMOVE text that states, “FAA AC 150/5300-18B, or latest revision.” and REPLACE text that states, “the Engineer’s direction.”

- XII. ITEM M-150 – FIELD SURVEY AND STAKEOUT**  
In section 150-3.3 *TOLERANCES* REMOVE text that states, “Permanent Runway End Survey Points: shall be set within 0.05 foot horizontal and 0.01 foot vertical.”
- XIII. ITEM M-200 – MAINTENANCE AND PROTECTION OF TRAFFIC**  
In section 200-1.1 *GENERAL* REMOVE the text that states, “runway closure markings” in the 4<sup>th</sup> bullet; REMOVE the 5<sup>th</sup> bullet in the 3<sup>rd</sup> paragraph in its entirety; and ADD a new bullet that states, “Lane closures on public roads.”
- XIV. ITEM M-300 – GRASSED SOIL FILTER SYSTEM**  
In section 300-2.3 *SOIL FILTER* ADD “media” to the paragraph title’s name with new title of section 300-2.3 stating *SOIL FILTER MEDIA*; and REPLACE text “mixture” with “media”.
- XV. ITEM M-300 – GRASSED SOIL FILTER SYSTEM**  
In section 300-2.4D *SUBMITTALS* REMOVE text and REPLACE with “Soil filter media permeability testing data per ASTM D5084-16a ‘Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter’ with media having a measured bulk dry density as measured by ASTM D698 of 90-92%.”
- XVI. ITEM M-300 – GRASSED SOIL FILTER SYSTEM**  
In section 300-3.4 *BACKFILL AND COMPACTION* REVISE “Soil Filter” to “Soil Filter Media” in the first sentence.
- XVII. ITEM M-300 – GRASSED SOIL FILTER SYSTEM**  
In section 300-4.1 *GRASSED SOIL FILTER SYSTEM* REVISE existing text to state the following: “Measurement for payment will be made per square foot for installation of the soil filter including but not limited to: excavation; furnishing and installation of system component materials, installing underdrain pipe; furnishing, placement and compaction of soil materials, grading, seeding, maintenance, and testing to the satisfaction of the Engineer/RPR. No additional payment will be made for corrective measures as required for a fully functional system to the satisfaction of the Engineer/RPR.”
- XVIII. ITEM P-151 – CLEARING AND GRUBBING**  
In section 151-3.1 REVISE text to “The quantities of clearing and grubbing as shown by the limits on the plans shall be the number of acres or fractions thereof, of land specifically cleared.”
- XIX. ITEM P-151 – CLEARING AND GRUBBING**  
In section 151-4.2 REVISE Item P-151-4.1 text to “Clearing and Grubbing – per acre or fractions thereof”.
- XX. ITEM P-403 – ASPHALT MIX PAVEMENT SURFACE COURSE**  
REMOVE and REPLACE Table 1 with the attached Table 1.  
Clarification: Asphalt Pavement Analyzer test method deleted.
- XXI. ITEM P-403 – ASPHALT MIX PAVEMENT SURFACE COURSE**  
In section 403-4.10 *Application of Prime and Tack Coat* REMOVE second sentence “A prime coat in accordance with Item P-602 shall be applied to aggregate base prior to placing the asphalt mixture.”  
Clarification: Prime coat requirement removed.

- XXII. ITEM P-602 – EMULSIFIED ASPHALT PRIME COAT**  
REMOVE the prime coat specification.
- XXIII. ITEM P-620 – RUNWAY AND TAXIWAY MARKING**  
REMOVE and REPLACE pages 1 and 2.  
Clarification: Paint bead type changed from Type IA to III.
- XXIV. ITEM D-701 – PIPE FOR STORM DRAINS AND CULVERTS**  
In section 701-2.2 *Pipe* ADD “AASHTO M252 Standard Specification for Corrugated Polyethylene Drainage Pipe”.  
Clarification: Adding pipe specification reference for one of the types of pipe specified.
- XXV. ITEM D-701 – PIPE FOR STORM DRAINS AND CULVERTS**  
In section 701-5.1a REMOVE existing text and REPLACE with “Payment will be made at the contract unit price per linear foot for 6-inch diameter corrugated polyethylene (CPE) pipe. Payment shall include coring into and connecting the CPE to the existing concrete drainage structure with watertight connection.”
- XXVI. ITEM D-701 – PIPE FOR STORM DRAINS AND CULVERTS**  
Under Basis of Payment, Item 701-5.1a REVISE text to “6 inch CPE pipe – per linear foot”.
- XXVII. ITEM D-705 – PIPE FOR STORM DRAINS AND CULVERTS**  
Under Method of Measurement, Item 705-4.1 REMOVE existing text and REVISE to “Existing underdrain cleanouts cut and capped will be measured by the number of existing underdrains cut and capped as detailed on the plans and accepted by the RPR.”
- XXVIII. ITEM D-705 – PIPE FOR STORM DRAINS AND CULVERTS**  
Under Basis of Payment, Item 705-5.1 REMOVE existing text and REVISE to “Payment will be made at the Contract Unit price for each complete underdrain cleanout that is cut and capped by the Contractor and accepted by the RPR. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.”
- XXIX. ITEM F-162 – CHAIN-LINK FENCE AND GATE**  
In section 162-1.1 REMOVE the existing text and REPLACE with “This item shall consist of furnishing and erecting a chain-link fence and automatic gate in accordance with these specifications, the details shown on the plans, and in conformity with the lines and grades shown on the plans or established by the RPR.”
- XXX. ITEM F-162 – CHAIN-LINK FENCE AND GATE**  
In section 162-4.2 REMOVE the existing text and REPLACE with “Vehicle Gates will be measured for payment for each automatic motorized vehicle gate installed.”
- XXXI. ITEM F-162 – CHAIN-LINK FENCE AND GATE**  
In section 162-5.2 REMOVE the existing text and REPLACE with “Payment for vehicle gates will be made at the contract unit price for each gate, gate operator motor, electric power, access control cards (4 each) and access control card reader, conduits and accessories shown on the drawings and required to provide a complete and operational automatic motorized vehicle gate to the RPR’s satisfaction. Payment includes removal and disposal of the existing manual gate.”
- XXXII. ITEM T-905 – TOPSOIL**

Under Basis of Payment REVISE text for Item T-905-5.1 to state "Topsoil (Obtained on Site) – per cubic yard"

**XXXIII. ITEM L-110 – AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS**

REMOVE specification L-110 and REPLACE with specification L-110 attached.

**XXXIV. ITEM L-115 ELECTRICAL MANHOLES AND JUNCTION STRUCTURES**

In section 115-4.1 REVISE first sentence to state the following: "Electrical manholes and junction structures shall be measured by each unit removed or installed completed in place and accepted." The remainder of section 115-4.1 remains unchanged.

**XXXV. ITEM L-115 ELECTRICAL MANHOLES AND JUNCTION STRUCTURES**

REVISE section 115-4.2 *Manhole elevation adjustments*. "115-4.2 Manhole elevation adjustments shall be measured by the completed unit installed, in place, completed, and accepted. Separate measurement shall not be made for the various types and sizes." To read "115-4.2 **New duct markers** are incidental to concrete junction structures."

**XXXVI. ITEM L-115 ELECTRICAL MANHOLES AND JUNCTION STRUCTURES**

DELETE section 115-5.2.

**XXXVII. ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

REMOVE existing text in section 125-2.6 *Retroreflective Markers* and replace with text that states "Retroreflective markers shall be type L-853 and shall conform to the requirements of AC 150/5345-39."

**XXXVIII. ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

In section 125-2.7 *Runway and Taxiway Lights* the Type of light in the table shall be REVISED to "L-861T (LED)".

**XXXIX. ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

In section 125-2.7, Lights Table, Column Notes, add text "W/ Arctic Heaters"

**XL. ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

In section 125-2.8 *Runway and Taxiway Signs* the Type of sign in the table shall be REVISED to "L-858 (LED)".

**XLI. ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

In section 125-4.1 REVISE text to state "Taxiway light and Retroreflective Markers will be measured by the number of each type installed as completed units in place, ready for operation, and accepted by the RPR. Guidance signs will be measured by the number of each type and size installed as completed units, in place, ready for operation, and accepted by the RPR."

**XLII. ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

In section 125-5.1 REVISE text to in first sentence state "Payment will be made at the Contract unit price for each complete runway or taxiway light, guidance

sign, and retroreflective marker installed by the Contractor and accepted by the RPR.” (The second sentence remains unchanged.)

**XLIII. ITEM X-600 REPLACE UNKNOWN CABLES AND COORDINATE WITH CENTRAL MAINE POWER AND COMMUNICATION PROVIDER, INVESTIGATE GAS LINE DEPTH**

DELETE section 600-2.1 and replace with “600.2.1. Cabling to Giguere Equipment Storage Building: Refer to notes on drawing E-001.”

**XLIV. ITEM X-600 REPLACE UNKNOWN CABLES AND COORDINATE WITH CENTRAL MAINE POWER AND COMMUNICATION PROVIDER, INVESTIGATE GAS LINE DEPTH**

ADD section 600-2.2 that states “600-2.2 Conduit and Accessories: Refer to Specification L-110 for materials, construction, measurement and basis of payment requirements.”

**XLV. DIVISIONS 01, 03, 05, 06, 07, 08, 09, 10, 13, 22, 23, & 26**

General updates to sections include the following:

1. Removed references to specific manufacturers.
2. Warranties revised to manufacturers standard warranty where applicable.
3. Deletion of Section 01 7419 Construction Waste Management and Disposal
4. Added Sections:
  - a. Section 01 25 16 Substitution Request Form
  - b. Section 01 45 33 Code Required Special Inspections and Procedures

Remove and replace sections with the attached as follows:

**DIVISION 01 — General Requirements**

Section 01 10 00 Summary  
Section 01 25 13 Substitution Procedures  
Section 01 25 16 Substitution Request Form  
Section 01 30 00 Administrative Requirements  
Section 01 32 16 Construction Progress Schedule  
Section 01 40 00 Quality Requirements  
Section 01 41 00 Regulatory Requirements  
Section 01 45 33 Code Required Special Inspections and Procedures  
Section 01 55 32 Maintenance of Aircraft Operations Area (AOA) Traffic  
Section 01 60 00 Product Requirements  
Section 01 70 00 Execution and Closeout Requirements  
Section 01 73 29 Cutting and Patching  
Section 01 78 00 Closeout Submittals  
Section 01 79 00 Demonstration and Training

**DIVISION 03 — Concrete**

Section 03 05 13 Concrete Sealers

**DIVISION 05 - Metals**

Section 05 40 00 Cold-Formed Metal Framing

**DIVISION 06 – Wood, Plastics, and Composites**

Section 06 10 00 Rough Carpentry

**DIVISION 07 — Thermal and Moisture Protection**

Section 07 21 00 Thermal Insulation

Section 07 26 00 Vapor Retarders

Section 07 62 00 Sheet Metal Flashing and Trim

Section 07 84 00 Firestopping

Section 07 92 00 Joint Sealants

**DIVISION 08 – Openings**

Section 08 11 13 Hollow Metal Doors and Frames

Section 08 36 13 Sectional Doors

**DIVISION 09 – Finishes**

Section 09 29 00 Gypsum Board

Section 09 65 13 Resilient Base and Accessories

Section 09 91 00\* Painting

Document 09 91 13 Exterior Painting Schedule

Document 09 91 23 Interior Painting Schedule

**DIVISION 10 — Specialties**

Section 10 14 00 Signage

Section 10 21 19 Phenolic Toilet Compartments

Section 10 28 13 Toilet Accessories

Section 10 40 00 Safety Specialties

**DIVISION 13 — Special Construction**

Section 13 34 19 Metal Building Systems

**DIVISION 22 – Plumbing**

Section 22 05 23 General-Duty Valves for Plumbing Piping

Section 22 05 53 Identification for Plumbing Piping and Equipment

Section 22 07 19 Plumbing Piping Insulation

Section 22 10 05 Plumbing Piping

Section 22 10 06 Plumbing Piping Specialties

Section 22 30 00 Plumbing Equipment

Section 22 40 00 Plumbing Fixtures

**DIVISION 23 – Heating, Ventilating, and Air Conditioning**

Section 23 05 13 Common Motor Requirements for HVAC Equipment

Section 23 05 93 Testing, Adjusting, and Balancing for HVAC

Section 23 07 13 Duct Insulation

Section 23 31 00 HVAC Ducts and Casings

Section 23 34 23 HVAC Power Ventilators

Section 23 82 00 Convection Heating and Cooling Units



**DIVISION 26 – Electrical**

Section 26 05 19 Low-Voltage Electrical Power Conductors and Cables

Section 26 05 26 Grounding for Bonding for Electrical Systems

Section 26 05 29 Hangars and Supports for Electrical Systems

Section 26 05 33.13 Conduit for Electrical Systems

Section 26 05 33.16 Boxes for Electrical Systems

Section 26 05 53 Identification for Electrical Systems

Section 26 09 23 Lighting Control Devices

Section 26 24 16 Panelboards

Section 26 27 26 Wiring Devices

Section 26 28 13 Fuses

Section 26 29 13 Enclosed Controllers

Section 26 43 00 Surge Protective Devices

Section 26 51 00 Interior Lighting

Section 26 56 00 Exterior Lighting

**4. REVISIONS/CLARIFICATIONS TO DRAWINGS**

**I. DRAWINGS**

**A. DRAWING C-001 – General Notes**

DELETE existing drawing C-001 and REPLACE with revised drawing C-001 attached.

Clarification: Updated notes.

**B. DRAWING C-002 – Quantities**

DELETE existing drawing C-002 and REPLACE with revised drawing C-002 attached.

Clarification: Updated quantities and addition of items.

**C. DRAWING C-005 – Construction Safety & Phasing Plan – Overall & Work Area 1**

DELETE existing drawing C-005 and REPLACE with revised drawing C-005 attached.

Clarification: Updated sheet numbers and notes.

**D. DRAWING C-006 – Construction Safety & Phasing Plan – Work Area 2**

DELETE existing drawing C-006 and REPLACE with revised drawing C-006 attached.

Clarification: Updated notes.

**E. DRAWING C-007 – Construction Safety & Phasing Details (1 of 2)**

DELETE existing drawing C-007 and REPLACE with revised drawing C-007 attached.

Clarification: Added work area delineation marker detail.

**F. DRAWING C-009 – Demolition Plan**

DELETE existing drawing C-009 and REPLACE with revised drawing C-009 attached.

Clarification: Updated notes and details.

**G. DRAWING C-010 – Layout Plan**

DELETE existing drawing C-010 and REPLACE with revised drawing C-010 attached.

Clarification: Updated geometry points table and notes/dimensions.

**H. DRAWING C-011 – Layout Details**

DELETE existing drawing C-011 and REPLACE with revised drawing C-011 attached.  
Clarification: Updated notes.

**I. DRAWING C-012 – Construction Safety and Phasing Plan**

DELETE existing drawing C-012 and REPLACE with revised drawing C-012 attached.  
Clarification: Updated notes.

**J. DRAWING C-013 – Profiles**

DELETE existing drawing C-013 and REPLACE with revised drawing C-013 attached.  
Clarification: Updated notes.

**K. DRAWING C-014 – Fence & Gate Details**

DELETE existing drawing C-014 and REPLACE with revised drawing C-014 attached.  
Clarification: Updated detail notes.

**L. DRAWING C-015 – Grading, Draining, & Erosion Control Plan**

DELETE existing drawing C-015 and REPLACE with revised drawing C-015 attached.  
Clarification: Updated quantities, addition of item numbers, and note additions.

**M. DRAWING C-016 – Drainage & EC Notes & Details (Sheet 1 of 5)**

DELETE existing drawing C-016 and REPLACE with revised drawing C-016 attached.  
Clarification: Addition of item numbers and updated notes.

**N. DRAWING C-017 – Drainage & EC Notes & Details (Sheet 2 of 5)**

DELETE existing drawing C-017 and REPLACE with revised drawing C-017 attached.  
Clarification: Addition of stone slope detail, updated Grassed Soil Filter Detail, updated quantities, addition of item numbers.

**O. DRAWING C-018 – Drainage & EC Notes & Details (Sheet 3 of 5)**

DELETE existing drawing C-018 and REPLACE with revised drawing C-018 attached.  
Clarification: Updated Underdrain Cleanout Cut and Cap detail.

**P. DRAWING C-019 – Drainage & EC Notes & Details (Sheet 4 of 5)**

DELETE existing drawing C-019 and REPLACE with revised drawing C-019 attached.  
Clarification: Updated quantities and notes.

**Q. DRAWING C-020 – Drainage & EC Notes & Details (Sheet 5 of 5)**

DELETE existing drawing C-019 and REPLACE with revised drawing C-019 attached.  
Clarification: Removal of tree removal detail and updated details.

**R. DRAWING C-021 – Utility Plan**

DELETE existing drawing C-021 and REPLACE with revised drawing C-021 attached.  
Clarification: Updated leaders and item numbers.

**S. DRAWING C-022 – Airfield Electrical & Details (1 of 2)**

DELETE existing drawing C-022 and REPLACE with revised drawing C-022 attached.  
Clarification: Updated notes.

**T. DRAWING C-023 – Airfield Electrical & Details (2 of 2)**

DELETE existing drawing C-023 and REPLACE with revised drawing C-023 attached.  
Clarification: Updated quantities, addition of item numbers, and quantity note revision.

**U. DRAWING C-024 – Sewer Utility Details**

DELETE existing drawing C-024 and REPLACE with revised drawing C-024 attached.  
Clarification: Updated details, addition of item numbers, and note additions.

**V. DRAWING C-025 – Water Utility Details**

DELETE existing drawing C-025 and REPLACE with revised drawing C-025 attached.  
Clarification: Updated details.

**W. DRAWING C-026 – Cross Sections (Sheet 1 of 2)**

DELETE existing drawing C-026 and REPLACE with revised drawing C-026 attached.  
Clarification: Updated details, addition of item numbers, and note additions.

**X. DRAWING C-027 – Cross Sections (Sheet 2 of 2)**

DELETE existing drawing C-027 and REPLACE with revised drawing C-027 attached.  
Clarification: Updated details, addition of item numbers, and note additions.

**Y. DRAWING A-100 – Construction Plan – Foundation**

DELETE existing drawing A-100 and REPLACE with revised drawing A-100 attached.

**Z. DRAWING A-101 – Construction Plan – Main Level**

DELETE existing drawing A-101 and REPLACE with revised drawing A-101 attached.  
Clarification: Removed section callout.

**AA. DRAWING A-102 – Curb Details**

DELETE existing drawing A-102 and REPLACE with revised drawing A-102 attached.  
Clarification: Clarified dimension and referenced locations of threshold steel and access doors.

**BB. DRAWING A-200 – Exterior Elevations**

DELETE existing drawing A-200 and REPLACE with revised drawing A-200 attached.  
Clarification: Added note about steel coating.

**CC. DRAWING A-440 – Enlarged Restroom Plans**

DELETE existing drawing A-440 and REPLACE with revised drawing A-440 attached.  
Clarification: Revised notes.

**DD. DRAWING A-441 – Enlarged Restroom Elevations**

DELETE existing drawing A-441 and REPLACE with revised drawing A-441 attached.  
Clarification: Revised notes.

**EE. DRAWING S-100 – Foundation Plan**

DELETE existing drawing S-100 and REPLACE with revised drawing S-100 attached.  
Clarification: Revised notes. Noted man-door locations where curb terminates.

**FF. DRAWING S-300 – Sections**

DELETE existing drawing S-300 and REPLACE with revised drawing S-300 attached.

Clarification: Revised notes.

**GG. Drawing P-001 – Plumbing Schedules**

DELETE existing drawing P-001 and REPLACE with revised drawing P-001 attached.

Clarification: Added note.

**HH. DRAWING E-001 – Site Electrical Plan**

DELETE existing drawing E-001 and REPLACE with revised drawing E-001 attached.

Clarification: Revised leaders and notes.

**5. Questions**

*Q1: Would you allow the north and south walls to be poured 14" taller, which would be top of curb, instead of a slab on top of a wall then curb?*

**A1: This is ok in concept, however, the monolithic wall would need to have the exact profile as shown. We do not want the exterior face of the wall to align with the curb.**

*Q2: Will the L-861T Taxiway Edge Lights need arctic kits?*

**A2: The L-125 specification was revised with this addendum to include arctic kits on the taxiway edge lights.**

*Q3: Bid Item L-125-5.3, Remove and Relocate Existing Lights and Base – will this item require new base cans?*

**A3: The contractor will remove, reuse, and relocate the entire light, including the base can.**

**END OF ADDENDUM NO. 2**

**PRE-BID MEETING SIGN-IN SHEET & PLAN HOLDERS AS OF 12/16/2024**



# Pre Bid

## LEW Construct T-Hungar Sign-in

<u>name</u>	<u>company</u>	<u>email</u>
Feril Shah	Ducas Construction	ferils@ducasconstruction.com
<del>Tom Moulson</del>	<del>Moulson Electric</del>	<del>Tom@MoulsonAssociates.com</del>
Joe Perryman	Gendron + Gendron	joep@gendroncorp.com
Todd Spencer	Gendron + Gendron	toddsg@gendroncorp.com
Rick Pavers	Crocker Construction	rick@crocker.com
Brett Phelan	Phelan Construction	bphelan@phelanconstruction.com
Blane Casey	Blane Casey	geasey@blanecasey.com
Brennan Whalen	RJ Grandin	estimators@rjgrandin.com
Jeff Reynolds	Ducas Const	jeffr@ducasconstruction.com
Nick Mathon	Gendron Holdings	NickM@GendronCorp.com
Matt Niles	Benchmark	Kim@BenchmarkConstruction.org
MIKE THIBODEAU	SARGENT CORP	Mthibodeau@SARGENT.US
TIM TARPLEY	ALLEN FARM FENCE	TTarpley@AllenFarmFence.com





## AUBURN-LEWISTON MUNICIPAL AIRPORT - CONSTRUCT NEW T-HANGAR PROJECT

The contact list below represents the current plan holders for this project. Most recent holder names will display at the top of the list.

### Benchmark Construction

 Matt Niles

 34 Thomas Dr.  
Westbrook , ME 04092


 Work: (207) 591-7600

 Mobile: (207) 949-8951

 [mniles@benchmarkconstruction.org](mailto:mniles@benchmarkconstruction.org)

### Doten's Construction

 Jackson Swann

 396 US Route 1  
Freeport, ME 04032

 Work: (207) 800-5783

 Mobile: (207) 800-5783

 [jackson@dotens.com](mailto:jackson@dotens.com)




### Douglas W Jones, Inc. d/b/a Cross Excavation

 Craig Babbidge






### RAParadis and Son Inc

 Todd Braley






 81 Blaisdell Rd  
Newport, ME 04953

 Fax: (207) 824-3363  
 Mobile: (207) 381-7567  
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## Lumacurve Airfield Signs

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# **PROPOSAL DOCUMENTS**

for

## **CONSTRUCT NEW T-HANGAR AND TAXILANE**

**AUBURN-LEWISTON MUNICIPAL AIRPORT  
AUBURN, MAINE**

**AIP No. 3-23-0002-xxx-2024  
MJ# 19186.01**

**PREPARED FOR:**

**AUBURN-LEWISTON MUNICIPAL AIRPORT  
AUBURN, MAINE**

**PREPARED BY:**



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Phone: (603) 225-2978  
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**NOVEMBER 2024**

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# PROPOSAL FORM

## CONSTRUCT NEW T-HANGAR AND TAXILANE

### AUBURN-LEWISTON MUNICIPAL AIRPORT AUBURN, MAINE

**AIP No. 3-23-0002-XXX-2024**  
**MJ# 19186.01**

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

To: AUBURN-LEWISTON MUNICIPAL AIRPORT

The undersigned (hereinafter called the Contractor) proposes to furnish all labor, equipment and materials required for **“CONSTRUCT NEW T-HANGAR AND TAXILANE”** in accordance with the accompanying Contract Documents as defined in the Supplemental General Provisions and prepared by McFarland Johnson, Inc., for the amounts listed below, subject to additions and deductions in accordance with the terms of the Specifications. It being understood that the Owner will be the sole judge as to acceptance of Bids and award of the Contract.

Bidder agrees to complete the work under this Contract within the time specified in the Invitation to Bid.

B. This Bid includes addenda:

<u>Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

C. Bidders agree to perform all of the work described in the Contract Documents and tabulated below for the following unit and lump sum prices.

It is understood that the quantities given in this Bid Form are approximate only and are given as a basis for comparison of Bids. The Owner does not expressly or by implication agree that the actual amount of work will even approximately correspond herewith, but reserves the right to increase or decrease the amount of any item of the work listed, and the unit prices quoted in the Bid shall apply without change to such variation in the quantity of each of the items, except as further clarified herein. The Owner further reserves the right to delete any item of work in whole or in part, in order to meet the available funding.

**SCHEDULE A BASE BID (T-HANGAR SITE PLAN WITHOUT RESTROOM, WATER  
AND SEWER) PROPOSAL FORM**

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
B-001-1	1 LS	<u>T-Hangar Building - Architectural</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
B-001-2	1 LS	<u>T-Hangar – Foundation and Slab</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
B-001-3	1 LS	<u>T-Hangar - Electrical</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
B-001-4	1 LS	<u>T-Hangar – General Bid</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
C-105	1 LS	<u>Mobilization (10% Maximum)</u> for the Lump Sum Price of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
M-150-1	1 LS	<u>Field Survey and Stakeout</u> for the Lump Sum Price of:  _____ dollars and _____ cents.				
M-200-1	1 LS	<u>Maintenance and Protection of Traffic</u> for the Lump Sum Price of:  _____ dollars and _____ cents.				
M-300-1	1,600 SF	<u>Grassed Soil Filter System</u> for the unit price per Square Feet of:  _____ dollars and _____ cents.				
C-100	1 LS	<u>Contractors Quality Control Program</u> for the Lump Sum Price of:  _____ dollars and _____ cents.				
C-102-5.1a	1 EA	<u>Installation and Removal of Pipe Inlet Protection</u> for the unit price per Each of:  _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
C-102-5.1b	2,560 LF	<u>Installation and Removal of Erosion Control Barrier</u> for the unit price per Linear Feet of:  _____ dollars and _____ cents.				
C-102-5.1c	6 EA	<u>Installation and Removal of Check Dam</u> for the unit price per Each of:  _____ dollars and _____ cents.				
C-102-5.1d	3,400 SY	<u>Installation of Erosion Control Matting</u> for the unit price per Square Yard of:  _____ dollars and _____ cents.				
C-102-5.1e	7 EA	<u>Installation and Removal of Inlet Protection</u> for the unit price per Each of:  _____ dollars and _____ cents.				
C-102-5.1f	110 CY	<u>Installation of Stone Slope with Geotextile</u> for the unit price per Cubic Yard of:  _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-101-5.1	800 SY	<u>Pavement Removal</u> for the unit price per Square Yard of:  _____ _____ dollars and _____ cents.				
P-101-5.6	225 SY	<u>Cold Milling (0-4")</u> for the unit price per Square Yard of:  _____ _____ dollars and _____ cents.				
P-151-4.1	0.10 AC	<u>Clearing and Grubbing</u> for the unit price per Acre of:  _____ _____ dollars and _____ cents.				
P-151-4.2	5 EA	<u>Remove Utility Poles</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
P-152-4.1	5,100 CY	<u>Unclassified Excavation</u> for the unit price per Cubic Yard of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-152-4.2	4,000 CY	<u>Embankment In Place</u> for the unit price per cubic yard of:  _____ _____ dollars and _____ cents.				
P-154-5.1	4,270 CY	<u>Subbase Course</u> for the unit price per cubic yard of:  _____ _____ dollars and _____ cents.				
P-209-5.1	1,120 CY	<u>Crushed Aggregate Base Course – 6” Depth</u> for the unit price per cubic yard of:  _____ _____ dollars and _____ cents.				
P-403-8.1	1,300 TON	<u>Asphalt Mixture Surface Course</u> for the unit price per ton of:  _____ _____ dollars and _____ cents.				
P-603-5.1	470 GAL	<u>Emulsified Asphalt Tack Coat</u> for the unit price per gallon of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-605-5.1	490 LF	<u>Joint Sealing Filler</u> for the unit price per Linear Foot of:  _____ dollars and _____ cents.				
P-620-5.1	810 SF	<u>Markings</u> for the unit price per square foot of:  _____ dollars and _____ cents.				
P-620-5.2	50 LB	<u>Reflective Media</u> for the unit price per pound of:  _____ dollars and _____ cents.				
F-162-5.1	770 LF	<u>Remove Chain Link Fence</u> for the unit price per Linear Foot of:  _____ dollars and _____ cents.				
F-162-5.2	910 LF	<u>Chain Link Fence</u> for the unit price per Linear Foot of:  _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
T-901-5.1	150 KSF	<u>Seeding</u> for the unit price per Kilo-Square Foot of:  _____ _____ dollars and _____ cents.				
T-905-5.1	1,000 CY	<u>Topsoil (Obtained on Site or Removed from Stockpile)</u> for the unit price per cubic yard of:  _____ _____ dollars and _____ cents.				
T-908-5.1	16,700 SY	<u>Mulching</u> for the unit price per square yard of:  _____ _____ dollars and _____ cents.				
D-701-5.1a	35 LF	<u>6 Inch CPE Pipe</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				
D-701-5.1b	90 LF	<u>12 Inch Reinforced Concrete Pipe</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				



ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
D-705-5.2	2 EA	<u>Cut and Cap Underdrain Cleanout</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
D-752-5.1	1 EA	<u>Headwall</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
D-752-5.2	1 EA	<u>Flared End Section</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
L-108-5.1	1,400 LF	<u>No. 8 AWG 5kV L-824 Type C Cable Installed in Trench or Duct Bank</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				
L-108-5.2	2,800 LF	<u>No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in trench including connections/terminations</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-108-5.3	4,100 LF	<u>No. 1/0 AWG 600V Thwn-2 Type C Cable, installed in duct bank or conduit</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				
L-108-5.4	1,400 LF	<u>No. 1/0 AWG, Stranded, Equipment Ground, Installed in Duct Bank or Conduit</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				
L-108-5.5	9 EA	<u>Additional Ground Rods</u> for the unit price per Each of:  _____ _____ dollars and _____ cents.				
L-110-5.1	1300 LF	<u>Non-Encased Electrical Duct Bank, 1-way 2-inch</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				
L-110-5.2	100 LF	<u>Concrete Encased Electrical Duct Bank, 4-way 4-inch</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-110-5.3a	1,500 LF	<u>Removal and Disposal of Direct Buried Cable</u> for the unit price per Linear Foot of:  _____ dollars and _____ cents.				
L-110-5.3b	600 LF	<u>Removal and Disposal of Conduit</u> for the unit price per Linear Foot of:  _____ dollars and _____ cents.				
L-110-5.4	540 LF	<u>Non-Encased Electrical Duct Bank, 2-way 4-inch</u> for the unit price per Linear Foot of:  _____ dollars				
L-115-5.1	2 EA	<u>Remove Existing Electric Handhole</u> for the unit price Each of:  _____ dollars and _____ cents.				
L-115-5.2	1 EA	<u>Remove and Dispose Duct Marker</u> for the unit price Each of:  _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-115-5.3	4 EA	<u>Install L-867E Electric Handhole in Turf</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
L-115-5.4	2 EA	<u>Install 4'x4' Concrete Junction Structure in Turf</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
L-115-5.5	1 EA	<u>Install 4'x4' Load Rated Concrete Junction Structure in Proposed Pavement</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
L-125-5.1	2 EA	<u>Airfield Signage (L-858 LED, Size 2) With Foundation with L-830 Transformer</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				
L-125-5.2	9 EA	<u>Base Mounted Taxiway Edge Lights (L861T LED) With L-830 Transformer</u> for the unit price Each of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-125-5.3	4 EA	<u>Remove and Relocate Existing Base-Mounted Taxiway Edge Light and Base</u> for the unit price Each of:  _____ dollars and _____ cents.				
L-125-5.4	28 EA	<u>Retroreflective Taxiway Edge Marker (L-853)</u> for the unit price Each of:  _____ dollars and _____ cents.				
33 4100-1	750 LF	<u>Underdrain Pipe and Fittings</u> for the unit price per Linear Foot of:  _____ dollars and _____ cents.				
X-600-1	1 ALL	<u>Replace Unknown Communication and Electric Cables</u> for the Allowance of:  _____ Two thousand _____ dollars and _____ Zero _____ cents.	\$2,000	00	\$2,000	00
X-600-2	1 ALL	<u>Investigate depth of Gas Line</u> for the Allowance of:  _____ One thousand five hundred _____ dollars and _____ Zero _____ cents	\$1,500	00	\$1,500	00

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
X-600-3	1 ALL	<u>Service Connection Coordination with CMP (Taxilane &amp; Service Road) for the Allowance of:</u>  <u>One thousand</u> _____ dollars  and <u>Zero</u> cents	\$1,000	00	\$1,000	00
X-600-4	1 ALL	<u>Service Connection Coordination with CMP (T-Hangar) for the Allowance of:</u>  <u>One thousand</u> _____ dollars  and <u>Zero</u> cents	\$1,000	00	\$1,000	00
X-600-5	1 ALL	<u>Service Connection Coordination with Comm Provider (Taxilane &amp; Service Road) for the Allowance of:</u>  <u>One thousand</u> _____ dollars  and <u>Zero</u> cents	\$1,000	00	\$1,000	00
X-800-1	1 EA	<u>Permanent Vehicle Traffic Sign</u> for the unit price Each of:  _____ _____ dollars  and _____ cents.				

**SCHEDULE A PROPOSAL BASE BID (SITE PLAN WITHOUT RESTROOM,  
WATER AND SEWER) SUBTOTAL**

SCHEDULE A BASE BID SUBTOTAL: \_\_\_\_\_

\_\_\_\_\_

(Words)

\_\_\_\_\_ dollars and

\_\_\_\_\_ cents (\$ \_\_\_\_\_ ).

(Figures)

**Note: Also record this Bid amount on the Bid Summary Sheet (page P-25)**

**SCHEDULE A ADDITIVE ALTERNATE #1 (MOTORIZED VEHICLE GATE)**  
**PROPOSAL FORM**

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
C-105	1 LS	<u>Mobilization (10% Maximum)</u> for the Lump Sum Price of:  _____ dollars and _____ cents.				
P-101-5.1	100 SY	<u>Pavement Removal</u> for the unit price per Square Yard of:  _____ dollars and _____ cents.				
P-101-5.6	110 SY	<u>Cold Milling (0-4")</u> for the unit price per Square Yard of:  _____ dollars and _____ cents.				
P-152-4.1	20 CY	<u>Unclassified Excavation</u> for the unit price per Cubic Yard of:  _____ dollars and _____ cents.				
P-209-5.1	20 CY	<u>Crushed Aggregate Base Course – 6”  Depth</u> for the unit price per Cubic Yard of:  _____ dollars and _____ cents.				



ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-403-8.1	20 TON	<u>Asphalt Mixture Surface Course</u> for the unit price per Ton of:  _____ _____ dollars and _____ cents.				
P-603-5.1	10 GAL	<u>Emulsified Asphalt Tack Coat</u> for the unit price per Gallon of:  _____ _____ dollars and _____ cents.				
P-605-5.1	40 LF	<u>Joint Sealing Filler</u> for the unit price per Linear Foot of:  _____ _____ dollars and _____ cents.				
F-162-5.3	1 EA	<u>Vehicle Gate</u> for the unit price per Each of:  _____ _____ dollars and _____ cents.				

**SCHEDULE A ADDITIVE ALTERNATE #1 (MOTORIZED VEHICLE GATE)**  
**PROPOSAL SUBTOTAL**

SCHEDULE A ADDITIVE ALTERNATE #1 SUBTOTAL: \_\_\_\_\_

\_\_\_\_\_

(Words)

\_\_\_\_\_ dollars and

\_\_\_\_\_ cents (\$ \_\_\_\_\_ ).  
(Figures)

**Note: Also record this Bid amount on the Bid Summary Sheet (page P-25).**

**SCHEDULE B BASE BID (RESTROOM, WATER AND SEWER) PROPOSAL FORM**

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
C-105	1 LS	<u>Mobilization (10% Maximum)</u> for the Lump Sum Price of:  _____ _____ dollars and _____ cents.				
B-001-5	1 LS	<u>Restroom Architectural</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
B-001-6	1 LS	<u>Restroom Plumbing</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
B-001-7	1 LS	<u>Restroom Electrical</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				
B-001-8	1 LS	<u>Restroom General Bid</u> for the Lump Sum of:  _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
31 2316.26	3 CY	<u>Trench Rock Removal</u> for the unit price per Cubic Yard of  _____ dollars and _____ cents.				
33 3113-1	280 LF	<u>Sewer Pipe and Fittings (4" PVC)</u> for the unit price per Linear Foot of  _____ dollars and _____ cents.				
33 3113-2	2 EA	<u>Sewer Cleanouts</u> for the unit price per Each of:  _____ dollars and _____ cents.				
33 3113-3	1 EA	<u>Sewer Manhole Connection</u> for the unit price per Each of:  _____ dollars and _____ cents.				
33 3113-4	1 ALL	<u>Sewer Connection Fee</u> for the unit price per Allowance of:  _____ dollars and _____ cents	\$1,000	00	\$1,000	00

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
33 0561-1	1 EA	<u>Concrete Manholes(Sewer)</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
33 1416-1	180 LF	<u>Water Pipe and Fittings(1")</u> for the unit price per Linear Foot of: _____ _____ dollars and _____ cents.				
33 1416-2	1 EA	<u>Water Valves(water curb stop with box)</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
33 1416-3	1 ALL	<u>Municipal Water Connection Fee</u> for the unit price per Allowance of: _____ <u>One thousand</u> _____ dollars and _____ <u>Zero</u> _____ cents	\$1,000	00	\$1,000	00
P-403-8.1	4 TON	<u>Asphalt Mixture Surface Course (3" depth) (Flight Line Drive Utilities)</u> for the unit price per Ton of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-209-5.1	5 CY	<u>Crushed Aggregate Base Course (6" depth) (Flight Line Drive Utilities)</u> for the unit price per Cubic Yard of:  _____ dollars and _____ cents.				
P-154-5.1	8 CY	<u>Subbase Course (12" depth) (Flight Line Drive Utilities)</u> for the unit price per Cubic Yard of:  _____ dollars and _____ cents.				

**SCHEDULE B BASE BID (RESTROOM, WATER, AND SEWER) PROPOSAL**  
**SUBTOTAL**

SCHEDULE B BASE BID SUBTOTAL: \_\_\_\_\_

\_\_\_\_\_

(Words)

\_\_\_\_\_ dollars and

\_\_\_\_\_ cents (\$ \_\_\_\_\_).

(Figures)

**Note: Also record this Bid amount on the Bid Summary Sheet (page P-25).**

**BID SUMMARY SHEET**

**SCHEDULE A BASE BID SUBTOTAL AMOUNT:** \$ \_\_\_\_\_  
(FROM PAGE P-17)

**SCHEDULE A ADDITIVE ALTERNATE #1 SUBTOTAL AMOUNT:** \$ \_\_\_\_\_  
(FROM PAGE P-19)

**SCHEDULE B BASE BID SUBTOTAL AMOUNT:** \$ \_\_\_\_\_  
(FROM PAGE P-23)

**TOTAL BID AMOUNT:** \$ \_\_\_\_\_  
(Schedule A, Schedule A Additive Alternate #1, Schedule B\_

**The Owner reserves the right to award the project in accordance with Specification entitled Award of Contract and Execution of Contract Bonds.**

The Owner reserves the right to delete any item of work in whole or in part, in order to meet the available funding.

Amounts are to be shown in both words and figures. In case of Discrepancy, the amount shown in words will govern.

The above unit prices shall include all labor, materials, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

Bidder proposes to provide all labor and materials to complete the work, as specified in the Contract Documents, and as is reasonably expected due to the existing conditions and required construction.

Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any informalities in the Bidding. The Bidder agrees that this Bid shall be good and may not be withdrawn for the period as specified in the Invitation to Bid.

The undersigned further certifies under the penalties of perjury that this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned hereby certifies that they are able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed on the work, and that they will comply fully with all laws and regulations applicable to award of this contract.

The undersigned agrees that if they are selected as the Contractor they will, within five (5) calendar days, after presentation thereof by the Owner, unless otherwise directed in writing by the Owner, execute a Contract in accordance with the terms of this General Bid and furnish a Performance Bond for 100% of the Contract Price and Payment Bond for 100% of the Contract Price, each of a Surety company meeting the requirements contained in the Contract Documents and satisfactory to the Owner, the premiums of which are to be paid by the Contractor and are included in the Contract amount.

The undersigned agrees to guarantee all of the work performed under this Contract to be done in accordance with the Contract Documents in a good and workmanlike manner and to renew or repair any work which may be rejected, due to defective materials or workmanship, prior to final completion and acceptance of the work.

The Bid Security attached in the sum of \$\_\_\_\_\_ is to become the property of the Owner, in the event the Contract and Bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner causes thereby.



Respectively Submitted By:

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Name of Authorized Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

(SEAL - if Bid is by a corporation)

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# **CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS**

## **Federal Certification**

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

### **Certifications**

- 1) The applicant represents that it is ( ) is not ( ) (CHECK ONE) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 1) The applicant represents that it is ( ) is not ( ) (CHECK ONE) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

**Note:** If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

### **Term Definitions**

**Felony conviction:** Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

**Tax Delinquency:** A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

## **State Certification:**

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

**3. Requirements of Contract Surety**

Contract Surety shall include a good and sufficient Performance Bond and labor and material Payment Bond, each in the sum of one-hundred percent (100%) of the awarded Contract amount, along with appropriate Power of Attorney. Contract Surety shall be delivered to the within fifteen (15) calendar days from the date of Notice of Award, simultaneously with Contractor's execution of the Contract. See Division 2 – Special Provision/Supplemental General Provisions, Part A Item 18 for additional information on Proposal and Contract Surety.

**4. Execution of Contract**

The successful Bidder shall sign (execute) the Contract and associated documents and return them to the Owner, along with the fully executed Contract Surety and required insurance certificates, if applicable, within 15 calendar days from the date on the Notice of Award by the Owner. If the Contract is mailed, special handling is recommended.

**5. Approval of Contract**

Upon receipt of acceptable insurance certificates, Contract, Contract Surety, and associated documentation that have been executed by the successful Bidder, the Owner shall complete the execution of the Contract in accordance with local laws or ordinances and return the fully executed Contract documents to the Contractor. The Contract is not binding upon the Owner until it has been executed by the Owner and delivered to the Contractor.

**6. Failure to Execute Contract**

Failure of the successful Bidder to execute the Contract and furnish acceptable insurance certificates, Contract Surety and other required Contract documents within the fifteen (15) calendar day period after receiving Notice of Award shall be just cause for cancellation of the award and forfeiture of the Proposal Surety, not as a penalty, but as liquidation of damages to the Owner. Award may then be made to the next best qualified Bidder, or the work re-advertised, or handled as the Owner may elect.

**7. Maintenance Bond**

Not required.

**END OF AWARD OF CONTRACT AND EXECUTION OF CONTRACT BONDS**

**TAX DELINQUENCY AND FELONY CONVICTIONS**  
**(Sections 8113 of the Consolidated Appropriations Act 2022; DOT Order 4200.6)**

**CERTIFICATION CLAUSE**

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

**Certifications**

- 1) The applicant represents that it is ( ✓ ) is not ( ✓ ) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is ( ✓ ) is not ( ✓ ) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

**Note**

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

**Term Definitions**

**Felony conviction:** Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

**Tax Delinquency:** A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

## **DIVISION 1 – PROJECT CONTRACT SPECIFICATIONS**

### **FEDERAL PREVAILING WAGE RATES**

#### **STATE OF MAINE**

**ANDROSCOGGIN COUNTY – HIGHWAY  
ME20240045 - 01/05/2024**

**and**

**ANDROSCOGGIN COUNTY – BUILDING  
ME20240004 - 11/15/2024**

Wage Rate Application notes:

- Highway rates will apply to all work except the T-Hangar.
- Building rates will apply to the T-Hangar work. Building rates apply to the utility work serving the T-Hangar work.

**SPECIAL PROVISIONS/SUPPLEMENTAL GENERAL CONDITIONS FOR  
FEDERALLY OBLIGATED AVIATION PROJECTS**

**PART A – PROJECT SPECIFIC CLAUSES**

1. **DBE DIRECTORY.** The latest edition of the DBE Directory can be obtained from the **MaineDOT Civil Rights Office** at the following address:

**<http://maine.gov/mdot/civilrights/dbe/>**

Contractors that do not have access to the internet may obtain a copy by contacting the Engineer.

2. **WAGE RATES.** U.S. Department of Labor Davis-Bacon wage rates are applicable to this Contract and are included in Division 1 – Federal Wage Schedules.

It is the Contractors responsibility to reviews the wages rates and labor classifications included within the contract documents. If it appears that a labor classification is required but not provided, the Contractor shall notify the Engineer prior to the start of construction.

3. **CONTACT WITH THE AIRPORT.** From the time of advertising until the actual bid opening for this Contract, the only contact with the Airport will be as described in the Invitation for Bids.

4. **SUSPENSION OF WORK.** The Contractor is hereby notified that in the absence of the Engineer, the Airport's Safety Officer and the Airport Operator shall each have the authority to suspend work when they determine that a serious safety or environmental violation exists on the job site. The period of time when work is suspended due to a serious safety or environmental violation will not be justification for an extension of time or the award of damages to the Contractor.

5. **CONTRACT DOCUMENTS.** The Contractor's attention is directed to the following documents that make up the Contract Documents and are effective for this Contract:

Table of Contents  
Invitation to Bid  
Instructions to Bidders  
Bid Proposal  
Bid Bond  
ALL MJ Bidding Requirement and Proposal Forms (see Bidder's Certification Form)

Award of Contract and Execution of Contract Bonds  
Contract with Insurance Provisions  
Performance Bond  
Payment Bond  
Notice of Award  
Notice to Proceed  
Contractor's Guaranty  
ALL MJ Contract Execution Forms

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

### Division 1 – Project Contract Specifications

FAA General Provisions

FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects

Reference Documents:

41 CFR – 60-4.2 & 4.3

49 CFR 26 – Title 49: Transportation

US Department of Labor – Davis-Bacon Wage Rates

State Prevailing Wage Rates (if applicable)

### Division 2 - Special Provisions:

Special Provisions/Supplemental General Provisions

Construction Safety and Phasing Plan

AC 150/5370-2G - Operational Safety on Airports During Construction (included)

Geotechnical Reports

Permits:

Maine Department of Environmental Protection Permits

Site Location of Development Act and Natural Resources Protection Act

National Resource Protection Act Permit (if applicable)

### Division 3 - Technical Specifications

Plans

Addendums, Request For Information responses, and Field Issued Sketches

6. **DAILY LIST OF WORKERS.** The Contractor shall provide a daily list of workers on the site in accordance with Part C. General Aviation Clauses, Section 3 Disadvantaged Business Enterprise, Subsection 3.1 paragraph viii. of this Special Provisions/Supplemental General Provisions.
7. **UTILITIES.** The Contractor shall coordinate with all utilities the service the Airport and surrounding area. No disturbance of utility facilities is anticipated as part of this project.
8. **PERMIT AND REGULATION COMPLIANCE.** The Contractor shall comply with all project permits, general permits, state laws, and state and local regulations. Any fines assessed against the Airport and related expenses due to non-compliance with the permits, laws, rules, and regulations cited in the Contract Documents and caused by the Contractor and their personnel, Subcontractors and Vendors shall be paid for by the Contractor.

For permit requirements refer to copies of the permits in Division 2 - Special Provisions of the Contract Documents.

9. **WORK AREAS.** In order to enhance safety during construction and minimize the impacts on Airport operations caused by construction, the Project has been divided into different work areas as required for project execution. For additional detail of the phases, work zones and restrictions, please refer to:



## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

- a) Project Plan Set: Refer to project phasing and work zone plans, notes and details.
- b) CSPP Drawings: The CSPP drawings as included in the contract drawings.
- c) Construction Safety and Phasing Plan (CSPP): Refer to the Construction Safety and Phasing Plan in Division 2 of the Contract Documents for additional detail, as applicable.
- d) Contractor Provided Safety Plan Compliance Document (SPCD): The SPCD, as reviewed and approved by the Engineer, shall become part of the work area restrictions, as applicable.

- 10. WORK AREA REQUIREMENTS.** A general outline of the safety precautions, pre-work requirements and administrative requirements required prior to being allowed to work in any of the specified work areas is provided within the CSPP documents in Division 2 of the Contract Documents. The work area requirements are not intended to describe every work element or every detail of work, but rather provide the Contractor with an outline of Airport safety measures, safety protocols and operational requirements during the progression of work.

As part of the SPCD preparation, the Contractor shall propose the actual sequencing of the work in all work areas subject to the conditions indicated and specified within the CSPP. If requested, the Contractor may make necessary changes in the sequencing in order to facilitate Airport operation and safety within a work zone. The Contractor may sequence that time, with coordination with the Airport and the Engineer, as required as long as that time falls within the specified total contract time for the work area.

- 11. PROJECT DURATION.** Upon execution of the Contract, the Sponsor will issue a written “Notice to Proceed” which will specify an effective date for the Contractor to begin work at the site. All work under this Contract must be completed within Total Contract Time of **as identified in the “Notice to Proceed.”**

For additional work area duration requirements and restrictions refer to any phasing notes on the plan sheets of the Contract Documents and the Construction Safety and Phasing Plan (CSPP).

It shall be understood that it is the Contractor's responsibility to schedule and request stoppages in contract time for each respective work area. Further, it is understood that if it is determined to be in the best interest of the Owner and the Airport, the request for a Contract time stoppage can and will be denied. During a Contract time stoppage, no work may commence in that work area until a request is made to resume work and Contract time. If work is performed without an official restart of the Contract time it is agreed that the work performed is at the Contractor's expense and is not eligible for measurement of payment.

It shall be clearly understood that the Contract time is contractual, and if the time is exceeded, liquidated damages will be assessed. Requests for additional Contract time will only be granted for the following reasons:

- 1) Additional work is authorized by change order.
- 2) Delays or postponements of critical path work per the approved construction schedule are requested by the Owner.

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

- 3) Material delivery delays, which are documented and are beyond the Contractor's control. Material delivery delays, which are not documented, and not accounted for or identified in the Contractor's schedule, will not be considered a valid justification to extend the Contract time.

- 12. LIQUIDATED DAMAGES.** If the work remains incomplete after the times specified in the Allowable Project Duration for the Total Contract Time or the Contract Time Within a Work Area, the Contractor agrees to pay the Owner as liquidated damages in the following amounts:

**The Liquidated Damages amount listed in the CONTRACT per day for each and every calendar day that the work remains incomplete beyond the Total Contract Time listed for the Project Duration.**

The amount to be assessed as Liquidated Damages listed shall be in accordance with Division 1 - FAA General Provisions Section 80-08.

Liability for Liquidated Damages. The Contractor covenants and agrees that should the amount of monies due, or that may become due the Contractor, are to be less than the amount of ascertained liquidated damages, the Contractor and the Contractor's surety shall be liable to the Owner for the deficiency.

For Working Day Only contracts, should the Contractor elect to work on Saturdays, Sundays, or Holidays after the Contract Completion Date, the Contractor will be charged liquidated damages for such days worked.

- 13. ADDITIONAL RESIDENT PROJECT REPRESENTATIVE SERVICES.** The Owner has established a Resident Project Representative budget based on the contract duration. If the Contractor's work schedule exceeds the Total Contract Time for the project, the Contractor agrees to pay the Owner the Liquidated Damages described in the Contract Documents as compensation for additional Resident Project Representative work efforts.

- 14. MONTHLY DBE REPORTING.** The Contractor shall submit monthly Disadvantaged Business Enterprise (DBE) reports. The Contractor shall use MJ Form 208 *Subcontractor/Supplier DBE Project Expenditure Report* as included within this Specification. The report shall be submitted regardless if any DBE participation took place during the period indicated. In general, MJ Form 208 is to be submitted with the Contractor's Periodic Cost Estimate, but the form must be submitted monthly, even if no Periodic Cost Estimates are submitted.

The Contractor shall continually monitor their DBE participation on the Project. If it appears that the actual DBE participation will be lower than indicated in the Contractor's DBE Letter of Intent, the Contractor shall promptly provide written notification, and indicate just reason for the change. The Contractor shall further provide additional Good Faith Effort documentation that

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

effort was made to replace this DBE participation as outlined in the Division 1 – Referenced Documentation.

Monthly DBE reports will be required prior to the acceptance of any Periodic Cost Estimate (PCE). Retainage for the Project will not be released until all Project monthly DBE reporting documentation has been submitted to and approved by the Engineer.

### 15. COORDINATION OF CONTRACT DOCUMENTS.

- (a) General. The various sections of the Contract Documents are essential parts of the Contract; a requirement occurring in one is as binding as though occurring in all. The Contract Documents are complementary and intended to describe and provide for a complete work product. In case of discrepancy, precedence of the Contract Documents will be determined in the following order:

#### Contract Document Order of Precedence

1. Project Permits. In the event of a conflict between permit requirements, the more protective or stringent shall take precedence as determined by the Engineer.
2. Contract
3. FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects
4. Invitation to Bid
5. Special Provisions – Supplemental General Provisions
6. Other Special Provisions documents.
7. FAA – Technical Specifications
8. FAA – General Provisions
9. Contract Plans
  - a. Calculated or Stated Dimensions
  - b. Scaled Dimensions
10. Cited Standards for Materials or Testing
11. Cited FAA Advisory Circulars and Orders
12. Any Other Specifications Adopted by Reference

Addendum, Request for Information responses and Field Issued Sketches items take on the precedence of the item they are revising or the section into which they are added.

- (b) No Advantage from Errors or Omissions in Contract Documents. Neither the Contractor nor the Owner shall take advantage or be afforded any benefit as the result of apparent error(s) or omission(s) in the Contract Documents. If either party discovers error(s) or omission(s), it shall immediately notify the other. Failure of a bidder to notify the Owner or apparent error(s) or omission(s) in the Contract Documents during the bid process may result in their bid being determined to be non-responsive.

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

- (c) Corrections to Contract Documents. The Engineer will make corrections and interpretations deemed necessary and appropriate to fulfill the intent of the Contract Documents. When there is an apparent absence or mention of a detail or an apparent omission of a detailed description in the Contract Documents, the detail or description shall be interpreted/understood/determined using the best general engineering and construction practice.
  - (d) Effect of Other Specifications/Standards. Other specifications (e.g. ASTM, NDS, CRSI, ACI) cited by reference shall become effective only if the work or material covered by them is not included in the Contract Documents. Specifications so referenced shall be the latest revision in effect on the date of advertisement for bids.
16. **BID VALID PERIOD.** No bids may be withdrawn by the Bidder prior to the date listed in the Invitation to Bid.
17. **SPECIALTY ITEMS.** The following items are considered “Specialty Items” in this project:
- a. **None anticipated.**
18. **GENERAL SURETY REQUIREMENTS:**

The Proposal Surety shall be as specified in the Invitation to Bid; only the Bid Bond as bound within these documents or a Cashier's Check is acceptable. Upon request of the bidder, the Owner may choose to accept the AIA Bid Bond form. Each separate Proposal shall be accompanied by a Cashier's Check or Proposal Bond on the form provided herein in the amount of Five Percent (5 %) of the total amount bid, made payable to the Owner. If a Proposal Bond is provided in lieu of a Cashier's Check, it must be accompanied by a Surety's Bond Affidavit indicating that the person signing the bond on behalf of the Surety has full legal authority to do so.

If a Surety Bond is provided, the Surety Company issuing the bond shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State of Maine. Bids submitted without Bid Security will be rejected as nonresponsive.

100% Contract Payment and 100% Performance Bonds shall be as specified in Section 30-05 of the General Provisions, and must be accompanied by a Surety's Bond Affidavit indicating that the person signing the bond on behalf of the Surety has full legal authority to do so. The Surety Company issuing the bond shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State of Maine. These Bonds are required from the Contractor guaranteeing that the Contract, including the various guarantee periods thereunder, will be faithfully performed and that Contractor will promptly make payment to all persons supplying them labor, materials, supplies, and services used directly or indirectly by the Contractor in the prosecution of the work provided for in the Contract.

If, at any time after the execution of the Contract and the Contract Bonds, as above required, the Owner deems the Surety or Sureties upon such Bond or Bonds is unsatisfactory, or if, for any reasons, such Bond or Bonds cease(s) to be adequate to cover the performance of the work or prompt payment as above specified, Contractor shall, at its expense and within fifteen (15) days written notice from the Owner to do so, furnish additional Bond or Bonds in such form and amount and with such Surety

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

and Sureties as shall be satisfactory to the Owner. In such event, no further payment to the Contractor shall be deemed due under the Agreement until such new or additional bond or bonds are furnished in a manner and form satisfactory to the Owner.

- 19. RETAINAGE.** The Retainage Percentage for this project, as defined in Division 1 – FAA General Provisions Section 90-06 Partial Payments, shall be no more than Ten Percent (10%) or the maximum percentage allowed by applicable law.

**PART B – FAA REQUIRED CONTRACT PROVISIONS CLAUSES**

**ORIGINAL REFERENCE DOCUMENT:**

*Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects*  
(Current as of May 24, 2023)

Link: [https://www.faa.gov/airports/aip/procurement/federal\\_contract\\_provisions/may\\_2023](https://www.faa.gov/airports/aip/procurement/federal_contract_provisions/may_2023)

**1. ACCESS TO RECORDS AND REPORTS**

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

**2. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 100 *Affirmative Action Certification* as part of the Bidder's Certifications.

**3. BREACH OF CONTRACT TERMS**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$250,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

See “Termination of Contract” and “Termination of Contract for Convenience” in this section.

**4. BUY AMERICAN PREFERENCE**

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 101 *Certificate of Buy American Compliance for Construction Products* as part of the Bidder's Certifications.

Required to provide MJ Form 205 *Contractor/Subcontractor/Supplier Buy American Certification* as part of the Submittal Process.

FAA Buy American Reference Info: [https://www.faa.gov/airports/aip/buy\\_american/](https://www.faa.gov/airports/aip/buy_american/)  
(Including detailed explanation of Waiver Process and Buy American Conformance Lists)

**Required Documentation**

**The FAA Buy American Requests.** All applications (requests) for an FAA Buy American Preference Waiver includes, at minimum, a completed Content Percentage Worksheet and Final Assembly Questionnaire. Additional information may be requested from the applicant by the FAA. Airport Sponsors, consultants, construction contractors, or equipment manufacturers are responsible for completing and submitting waiver applications. The FAA is unable to make a determination on waiver requests with incomplete information. Sponsors must confirm with the bidder or offeror to assess the adequacy of the waiver request and associated information prior to forwarding a waiver request to the FAA for action. All FAA waivers forms are available from the FAA Buy American Requirements webpage.

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

**Proprietary Confidentiality.** Exemption 4 of the Freedom of Information Act protects "trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential. Proprietary manufacturing and design information submitted to the Federal Aviation Administration for the purposes of receiving a Buy American Waiver shall not be disclosed outside the FAA. The FAA will provide a written notification to the Airport Sponsor, manufacturer(s), contractor(s) or supplier(s) when a waiver determination is complete.

**Timing of Waiver Requests.** Sponsors desiring a Type 2 waiver should submit their waiver request, with justification, before issuing a solicitation for bids or a request for proposal for a project.

The Sponsor must submit a Type 2, Type 3, or Type 4 waiver request prior to executing the contract. The FAA will generally not consider waiver requests after execution of the contract except where extraordinary and extenuating circumstances exist.

**The Buy American Notice of Determination (NOD) Process.** The FAA Reauthorization Act of 2018 requires that all approved waivers must be posted to the FAA’s website and remain posted for public comment for 10 days, before becoming effective. All FAA waivers must complete the NOD process. Sponsors are encouraged to wait until approved waivers become effective before executing AIP projects.

**Buy American Conformance Lists.** The FAA Office of Airports maintains listings of projects and products that have received a waiver from the Buy American Preference requirements for project specific and nationwide use. Each of these conformance lists is available online at [www.faa.gov/airports/aip/buy\\_american/](http://www.faa.gov/airports/aip/buy_american/). Products listed on the FAA Nationwide Buy American Conformance list do not require additional submittal of domestic content information. Nationwide waivers expire five years from the date issued, unless revoked earlier by the FAA.

### 5. **CIVIL RIGHTS – GENERAL**

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 6. **CIVIL RIGHTS – TITLE VI ASSURANCES**

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 7. **CLEAN AIR AND WATER POLLUTION CONTROL**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$250,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 8. **CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$100,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 9. **COPELAND “ANTI-KICKBACK” ACT**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$2,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 10. **DAVIS-BACON REQUIREMENTS**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$2,000.)

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 11. **DEBARMENT AND SUSPENSION (NON-PROCUREMENT)**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$25,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 102 *Certification of Offeror/Bidder Regarding Debarment* as part of the Bidder's Certifications.

### 12. **DISADVANTAGED BUSINESS ENTERPRISE**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$250,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 103 *Proposed DBE Utilization* as part of the Bidder's Certifications.

Required to provide MJ Form 104 *Subcontractor/Supplier DBE – Letter of Intent* as part of the Bidder's Certifications.

Required to provide MJ Form 105 *Prime Contractor – DBE Reporting Information Form* as part of the Bidder's Certifications.

Required to provide MJ Form 106 *Subcontractor/Supplier – DBE Reporting Information Form* as part of the Bidder's Certifications.

### 13. **DISTRACTED DRIVER**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 14. **PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 15. **EQUAL EMPLOYMENT OPPORTUNITY**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 16. **FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### 17. **LOBBYING AND INFLUENCING FEDERAL EMPLOYEES**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$100,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 107 *Certification Regarding Lobbying* as part of the Bidder's Certifications.

### 18. **PROHIBITION OF SEGREGATED FACILITIES**



## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 108 *Prohibition of Segregated Facilities* as part of the Bidder's Certifications.

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

### **19. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### **20. PROCUREMENT OF RECOVERED MATERIALS**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### **21. RIGHT TO INVENTIONS**

NOT APPLICABLE TO THIS CONTRACT.

### **22. SEISMIC SAFETY**

(This section applies to building projects.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### **23. TAX DELINQUENCY AND FELONY CONVICTIONS**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

Required to provide MJ Form 109 *Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions* as part of the Bidder's Certifications.

### **24. TERMINATION OF CONTRACT**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### **25. TRADE RESTRICTION CERTIFICATION**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### **26. VETERAN'S PREFERENCE**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

### **27. DOMESTIC PREFERENCE FOR PROCUREMENT**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section

**PART C – GENERAL AVIATION CLAUSES**

**1. FORMS**

The Special Provisions Section of these Specifications references most of the forms as provided in Division 1 and Division 2 of the Contract which are required for use during the project and referenced throughout the Contract Documents. Most of the forms have been assigned unique form numbers to assist the Contractor in locating the correct form. After award of the Contract, the Prime Contractor may request electronic copies of some or all the forms contained in Division 1 and Division 2.

**2. SHOP DRAWINGS AND SUBMITTALS**

- 2.1. Submittals shall include but not be limited to: shop drawings, schedules, samples, and manufacturer's literature as required by the Specifications or requested by the Resident Engineer.

No work shall be fabricated until such approval has been received. Work performed without shop drawing approval is at the Contractor's own risk.

- 2.2. All submissions shall include Form MJ-206 "CONTRACTOR SUBMITTAL FORM" as a cover sheet to the submittal information.

For submittals generated from Subcontractors, two (2) submittal forms are required, one (1) Form MJ-206 from the Contractor and one (1) Form MJ-207 "SUBCONTRACTOR SUBMITTAL FORM" from the Subcontractor.

Submittals received without the completed submittal form(s) will be returned to the Contractor as incomplete and not reviewed. Contractor submittal forms shall be printed on colored paper of the Contractor's choice and shall remain the same color throughout the project.

Contractor submittal forms MJ-206 and MJ-207 are provided in Division 1 "Contract Execution Forms" as referenced above.

- 2.3. Submissions made directly by Subcontractors will not be accepted. All business concerning approval will be conducted through the Contractor.

The Contractor shall submit for the approval of the Resident Engineer, the following number of submittal copies:

Single Digital Copy (Which is the preferable method)

The Contractor may submit Submittals via email, or other Engineer approved method, using Adobe Acrobat (.pdf) format. In the event that Submittals are submitted via email, it shall be the Contractor's responsibility to ensure that the Submittal is received by the Engineer.

If Hard Copies of Submittals are used:

- Four (4) copies for the Resident Project Representative/Engineer
- Plus the number of copies required by the Contractor/Subcontractor

- 2.4. Submissions shall be made sufficiently in advance of construction requirements to allow ample time for checking, resubmitting and rechecking without causing delay in the work. Failure to submit shop drawings in a timely manner shall not be considered as a valid reason for a Contract time extension.

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

- 2.5. Each submission, including the submission of Subcontractors shall be checked by the Contractor for accuracy and compliance with the Contract Documents. The certification on the submittal form shall constitute as evidence of such checking and coordination. Submissions without this certification will not be considered for review by the Resident Project Representative.

Submittal certification shall include one (1) of the following:

2.5.1. Submitted "as specified" for the product

2.5.2. Submitted "AS EQUAL" to the product specified

2.5.3. Submitted "IN SUBSTITUTION" for the product specified

2.5.4. "OTHER"

- A. Submitted "as specified" shall mean the Contractor is certifying that the submittal item or system is of the same manufacture and model number, or performance standard as specified and is in all ways identical to the Contract Documents in form and function. For these items, manufacturer's data sheets shall be attached to the Contractor submittal form.
- B. Submitted "AS EQUAL" to the product or system specified shall mean the Contractor is certifying the proposed submittal, although supplied by a manufacturer other than the one specified for the item meets or exceeds the physical requirements, function, specifications, quality, speed, reliability, service life, safety, and/or maintenance costs of the product specified, and is capable of being incorporated into the overall project without design revisions and will perform equally or better than the specified item. For these items, manufacturer's data sheets shall be attached to the Contractor submittal to demonstrate that the performance, durability and/or maintenance standards of the product are as specified.
- C. Submitted "IN SUBSTITUTION" to the product or system specified means the Contractor is proposing an item or system of different physical requirements, specifications, quality, reliability, and/or maintenance costs, than the product specified. For a submission "IN SUBSTITUTION" of the product or system specified, the following information and procedure shall be followed to determine if the Owner's requirements will be satisfied:
  - a. Design the system to meet or exceed the operational requirements, physical requirements, specifications, quality, reliability, maintenance costs, and ease of operation of the specified system.
  - b. Submit full Specifications for the system and all components in the form of shop drawings for review by the Owner and the Engineer.
  - c. Submit a revised design for the system, stamped by a licensed Professional Engineer within the state in which the work is to be performed.
  - d. Submit revised details for any and all components of the proposed system that are different than those of the specified system. A licensed Professional Engineer within the state in which the work is to be performed shall stamp details.
  - e. Demonstrate the proposed system to the satisfaction of the Owner and Engineer.

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f. Not used.

g. Provide a credit satisfactory to the Owner for any cost savings associated with the substitution. The Contractor should anticipate providing a credit equal to one-half of the cost differential between the specified system and the system proposed for substitution.

Acceptance of any alternate item or system will be at the discretion of the Owner. Upon acceptance or rejection of a system or component thereof, the Engineer shall provide a written response to the Contractor in the form of a shop drawing review.

D. Submitted Certified as "OTHER". The Contractor shall provide information to demonstrate the proposed item or system will satisfy the design intent and provide the Owner performance, reliability and maintenance ease over its anticipated service life that exceeds that of the specified product. The final determination of suitability shall be the sole responsibility of the Owner.

2.6. Changes on the submitted shop drawings that deviate from the Project Plans and Specifications must be brought to the Owner's and Resident Project Representative's attention, in writing, prior to review. Changes must be clearly visible on the shop drawings in the form of written notation, ballooning, or highlighting the intended change. A written description for the proposed change must also be included and submitted on company letterhead. Changes to drawings and details not submitted in accordance with these requirements will not be recognized as an approved deviation from the Design of Record. Construction repairs, renovations, or replacements required as a result of shop drawing and submittal deviations that are not documented in accordance with these requirements are subject to removal and/or replacement by the Contractor, at the sole cost of the Contractor. The Contractor shall not be relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar submittals by the Resident Project Representative's actions.

2.7. Shop drawings for pipe, fittings, and masonry items shall consist of certificates of conformance of affidavits from the manufacturer's signifying that all materials conform to the Specifications.

2.8. The Contractor shall allow for sufficient time within the project schedule for shop drawing review and processing. Items requiring long lead times which impact the start or completion of the project shall be identified, brought to the Engineer's attention and noted on the shop drawing submission. Additional Contract time will not be provided for failure to submit shop drawings for approval in a timely manner.

2.9. Not used.

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- 2.10. The Contractor shall submit all required Buy American Preferences documentation with each shop drawing as outlined in Appendix Y of FAA Order 5100-38D (AIP Handbook) dated February 26, 2019 (or current version) included in this Contract Document (Division 1 – Referenced Documents) and as required by the Owner or the Resident Project Representative. Delays caused by the Buy American Preferences program shall be expected and the Contractor agrees to make no monetary claim for delays, interferences or hindrances of any kind in the performance of this Contract occasioned by any act or omission to act of the Owner or any of its Representatives.

**Each shop drawing and submittal shall be accompanied by a signed copy of Form MJ-205 “Contractor / Subcontractor / Supplier Buy American Certification.”** A blank copy of this form is included in Division 1 - “Contract Execution Forms” Section referenced above.

### 3. DISADVANTAGED BUSINESS ENTERPRISE (DBE) AND SMALL BUSINESS PROGRAMS

The **City of Auburn, Maine** for the **Auburn-Lewiston Municipal Airport (SPONSOR)** has established a DBE program in accordance with 49 CFR Part 26 (Part 26) and the U. S. Department of Transportation (USDOT) regulations.

#### 3.1. DBE PROGRAM:

It is the policy of the **SPONSOR** to help ensure that DBEs, as defined in Part 26, have an equal opportunity to receive and participate in FAA - assisted contracts. It is also our policy:

- To help ensure nondiscrimination in the award and administration of FAA - assisted contracts;
- To create a level playing field on which DBEs can compete fairly for FAA - assisted contracts;
- To help ensure that the DBE program is narrowly tailored in accordance with applicable law. To help ensure that only firms that fully meet Part 26 eligibility standards are permitted to participate as DBE firms;
- To help remove barriers to the participation of DBEs in DOT assisted contracts;
- To assist the development of firms that can compete successfully in the marketplace outside the DBE program; and,
- To help ensure that all firms, from prime contractors to subcontractors, understand and respect their obligations relative to all aspects of the DBE program, and that deviations from the requirements of the regulation may be subject to applicable state and federal enforcement sanctions

The **SPONSOR** has delegated a DBE Liaison Officer. In that capacity, they are responsible for implementing all aspects of the DBE program. Implementation of the DBE program is accorded the same priority as compliance with all other legal obligations incurred by the **SPONSOR** in its financial assistance agreements with the Department of Transportation. A Copy of the **SPONSOR’s** – “DBE Program” is on file at the **SPONSOR’s** administrative offices.

The **SPONSOR** has chosen to have a Race-Neutral DBE program for federal fiscal year 2024. A Race-Neutral program is one where the Airport works to create a level playing field where all firms, including DBE’s and small businesses, can compete for work. A Race-Neutral DBE program does not include project specific DBE goals.

Although Contractors do not have a project specific goal for DBE participation on a Race-Neutral

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

project, Contractors must still comply with the requirements of 49 CFR Part 26 and the AIP Federal Contract Provisions contained in Division 1 – FAA Required Contract Provisions for AIP Projects.

Some of these FAA Required Contract Provisions for AIP Projects requirements include:

- i. **Seeking Subcontractors and Suppliers:** Bidders must make a good faith effort to provide notice to all firms, including small businesses and DBE's, of upcoming opportunities to supply materials or subcontract on federally funded projects. Some examples of good faith efforts would be: contacting all firms on the state DBE or minority contractor listing to notify them of opportunities; compiling lists of firms that have previously shown an interest in working on federally funded projects and contacting them when bidding projects; using services like Construction Summary to advertise for suppliers and subcontractors; and before the start of the "bidding season" place ads in newspapers and on the company web site to solicit letters of interest from firms.

Despite the fact that there is no project specific DBE goal for this project, the Contractor must still utilize the Good Faith Effort guidelines and procedures in 49 CFR Part 26 including Appendix A.

- ii. **Prompt Payment:** Prime Contractor can level the playing field for all Subcontractors and Suppliers by paying them promptly for satisfactory completion of their work. Contractors are encouraged to pay Subcontractors and Suppliers as quickly as possible. **Contractors are required to pay all Subcontractors and Suppliers in accordance with the Prompt Payment** clause stated in this Division 1 – FAA Required Contract Provisions for Obligated Sponsors and Airport Improvement Program Projects – Disadvantaged Business Enterprise Section.
- iii. **Identification of DBE and Small Business Contractors Included in the Bid:** The Prime Contractor is required to provide the anticipated DBE and Small Business utilization that is included in their bid. Form MJ-103A "Proposed Disadvantaged Business Enterprise (DBE) and Small Business Utilization – Race Neutral Projects" or Form MJ-103B "Proposed Disadvantaged Business Enterprise (DBE) and Small Business Utilization – Race Conscious Projects" must be filled in and included with the Prime Contractor's bid. The form must include the percentage of DBE participation and Small Business participation that the Prime Contractor anticipates achieving for the project. The form must include the name, proposed work, and dollar amount of the work that the DBE or Small Business will be providing.

For each DBE or Small Business listed on Form MJ-103A/103B, the Contractor must also submit a copy of Form MJ-105 "Prime Contractor – DBE/Small Business Reporting Information Form" (if the Prime Contractor is a DBE or Small Business) or MJ-106 "Subcontractor / Supplier DBE / Small Business Reporting Information Form" with detailed information on the firm.

As part of the bid opening, the Contractor must submit signed copies of Form MJ-104 "Subcontractor / Supplier Disadvantaged Business Enterprise (DBE) and Small Business – Letter of Intent" for each DBE or Small Business firm listed in on Form MJ-103A/103B.

- iv. **DBE and Small Business Termination and Substitution:** Contractors must utilize the all DBE and Small Business Subcontractors and Suppliers for the work and for the payment amount listed in their bids. The work or payment amount of DBE and Small Business Subcontractors

## DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

and Suppliers may not be reduced, switched to a different contractor, or eliminated unless a written request is made to the Owner and the Owner approves the change.

If a substitution or a change in the work or payment amount of DBE and Small Business Subcontractors and Suppliers is requested, the work or payment shall be shifted to another DBE or Small Business Subcontractor or Supplier. Any change or substitution of subcontractors, suppliers, or joint venture partners requires the approval of the Owner. **The Contractor shall submit a copy of Form MJ-210 “Change of Subcontractor/Supplier” to the Engineer to request permission to change or substitution of subcontractors, suppliers, or joint venture partners.** If another DBE or Small Business Subcontractor or Supplier cannot be found by the Contractor, they must provide documentation of Good Faith Effort as outlined in 49 CFR Part 26 including Appendix A.

The DBE and Small Business termination or substitution process is complicated and time consuming. The Contractor is not entitled to any contract time extensions as a result of the process. The Contractor may not make any delay claims against the Owner nor will the Contractor be entitled to receive any additional compensation due to the termination or substitution of a Subcontractor or a Supplier.

Failure to comply with the requirements of this section may result in the Contractor’s termination for cause.

- v. Commercially Useful Function: DBE’s and Small Businesses must perform a commercially useful function as defined by 49 CFR Part 26 to be counted in the calculation of DBE or Small Business accomplishments. In particular, DBE’s and Small Businesses may not use any of the Prime Contractor’s employees, equipment, or materials in the performance of their work.
- vi. Calculating DBE Participation: The Contractor shall consult 49 CFR Part 26 and understand the way DBE participation is counted on FAA funded projects such as this project. Only DBE’s certified by the State’s Identified Unified Certification Program shall be considered as DBE’s for this project (refer to Part A – Section 1 of this Special Provision/Supplemental General Provisions for DBE Directory location). DBE firms that are certified in other states and firms that think that they may be eligible to be certified as a DBE in this state are encouraged to contact the Project Locations State Agency/Department to be included in that State’s Unified Certification Program.
- vii. List of Potential Subcontractors and Suppliers: All bidders shall provide information on all firms that they contacted or considered as a potential Subcontractor or Supplier on this project. The Contractor shall provide a copy of Form BC3 – Bidder’s Proposed List of Subcontractors and Suppliers, in addition to the requirements outlined above for DBE subcontractors/suppliers. **This information must be provided with the Contractor’s bid.** Failure to provide this information with the bid may result in the Owner declaring the bid non-responsive and rejecting it.
- viii. Construction Phase Information (Daily Worker List): During the on-site construction work, the Prime Contractor shall instruct all their employees as well as all employees of all subcontractors and other on-site personnel to sign in each day at the Contractor’s office trailer. In addition, the Contractor shall provide the Resident Project Representative with a daily list of workers and equipment on site.



**3.2. SMALL BUSINESS PROGRAM:**

It is the policy of the **SPONSOR** to facilitate competition by small business concerns, taking all reasonable steps to eliminate obstacles to their participation in federally funded projects, including unnecessary and unjustified bundling of contract requirements that may preclude small business participation in procurements as prime contractors or subcontractors.

A Small Business is defined in 49 CFR Part 26.5 and 13 CFR Part 121 and the average annual gross receipts can, in some cases, be over \$19 million.

A DBE is typically also a Small Business and, if they qualify as both, they may be counted toward both the DBE and Small Business participation on this project.

The Contractor shall make all reasonable efforts to eliminate obstacles to small business participation in making portions of their work available to subcontractors. Methods that may be used include unbundling large tasks, using small business and DBE directories to solicit proposals from small businesses, and making all potential subcontractors and suppliers aware of prompt payment clauses contained in this project.

**4. SUBLETTING WORK TO SUBCONTRACTORS AND SUPPLIERS OR ASSIGNMENT OF CONTRACT**

- 4.1. **GENERAL:** The Contractor shall not sublet, assign, sell, transfer, or otherwise dispose of the Contract or any portion thereof, or of its right, title, or interest therein to any individual, firm, corporation, or other entity without the written consent of the **SPONSOR**. The Contractor must file with the **SPONSOR** copies of all executed subcontracts and other documents. An approved subcontractor shall not in turn sublet or assign any of the work pertaining to the subcontract without the Contractor obtaining further permission from the **SPONSOR**. In no event shall the **SPONSOR** approval release the Contractor from responsibility and liability under the Contract and bonds.

Any work or material supply that costs \$10,000 or more and is included in this project that the Prime Contractor wants to sublet to another firm must be approved by the **SPONSOR** in writing. Any Subcontractors or Suppliers that will be doing work or supplying material that is sublet and approved by the **SPONSOR** must have a signed contract with the Prime Contractor or a lower tier Subcontractor or Supplier before they may begin work or deliver material to the project site. The **SPONSOR** reserves the right to reject the use of any Subcontractor or Supplier that they feel is not in best interests of the **SPONSOR**.

**The Contractor must file the Forms outlined in subsection 4.5 of this Section (below) to obtain the SPONSORS' permission to utilize subcontractors and suppliers.**

- 4.2. **PERFORMANCE OF THE CONTRACT WORK:** The Contractor shall perform Contract work with its own organization amounting to at least **25 percent** of the total Contract work amount, minus "Specialty Items." The Contractor's own organization includes only workers employed and paid directly by the Contractor and equipment owned, leased, or rented by it from a non-debarred individual or entity, with or without operators. The term "own organization" does not include employees or equipment of a subcontractor, assignee, agent, or supplier of the Contractor. When determining whether the Contractor is in compliance with this requirement, the following shall apply:

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- (1) The cost of materials and manufactured products to be purchased or produced under the Contract shall be included in the amount upon which the percent requirement is computed.
  - (2) The percentage of subcontracted work shall be based on the Contract, rather than subcontract, unit prices. If only a part of a Contract item is to be sublet, its proportional value shall be determined on the same basis.
  - (3) When a firm sells materials to a Contractor and performs the work of incorporating the materials into the project, these actions must be considered in combination and as constituting a single subcontract.
- 4.3. **“SPECIALTY” ITEMS:** The cost of “Specialty Items” may be deducted from the total Contract price before computing the amount of work required to be performed by the Contractor’s own organization. Specialty items will be designated, as such in Part A, Section 17 of this Special Provision/Supplemental General Provision and may be performed by subcontract.
- 4.4. **PERFORMANCE REQUIREMENTS:** The Contractor and its subcontractor(s) shall, in the staffing and administration of the Contract, comply with the following performance requirements:
- (1) Commercially Useful Function. The Contractor and all subcontractor(s) must each perform a “commercially useful function”. This means that the Contractor or Subcontractor is responsible for the execution of a distinct element of the work of a Contract and carries out its responsibilities by actually performing, managing, and supervising the work involved. The Contractor or Subcontractor must have the latitude to independently:
    - a. Select contracts to be bid;
    - b. Determine prices to be quoted;
    - c. Select material suppliers;
    - d. Hire, fire, supervise, and pay employees; and
    - e. Direct or cause the direction of the management and policies of the firm.The Contractor/subcontractor may not broker work for another firm or act as a bidding conduit.
  - (2) Contractor to Furnish Competent Representative; Safety Officer; Others. To ensure that any subcontracted work is performed in accordance with the Contract requirements, the Contractor shall be required to furnish:
    - a. A competent, reliable, English-speaking representative employed by the Contractor who has full authority to direct performance of the work in accordance with the Contract requirements and who is responsible for all construction operations on the project regardless of who performs the work.
    - b. A competent, reliable, English-speaking employee designated as the safety officer who is authorized to receive orders and to issue binding directions concerning safety to all persons except Sponsor representatives associated with the project, whether employed by the Contractor, subcontractors, or material suppliers.
    - c. Such other individual(s) from the Contractor’s organization as the SPONSOR’s Construction Engineer determines are necessary to ensure the performance of the Contract, e.g., supervisory, managerial and engineering personnel.

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(3) Employees on Payroll. The Contractor/subcontractor is not permitted to place on the payroll the employees of another firm for the purpose of avoiding Federal or State regulations or the provisions of the Contract.

- 4.5. **SUBLETTING WORK TO SUPPLIERS:** Suppliers that the Contractor or a lower tier Subcontractor or Supplier plans to sublet work to must be approved by the **SPONSOR**. The Prime Contractor must submit a package of information to the **SPONSOR** through the Resident Project Representative at least fourteen (14) calendar days prior to the date that the supplier will be supplying material to the project site.

The Supplier Sublet package shall include the following correctly filled out and executed forms:

- i. Form MJ-204 – “Transmittal Request for Consent to Sublet”;
- ii. Form MJ-202 – “Contractor Acknowledgement Certification”;
- iii. Form MJ-203 – “EEO Officer Notification and Program Compliance Certification”;
- iv. EEO Appointment Letter;
- v. EEO Policy Statement;
- vi. Form MJ-106 – “Subcontractor/Supplier – DBE/Small Business Reporting Information Form”; and
- vii. Form MJ-108 – “Prohibition of Segregated Facilities”.

- 4.6. **SUBLETTING WORK TO SUBCONTRACTORS:** Subcontractors that the Contractor or a lower tier Subcontractor or Supplier plans to sublet work to must be approved by the **SPONSOR**. The Prime Contractor must submit a package of information to the **SPONSOR** through the Resident Project Representative at least fourteen (14) calendar days prior to the date that the supplier will be supplying material to the project site.

The Subcontractor Sublet package shall include the following correctly filled out and executed forms:

- i. Form MJ-204 – “Transmittal Request for Consent to Sublet”;
- ii. Form MJ-201 – “Annual Contractor Assurances – AIP Funded Contracts”;
- iii. Form MJ-202 – “Contractor Acknowledgement Certification”;
- iv. Form MJ-203 – “EEO Officer Notification and Program Compliance Certification”;
- v. EEO Appointment Letter;
- vi. EEO Policy Statement;
- vii. Form MJ-100 – Affirmative Action Certification - “Equal Employment Opportunity Report Statement as Required by 41 CFR 60-1.7(b)”.
- viii. Form MJ-106 – “Subcontractor/Supplier – DBE/Small Business Reporting Information Form”; and
- ix. Form MJ-108 – “Prohibition of Segregated Facilities”.

Form MJ-201 must be resubmitted by the Prime Contractor and each Subcontractor annually by January 15<sup>th</sup>.

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### 5. PROOF OF PROMPT PAYMENT

Prompt payment of suppliers and subcontractors is required as outlined in Section 3, Subsection 3.1, paragraph ii. from above in this Part C.

With each Periodic Cost Estimate (PCE), the Prime Contractor shall provide proof of payment of all Subcontractors and Suppliers whose work was included in the previous PCE. Proof of payment shall consist of a copy of a cancelled check or a certificate of payment signed by the Subcontractor or Supplier. The Owner may provide the Contractor with one or more forms to be filled out and returned to the Owner to monitor and track payments.

To track work by Subcontractors and Suppliers, the Prime Contractor shall submit copies of Form MJ-208 “Subcontractor / Supplier Disadvantage Business Enterprise (DBE) and Small Business – Project Expenditure Report” for EVERY approved Subcontractor and Supplier with each PCE even if the Subcontractor or Supplier did not do any work on the project or supply any materials to the project during the period covered by the PCE.

If the Contractor is in violation of this prompt payment requirement, the Owner may withhold the amount due to the Subcontractor or Supplier from future payments due to the Contractor until satisfactory proof of payment is received. If the Contractor is in violation of this prompt payment requirement four (4) or more times, the Owner may terminate the Contract for cause and/or may require the Contractor to pay some or all of their Subcontractors or Suppliers and provide proof of payment before the Subcontractor’s or Supplier’s work can be included on a PCE.

### 6. EQUAL EMPLOYMENT OPPORTUNITY (EEO) / AFFIRMATIVE ACTION (AF) / NON-DISCRIMINATION

The Offeror's or Bidder’s attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth in Division 1 and also referenced in Part B. Section 17, in this Special Provision/Supplemental General Provision. The Contractor and all Subcontractors and Suppliers shall comply with the EEO, AF, and Non-Discrimination requirements in the “Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects” contained in Division 1 documentation, 41 CFR 60-4 (two sections are contained in Division 1 Referenced Documents), and Federal Executive Order 11246. If the federal requirements and the state requirements conflict, the federal requirements shall govern. Requirements include, but are not limited to:

- 6.1. **SF-100:** The Contractor and all first tier Subcontractors must file SF-100 (EEO-1) by September 30<sup>th</sup> of each year but in no case later than the start of this project if they employ 50 or more employees at all locations and they have contracts of \$50,000 or more. The Contractor shall confirm these requirements prior to the start of work.
- 6.2. **MINORITY AND FEMALE EMPLOYEE PARTICIPATION:** The Contractor and all Subcontractors must comply with 41 CFR Part 60-4 and Federal Executive Order 11246 in regards to goals for minority and female employees in federally funded projects. Participating Contractors and Subcontractors must:
  - i. Take specific actions as outlined in 41 CFR Part 60-4 to ensure EEO;
  - ii. Have an EEO / AF Plan;

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- iii. Designate an EEO / AF Officer;
  - iv. Periodically notify and train supervisors and others on the Plan;
  - v. Recruit minorities and females;
  - vi. Maintain EEO / AF records;
  - vii. Develop or participate in on-the-job training programs;
  - viii. Disseminate their Plan;
  - ix. Post their Plan;
  - x. Annually evaluate all minorities for promotion; and
  - xi. Annually review supervisors' adherence to their Plan.
- 6.3. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are contained in the Invitation for Bids.

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its Federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training shall be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project, for the sole purpose of meeting the contractor's goals, shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

- 6.4. The Contractor shall provide written notification to the US Department of Labor, Director, Office of Federal Contract Compliance Programs (OFCCP), within ten (10) working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of subcontract; and the geographical area in which the subcontract is to be performed.
- 6.5. As used in this notice and in the contract resulting from this solicitation, the "covered area" is noted in Division 1 – FAA Required Contract Provisions, Page RCP-3.

## **7. MATERIALS, SERVICES, AND FACILITIES**

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It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide at no cost to the Owner all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work for the specified item.

Any work to be performed after regular hours, on Sundays or on Legal Holidays, shall be performed without additional expense to the Owner.

### **8. CONTRACTOR'S TITLE TO MATERIALS**

No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he /she has good title to all materials and supplies used by him/her in the work free from all liens, claims or encumbrances.

### **9. LUMP SUM AND UNIT PRICES**

Only those items for which unit prices are shown in the Bid Form will be considered for separate payment. Compensation for all other work shall be included in the appropriate Contract items.

Quantities listed in the Bid Form are estimated for Bidding purposes only and do not necessarily represent the exact amount of work to be done. Payment for unit price items will be based on the unit prices specified or Bid and the actual amount of work performed.

### **10. "OR EQUAL" CLAUSE**

Whenever materials are identified on the Plans or in the Specifications by reference to manufacturer's or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and any material of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the materials so proposed are, in the opinion of the Engineer, of equal substance and function. Such materials shall not be purchased or installed by the Contractor without the Engineer's written approvals through the Shop Drawing process.

### **11. REPRESENTATIONS OF THE CONTRACTOR**

The Contractor represents and warrants:

- a. that they are financially solvent and that they are experienced in and competent to perform the type of work or to furnish the plant, materials, supplies or equipment, to be so performed or furnished by him/her; and
- b. that they are familiar with all Federal, State, municipal and Sponsor laws, ordinances and regulations, which may in any way affect the work or those employed therein, including but not limited to, rulings or actions specifically relating to the work or to the project of which it is a part; and
- c. that such temporary and permanent work provided by the Contract Documents as is to be done by them can be satisfactorily constructed and used for the purpose for which it is intended, and that such construction will not injure any person or damage any property; and

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- d. that they have carefully examined the Plans, Specifications and site of the work, and that from their own investigations, they have satisfied themselves as to the nature and location of the work, the character, quality and quantity of equipment and other facilities needed for the performance of the work, the general and local conditions and all other materials which may in any way affect the work or its performance.

### 12. PROTECTION OF WORK AND PROPERTY AND EMERGENCIES

- 12.1. **PROTECTION OF WORK AND PROPERTY:** The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Contract. The Contractor shall at all times safeguard and protect their own work and adjacent property from damage. The Contractor shall correct any such damage, loss or injury unless such is caused directly by errors contained in the Contract or caused by the Owner, or the Owner's duly authorized representative.
- 12.2. **EMERGENCIES:** In case of an emergency which threatens loss or injury of property, and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Resident Project Representative, in a diligent manner. The Contractor shall notify the Resident Project Representative immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Resident Project Representative for approval.

The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in Division 1, General Provisions, Section 40.

Where the Contractor has not taken action but has notified the Engineer of any emergency threatening injury to persons or damage to the work or any adjoining property, the Contractor shall act as instructed or authorized by the Resident Project Representative.

Where the Contractor has not taken action but has notified the Engineer of any emergency threatening injury to persons or damage to the work or any adjoining property, the Contractor shall act as instructed or authorized by the Resident Project Representative.

Any Contractor whose place of business is located outside of the boundary of the city or town where the airport is located and who does not maintain local headquarters 24 hours a day within that city or town must make satisfactory arrangements with the Engineer for taking care of emergencies or complaints which may occur at night, over the weekend, or when the job is shut down. If they do not, the Owner may make arrangements and the cost will be charged to the Contractor. Before the final estimate is certified for payment, the Contractor shall make similar arrange

- 12.3. **COVID-19 RESTRICTIONS:** The Contractor shall comply with all requirements of the Federal Government, FAA, General State Guidelines, other State Regulations, local regulations, and the **SPONSOR** related to protection of workers and the public from COVID-19. This may include maintaining additional facilities, like hand-washing stations, at the work area and quarantining workers traveling into SPONSOR's work zones. All costs for the Contractor's compliance with COVID-19 requirements shall be considered incidental to the project and shall be the full responsibility of the Contractor.

### 13. PROTECTION AND RESTORATION OF PROPERTY

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- 13.1. **GENERAL:** These requirements are in addition to those contained in Division 1 - FAA General Provisions, Section 70.

The Contractor shall:

- (1) Not enter upon private property for any purpose without obtaining written permission;
- (2) Use every precaution necessary to prevent damage or injury to public and private property;
- (3) Protect all trees, shrubs, and other plants not marked by the Engineer for removal from damage by construction operations.

- 13.2. **PROTECTION OF EXISTING INFRASTRUCTURE:** The Contractor shall make sure that any portions of the existing airport, roadway and existing structures which are to be retained for public use or travel are left in as good condition as when the Contractor commenced work. The Contractor shall not move or use equipment on any pavement or structure in a manner that may or does cause damage.

- 13.3. **CONTRACTOR'S RESPONSIBILITY:** The Contractor's responsibility shall not be released until the work has been completed and accepted and the applicable statute of limitations has expired.

- 13.4. **RESTORATION OF DAMAGED PROPERTY:** When any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work or in consequence of the non-execution thereof on the part of the Contractor, such property shall be restored at the Contractor's expense to a condition similar or equal to that existing before such damage or injury was done or the Contractor shall make good such damage or injury in an acceptable manner.

- 13.5. **CLEANING TRAFFIC SIGNALS, STREET LIGHTING, AND AIRFIELD LIGHTING:** When the Contractor's operations compromise the functionality of existing traffic signals and/or street or airfield lighting equipment, the Engineer may require the Contractor to clean said equipment prior to project completion. Cleaning of traffic signals shall include all vehicle and pedestrian signal face lenses (inside and outside). Further, the inside of the controller cabinet shall be vacuumed and any vent filter shall be replaced; cleaning of streetlights shall include both the lens (inside and outside) and the reflector. The cleaning of electrical equipment shall be done by a traffic signal/electrical contractor. Any equipment that is damaged in the cleaning process shall be repaired or replaced at the Contractor's expense. The costs for cleaning will not be paid for directly, but will be considered incidental to other items in the Contract.

- 13.6. **GROUND VIBRATION LIMITS:** The maximum Peak Particle Velocity (PPV) of ground vibration in any of the three mutually perpendicular components of particle velocity for the following structure types shall be limited as follows:



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### PPV IN MM/S (IN/SEC)

<u>Type of Structure</u>	<u>Frequencies &lt; 40 Hz</u>	<u>Frequencies &gt; or = 40 Hz</u>
Modern Homes (drywall interior)	19 (0.75)	50 (2.0)
Older Homes (plaster on wood or lath)	13 (0.50)	50 (2.0)
Non-Residential Structures Underground Utilities		

The SPONSOR reserves the right to lower the PPV limit in areas where there may be structures or elements with a higher sensitivity to ground vibration. Adherence to this specification does not waive the Contractor's responsibility for damage as specified in this Subsection and in Part B. Section 22 Seismic Safety (as applicable).

#### 14. PUBLIC CONVENIENCE AND SAFETY

14.1. **GENERAL:** The Contractor shall conduct all work so as to ensure the least possible obstruction to traffic. The safety and convenience of the general public and the residents along the highway within the construction area and the protection of persons and property shall be provided for by the Contractor.

14.2. **DUST CONTROL:** The Contractor shall use all necessary dust control on haul road(s) and maintenance yard(s) in the same manner as required for materials sources and disposal areas. Dust control on haul road(s) and maintenance yard(s) shall be performed in accordance with Division 1, General Provisions, and will not be paid for directly, but will be considered incidental to all other Contract items. The Contractor shall perform all dust control directed by the Engineer on the haul road(s) and/or maintenance yard(s); unless otherwise provided, dust control will not be paid for directly, but will be considered incidental to all other Contract items.

The Engineer will direct the use of all necessary dust control within the limits of the construction performed under the Contract. Under those contracts which contain pay items for dust control, the dust control within the construction area shall be performed in accordance with the requirements of Division 1 – General Provisions (and other references herein) and will be paid for under the appropriate Contract item(s). Under those contracts which do not contain pay items for dust control, the necessary dust control shall be performed in accordance with the requirements of Division 1 – General Provisions (and other references herein) and the cost will not be paid for directly, but will be considered incidental to all other Contract items.

14.3. **STORED MATERIALS:** Materials stored within the construction area shall be placed so as to cause a minimum obstruction to the facility users, the traveling public and snow removal operations. Materials shall not be store in any areas regulated by State or Federally Environmental Agency or in buffers unless approved by the Resident Project Representative.

14.4. **FIRE HYDRANTS:** Fire hydrants located within the construction area shall be kept accessible to fire apparatus at all times and no material or obstruction shall be placed within 15 feet of any such hydrants.

14.5. **ADJOINING WAYS:** Sidewalks, gutters, drainage inlets, and portions of highways adjoining the construction shall be obstructed only when necessary. If a sidewalk is obstructed,

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temporary pedestrian access meeting the requirements of ADA and the MUTCD shall be provided around the obstructed area.

- 14.6. **VEHICLE LANE RESTRICTIONS:** When the total useable width of a traveled way will be decreased to 14 feet or less for a period longer than one working day, the Contractor shall notify the Engineer of the date of the first day and the anticipated period of time such a lane restriction will be in effect. This notification shall be provided at least two weeks prior to the beginning of the lane restriction so that the Engineer may provide proper notification to the Oversized/Overweight Section of the Commercial Vehicle Enforcement Unit of the Department of Motor Vehicle and the Agency's Communications Section. When the date of the removal of the restriction becomes known, the Contractor shall notify the Engineer so that notification can be provided to these entities.

### 15. USE OF EXPLOSIVES

- 15.1. **GENERAL:** The Contractor shall use the utmost care to protect life and property and, whenever directed by the Engineer, shall reduce the number and size of explosive charges. Blasting mats shall be used when required by regulation or deemed necessary. The Contractor shall notify each person, company, corporation, or public utility that owns, leases, or occupies property or structures near the site of the work of plans to use explosives; notice shall be given sufficiently in advance to enable people to take such steps to protect their property or structure from injury as they may deem necessary. Provision of notice shall not relieve the Contractor of responsibility for any damage resulting from the Contractor's blasting operations. All persons within the danger zone of blasting operations shall be warned, a warning whistle shall be sounded, and the zone cleared just prior to blasting. A sufficient number of flaggers shall be stationed outside the danger zone to stop all approaching traffic during blasting operations. Explosives shall be used only during daylight hours and shall be handled only by competent, trained workers; particular care shall be taken to ensure that no unexploded charges remain in the work area unattended and when constructions operations cease for the day. All explosives shall be stored securely, all storage locations shall be clearly marked "DANGEROUS-EXPLOSIVES," and all storage locations shall be supervised and controlled by a competent, trained person at all times. All explosives and highly flammable materials shall be stored and used in strict conformity with all Federal, State, and local laws, rules, and regulations. Attention is directed to VOSHA *Safety and Health Standards for Construction*, Subpart U, Blasting and the Use of Explosives.
- 15.2. **LIABILITY:** Each of the insurance policies required for a project shall include coverage for injury to persons and injury or destruction of any property arising out of the storage and use of explosives.
- 15.3. **INSURANCE:** The Contractor acknowledges full responsibility and assumes full liability for any and all damage or injury to persons or property caused either directly or indirectly by the Contractor's or a subcontractor's use of explosives. The liability of the Contractor shall apply equally to damages or injury to persons or property whether said injury or damage occurs within or outside of the right-of-way. The cost of all precautionary measures shall not be paid for directly, but all costs therefore shall be included in the bid prices for the pay items under the Contract.
- 15.4. **BLASTING CAP DANGER:** The Contractor and/or the Contractor's agents shall take all precautions necessary to prevent premature explosions of electric blasting caps individually or

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when they are connected into a circuit.

- 15.5. The Contractor and/or the Contractor's agents acknowledge and are hereby advised of the potential hazard of a premature explosion of electric blasting caps due to propagation of radio frequency energy by transmitters of radio and the related radio services such as television and radar. Mobile and fixed radio, cellular telephone, radar, television, and related transmitters are in general use in the project area, including police departments, fire departments, political subdivisions, utility companies, commercial carriers, private and public enterprises, and individuals.
- 15.6. **WARNING SIGNS; COSTS INCIDENTAL:** Prior to blasting operations the Contractor shall install warning signs in conformance with the MUTCD. Warning signs shall be located in prominent positions at least 1,200 feet from the point of blasting and visible to any person approaching the blasting point. Payment for furnishing, erecting and maintaining warning signs shall be considered incidental to other items in the Contract.
- 15.7. **DOCUMENTATION OF STRUCTURE CONDITION:** It shall be the responsibility of the Contractor to document the existing condition of all structures that have potential for damage. This documentation shall be in the form of a video or pictures, with sufficient description, and shall be supplied to the Engineer prior to any blasting on the project. The costs of preparing this documentation will not be paid for directly, but shall be considered incidental to all Contract items.
- 15.8. **BLAST SURVEYS:** The Contractor shall monitor all blasts and provide a report to the Engineer that shall indicate the Peak Particle Velocity (PPV) of the blast. The PPV sensitivity as reported shall range from less than 0.5 mm/s (0.02 in/s) to more than 125 mm/s (5.0 in/s). The Engineer reserves the right to request more than one instrument to monitor the blasting if there is a need for monitoring in more than one direction from the blasting area. The costs of the monitoring and preparing the reports will not be paid for directly, but shall be considered incidental to all Contract items.

### 16. PROTECTION AND RESTORATION OF UTILITIES AND SERVICES

- 16.1. **GENERAL.** The Contractor shall take proper precaution during construction to avoid damage to public and private services. These services include, but are not limited to gas, water, sewer and drainage pipes, springs, wells, septic tanks, cesspools, telephone, telegraph, television, and other communication and electrical services. Services may be located on or adjacent to the project, above, on, or under the ground, and may not be shown on the Plans.
- 16.2. **DIG-SAFE.** The Contractor shall comply with the requirements of Dig-Safe laws in the state in which the work will take place.
- 16.3. **NOTICE OF WORK.** At commencement or resumption of construction, the Contractor shall notify the owners, operators, occupants, or lessees of all the public or private services of any work to be done on, over, under, adjacent to, or in proximity to said utilities during the construction of the project. Further, the Contractor shall again notify the aforesaid parties seven (7) to fourteen (14) calendar days in advance of starting such work to enable them to take steps as they may deem necessary to protect their property or structures from damage. Provision of

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notice shall not relieve the Contractor of its responsibility for any damages resulting from the Contractor's work.

- 16.4. **OWNER ACCESS.** Owners, employees, or agents of public or private services located within the project limits shall be allowed free and full access with the tools, materials, and equipment necessary to install, operate, maintain, place, replace, relocate, and remove service facilities. No compensation will be paid to the Contractor for any inconvenience caused by working with these parties or around or with their services.
- 16.5. **SERVICE RELOCATION.** The exact location of any service facility relocated within the project limits shall be as directed by the Engineer.
- 16.6. **COOPERATION.** The Contractor shall cooperate with the owners of any of the aforementioned services in order that the service removal and/or relocation operation will progress in a reasonable manner, that duplication or temporary relocation work may be reduced to a minimum, and that services rendered by the concerned parties will not be unnecessarily interrupted.
- 16.7. **SERVICE INTERRUPTION.** If in connection with the work interruption in service occurs, the Contractor shall promptly notify the owner or the owner's authorized representative and cooperate with the owner to promptly restore service. In no case shall interruption to water or sewer service be allowed to exist outside of normal working hours without the substitution of acceptable alternate service.
- 16.8. **FIRE HYDRANTS.** No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.
- 16.9. **RESPONSIBILITY FOR DAMAGE.** The Contractor shall be responsible for all damages done to services from the beginning of construction to the satisfactory completion of the project, including all damages to water supplies and sewage systems, including but not limited to damage to springs and wells, septic tanks, cesspools, and underground pipes, whether located within or outside the project area or whether or not shown on the Plans, except as otherwise provided in the Contract.
- 16.10. **WATER; INVESTIGATION OF CLAIMS.** The SPONSOR will receive and investigate all claims relating to damage to springs, wells, and water supply systems. The Contractor will be notified of the results of the investigation. If it is determined that the damage is the responsibility of the State or the SPONSOR, the Contractor will not be liable and will be reimbursed by the State or SPONSOR for expenses incurred in providing temporary water service and repairing the damage.
- 16.11. **RESTORATION OF SERVICE BY AGENCY.** If the Contractor fails to restore a service or to make good on a damage or injury to service(s), the Engineer may proceed to repair, rebuild, or otherwise restore the service as deemed necessary and the cost thereof will be deducted from any monies due, or which may become due, the Contractor under the Contract.

## 17. RESPONSIBILITY FOR DAMAGE CLAIMS

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These requirements are in addition to those contained in Division 1, FAA General Provisions, Section 70-11.

- 17.1. **GENERAL.** The SPONSOR shall notify the Contractor in the event of any claim or suit pursuant to the items listed in Division 1, FAA General Provisions, Section 50-16, and the Contractor shall immediately retain counsel and otherwise provide a complete defense against the entire claim or suit.

After a final judgment or settlement the Contractor may request recoupment of specific defense costs and may file suit in the Court having jurisdiction, requesting recoupment. The Contractor shall be entitled to recoup costs only upon a showing that such costs were entirely unrelated to the defense of any claim arising from an act or omission of the Contractor.

The Contractor shall indemnify the State and its officers and employees in the event that the State, its officers or employees become legally obligated to pay any damages or losses arising from any act or omission of the Contractor.

- 17.2. **SUBMISSION OF DAMAGE CLAIMS.** With regard to each and every damage claim, the Contractor shall:

- (1) Provide the claimant with a damage claim form for the submission of damage claims to the Contractor and Agency;
- (2) Pay, settle, or otherwise resolve the claim;
- (3) Submit the claim to the insurance carrier, with a copy to the Agency;
- (4) Treat all claimants with respect.

## 18. SCHEDULES.

These requirements are in addition to those contained in Division 1, FAA General Provisions, Section 80.

**PM PROGRESS SCHEDULE:** Within ten (10) calendar days after the Award of the Contract, the Contractor shall submit to the Engineer for approval a CPM progress schedule. The CPM progress schedule shall show the proposed sequence of work and when the Contractor proposes to complete the various items of work within the time(s) established in the Contract. During the progress of the work, the Contractor shall confer with the Engineer concerning performance of the work in accordance with the approved schedule. The approved schedule shall be used as a basis for establishing major construction operations and for checking the progress of the work.

## 19. CHARACTER OF WORKERS, METHODS, AND EQUIPMENT

**ADD the following paragraph** to the end of Section 80-05 “CHARACTER OF WORKERS, METHODS, AND EQUIPMENT” of the Division 1, FAA General Provisions:

**“Electrical Work.** All electrical work shall be performed by or under the supervision of a licensed electrician (master or journeyman). Electrical work shall be defined as any work which involves making connections to electrical components or splices in wiring that are, or will be, carrying 100 V or more. “Under the supervision of” means that the licensed electrician

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employed on the project shall be physically present on the project and must be actively supervising the work.

**Removal of Machinery and Equipment.** Not used.

### 20. DEFINITIONS.

**The following definitions SHALL REPLACE** the definitions of the same name in Division 1, FAA General Provisions, Section 10:

**10-16 CONTRACT.** A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.

The Contract includes those documents listed as Contract Documents in the Supplemental General Provisions, and any supplemental agreements that are required to complete the work in an acceptable manner.

**10-19 CONTRACTOR.** The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work. The term “Contractor” means the prime Contractor as differentiated from a subcontractor. All Contractors must be registered with the Secretary of State. The Contractor will act in an independent capacity and not as officers or employees of the Owner.

**10-60 SURETY.** The individual, partnership, firm, or corporation, or any acceptable combination thereof, other than the Contractor, executing the bond or bonds furnished by the Contractor. The Surety Company issuing the bond(s) shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State in which the project is located.

**The following definitions shall be ADDED** to the definitions in Division 1, FAA General Provisions, Section 10 in the:

**10-67 ACCEPTANCE.** All Contracts require proper acceptance of the described goods or services by the Owner. Proper acceptance shall be understood to include inspection of goods and certification of acceptable performance of services by Authorized Representative(s) of the Owner to insure that the goods or services are complete and are as specified in the Contract.

**10-68 AIRPORT OPERATOR.** The person or entity representing the Owner and having operational responsibility for the Airport.

**10-69 CONTRACT DOCUMENTS.** All the documents that comprise the awarded Contract as defined in Item 10-13 of this Section.

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**10-70 GOODS.** Hard goods, supplies, or materials.

**10-71 HE, SHE, HE/SHE, HER, HERS, HIS/HER, HIM, AND HIS.** These terms shall be gender-neutral and shall be applied without regard to gender.

**10-72 SUBCONTRACTOR.** An individual or legal entity to whom or which the Contractor sublets part of the work. A Supplier can also be considered a Subcontractor.

**10-73 SUPPLIER.** An individual or legal entity with which the Contractor enters an agreement to provide Goods for use in the Project.

### 21. CLAIMS FOR ADJUSTMENT

**21.1. NOTICE REQUIREMENTS:** In order to bring a claim for additional compensation not clearly covered by the Contract for conditions substantially different than represented by the Contract and not ordered by the Engineer as Extra Work as defined herein, the Contractor must provide written notice (“the Notice of Intent to File a Claim” or the “Notice”) to the Engineer before conducting any work or purchasing any materials subject to the claim (the “Claim”). The words “Notice of Intent to File a Claim” must appear in large print at the top of the document. The Notice must specify the basis for the Claim, including the nature of the Claim, the reason why the Contractor believes that the Owner is responsible for payment of the Claim, and a description of the additional compensation, including reference to each activity associated with the work and/or materials, including reference to any impacts to the Contractor’s Progress Schedule (Critical Path). If the Contractor fails to provide the Notice as specified herein, the Contractor waives its right to bring the Claim under the Contract.

**21.2. NOTICE DOCUMENTATION REQUIREMENTS:** Upon providing the Notice of Intent to File a Claim, the Project Superintendent must commence daily records for all labor hours, equipment hours (idle and operating), and materials involved with the work or materials at issue in the Notice. The Contractor must submit such records to the Engineer on a daily basis. Such records must include a written analysis of how the work and/or materials at issue in the Notice impact/s the Critical Path. If the Contractor fails to provide such records to the Engineer as required herein, the Contractor waives its right to bring the Claim.

**21.3. CLAIMS PROCEDURE:** The Engineer’s written acknowledgement of the Notice and receipt of the Contractor’s daily reporting under this Subsection shall not be construed as an approval by the Owner of the merits of the Claim. Claims are evaluated by the Resident Project Representative, the Owner, the FAA, and any other agency contributing funding to the project. If the Owner decides in favor of the Contractor, the Claim will be allowed, in whole or in part, and paid as provided in the Contract. If the Owner denies the Claim, in whole or in part, the Contractor may appeal to the Owner one time for review of the decision. Notwithstanding any other provision of law, case law, regulation, or the Contract, an appeal from the decision of the Engineer shall be made within 30 calendar days of denial, and not thereafter.

**21.4. CLAIMS DOCUMENTATION REQUIREMENTS:** The Contractor must provide the Engineer with the following documentation in support of the Claim:

- (1) A detailed statement of the Claim, including all necessary dates, location, and work and material items at issue in the Claim;

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- (2) The date on which the Contractor first became aware of the actions or conditions giving rise to the Claim;
- (3) A copy of the Notice of Intent to File a Claim;
- (4) A list of the names of all Owner employees and agents, including consultants, the Contractor believes have knowledge or information concerning the facts giving rise to the Claim;
- (5) A list of the names of all Contractor employees and agents, including subcontractors, whom the Contractor believes have knowledge or information concerning the facts giving rise to the Claim;
- (6) A list of the specific provisions of the Contract that the Contractor believes support the Claim, and a description of why the Contractor believes those provisions support the Claim;
- (7) A list of all documents and all oral statements that the Contractor believes support the Claim;
- (8) A statement as to whether additional compensation and/or a time extension are being requested in the Claim;
- (9) If a time extension is being requested in the Claim, a statement as to the specific number of days being requested, supported with reference to how the facts underlying the Claim affected the Contractor's performance schedule, including how such facts affected the Critical Path;
- (10) A description of the amount of additional compensation being sought, itemized by category of work, including delays associated with performing the work, work items, materials costs, and any and all other costs at issue in the Claim. Such documentation includes, but is not limited to, invoices for rented equipment, a Blue Book analysis for owned equipment; and subcontractor agreements.
- (11) If additional compensation for delays associated with performing the work is included in the Claim, the Contractor must provide a description of the operations that were delayed, the reasons for the delay, the impact of the delay on the operations, and how the delay impacted the Contractor's progress schedule, including the Critical Path. The Contractor must review the Contract for the project as claims for delays must be in accordance with the Contract terms.
- (12) For every claim seeking additional compensation in excess of \$50,000, the Contractor must provide a separate document certifying that the documentation provided in support of the Claim and that the amount of additional compensation sought in the Claim is accurate and that the Contractor has a good faith basis for believing that the Owner is responsible for payment of the Claim (the "Claims Certification"). The Claims Certification shall be notarized and executed by a senior officer of the Contractor with legal authority to bind the Contractor, or if the Contractor is a sole proprietor, by the proprietor. The Claims Certification may be used in any proceeding under the False Claims Act, 18 U.S.C. 1020, and/or 23 CFR 635.119.

**21.5. APPEAL TO THE OWNER (SPONSOR):** Appeals will be judged by the SPONSOR (Owner), in accordance with their policies. Should an appeal be judged in favor of the Contractor, it will be allowed and paid as provided for in the Contract. Should an appeal be



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denied by the SPONSOR (Owner), the Contractor may not appeal this claim again.

**21.6. TIME FOR CLAIMS; APPEALS.** Notwithstanding any other provision of law, case law, regulation, or the Contract, all claims by the Contractor shall be submitted in writing within thirty (30) calendar days after the Acceptance Date of the project or within thirty (30) calendar days of the Notice of Intent to File a Claim, whichever occurs first, and not thereafter (the “Claim Filing Period”). Such claims must meet the requirements set forth above, including but not limited to complete documentation supporting the Claim. If the Contractor fails to meet these requirements, the Owner may grant the Contractor additional time to meet the requirements. Any additional time granted for such purpose shall not be the subject of any demand for interest payments or for attorneys’ fees and/or other costs. If the Contractor fails to file the Claim within the Claim Filing Period, the Contractor waives its right to bring the Claim. If the disputed work continues to be performed beyond the Claim Filing Period, the Contractor must submit a written request to extend the Claim Filing Period prior to the expiration of the Claim Filing Period. The Contractor shall submit such requests for extension of the Claims Filing Period every thirty (30) calendar days until the disputed work is completed.

### **22. INSPECTION BY OWNER AND PUBLIC AGENCIES**

The authorized representatives and agents of the Owner (SPONSOR) shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. Representatives of the Owner (SPONSOR) shall have access to the work wherever it is in preparation or progress and the Contractor shall provide facilities for such access and inspection.

### **23. REPORTS, RECORDS AND DATA**

The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data, as the Owner may request concerning work performed or to be performed under this Contract.

### **24. GENERAL GUARANTEE**

Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting there from, which shall appear within a period of one year of the date of final acceptance of the work unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

### **25. NOTICE AND SERVICE THEREOF**

Any notice to any Contractor from the Owner relative to any part of this Contract shall be in writing and considered delivered and the service thereof completed when said notice is posted, by certified or registered mail, or by documented express packaging (UPS, Fed-Ex or other express shipping) to the said Contractor at their last given address, or delivered in person to said Contractor or their authorized representative.

### **26. PRE-CONSTRUCTION CONFERENCE**

A Pre-construction Conference shall be held. The purpose of this conference is to go over the Contractor's proposed job organization, equipment and preliminary work schedule and to review

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Specification requirements. The order of construction shall be discussed with the Engineer and shall meet with their approval. The Contractor, prior to starting work, shall submit to the Engineer a written description of the methods they plan to use in doing the work.

A pre-construction conference for permitting may also be required by the Owner or the project permits. This may be concurrent with the regular pre-construction conference or separate at the discretion of the Owner.

### **27. REQUIRED PROVISIONS DEEMED INSERTED**

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion or correction.

### **28. RECORD "AS BUILT" PLANS**

In addition to any other requirements in the Plans and Specifications pertaining to "As-Built" Plans and surveys:

- 1) The Contractor shall, during the progress of the work, keep a master set of prints on the job site, on which they shall keep a careful and neat record of all deviations from the Contract Plans prepared by the Engineer which are made during the course of the work.
- 2) Upon completion of the project, these "as built" prints shall be certified as to their correctness by the signature of the Contractor and turned over to the Engineer for use in the preparation of a permanent set of "As Built" Plans.

### **29. AIRPORT OPERATIONS AND SAFETY REQUIREMENTS DURING CONSTRUCTION**

The Contractor's attention is directed to the FAA Advisory Circular (AC) 150/5370-2G, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, as amended or superseded. Refer to Division 2, Special Provision 1A for a copy.

As applicable, the Contractor has been provided with a copy of the Construction Safety and Phasing Plan (CSPP) as part of the Division 2 documents. If no CSPP is provided, at a minimum, there will be construction safety and phasing notes and details in the plan set. For all contracts, the Contractor must review the CSPP (AND plan notes and details) and file a Safety Plan Compliance Document Certification (Form MJ-200) indicating that they understand the safety plan provisions and will comply with it throughout construction.

### **30. PERMITS AND APPROVALS**

Refer to Division 2, Permits for any project specific permits that have been obtained. If there other permits to be obtained, it is the Contractor's responsibility to secure, obtain and pay for any Permits, Licenses, Approvals and all other legal or administrative prerequisites to their performance of the Contract.

### **31. LIABILITY OF PUBLIC OFFICIALS**

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To the full extent permitted by law, no official, employee, agent or representative of the Owner shall be individually or personally liable on any obligation of the Owner under this Contract.

### **32. OSHA TRAINING**

All employees to be employed at the job site shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) that is ten (10) hours in duration at the time the employee begins work.

The Contractor shall furnish documentation of successful completion of said course by either a copy of the OSHA card or a letter or certificate of completion from the person or company that administered the course. OSHA documentation shall be provided prior to any person beginning work on the site. It is recommended that Contractors and Subcontractors provide a copy of OSHA documentation for all employees prior to the start of work.

Periodic Cost Estimates will not be accepted for payment unless all OSHA documentation has been received. Final payment for the Project will not be made until all Project OSHA cards have been submitted to and approved by the Engineer.

**PART D – STATE / AGENCY / AIRPORT SPECIFIC CLAUSES**

**1. RESPONSIBILITY FOR DAMAGE TO WORK**

Except as caused by uncontrollable events, the Contractor shall bear all risk of loss relating to the Work until Final Acceptance, regardless of cause, including completed Work, temporary Structures, and all other items or Materials not yet incorporated into the Work.

The Contractor shall, at its sole expense, rebuild, repair, restore, or replace such damaged Work or otherwise make good any losses that arise from such damage ("rebuilding, etc."). If the Contractor fails to promptly commence and continue such rebuilding, etc., the SPONSOR or the SPONSOR's Airport may, upon forty-eight (48) hours advance written notice, commence rebuilding, etc. of the damaged property without liability to the SPONSOR or the SPONSOR's Airport with its own forces or with contracted forces and all costs will be deducted from amounts otherwise due the Contractor.

**2. NO DAMAGES FOR DELAY CLAUSE**

Pursuant to the following Subsections of Division 1, FAA General Provisions of the Contract Documents:

50-15 "Claims for Adjustment and Disputes";

70-11 "Responsibility for Damage Claims/Indemnity/Limitation of Damages";

80-06 "Temporary Suspension of the Work"

The **SPONSOR** further amends the language of those Subsections to include the following clause and shall be in effect for this project:

Notwithstanding anything to the contrary in the Contract Documents, an extension of the Contract Time shall be the Contractor's sole remedy for:

- (1) any delay in the commencement, prosecution or completion of the Work,
- (2) any hindrance or obstruction in the performance of the Work,
- (3) any loss of productivity, or
- (4) any other similar conduct (collectively "Delays") whether or not these Delays are foreseeable, contemplated or un contemplated, unless a Delay is caused by acts or omissions of the Owner or any of its representatives or agents that constitute bad faith or constitute willful, malicious or grossly negligent conduct and then only to the extent that such acts or omissions continue after the Contractor notifies the Owner in writing that it is engaged in conduct of this nature.

In no event shall the Contractor be entitled to any compensation or recovery of any monetary damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity cost, impact damages or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work), regardless of the extent or frequency of the Owner's exercise of these rights or remedies, shall not be construed as bad faith or willful, malicious or grossly negligent conduct on the part of the Owner or any of its representatives or agents.

**END OF SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS**

# **CONSTRUCTION SAFETY AND PHASING PLAN**

For

**Construct New T-Hangar and Taxilane  
AIP No. 3-23-0002-XXX-2024  
McFarland Johnson Project No. 19186.01**

**AUBURN-LEWISTON MUNICIPAL AIRPORT  
AUBURN, MAINE**

Prepared for the

**AUBURN-LEWISTON MUNICIPAL AIRPORT  
AND  
CITY OF AUBURN**

**December 12, 2024**

Prepared by



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## Airport Description / Airport Operations

Auburn-Lewiston Municipal Airport is a public General Aviation (GA) airport located in Androscoggin County, Maine. It is owned by the City of Auburn.

## Project Description

This project consists of two work areas. The first work area consists of the construction area outside of the Taxiway A Object Free Area. The work in this area involves erosion control best management practices, clearing, grading, paving, t-hangar construction, airfield marking, drainage installation, topsoil, seeding, mulching, installation of automatic gate, and utilities.

The second work area consists of the construction inside of the Taxiway A Object Free Area. The work in this area involves grading, paving, airfield marking, topsoil, seeding, mulching, and airfield electrical.

## Referenced Publication

The following Sections are intended to address the requirements set forth in the latest revision of Advisory Circular 150/5370-2G "Operational Safety on Airports During Construction". The outline provided below corresponds with the subject outline as specified in Chapter 2, Section 1, Paragraph 2.4 of the referenced Advisory Circular.

### 1. Coordination

#### **Prebid Meeting TBD at Auburn-Lewiston Municipal Airport**

- CSPP to be reviewed and discussed.
- Key Attendees: City of Auburn Representative / Airport Manager  
Design Engineer  
Bidding Contractors

#### **Preconstruction Meeting - Just Prior to Construction – Time to be Determined**

- CSPP & SPCD to be reviewed and discussed.
- Key Attendees: City of Auburn Representative / Airport Manager  
FAA Airports Project Manager  
MaineDOT Project Manager

Design Engineer Representative  
Resident Engineer  
Engineer's QA  
Contractor Project Manager  
Contractor Superintendent  
Contractor's QC  
Subcontractor representative(s)  
FAA Tech Ops Representative(s)

### **During Construction:**

Daily Coordination Meeting will be held prior to starting work each day

- Standing Discussion Item will be the day's activities and safety of the project site
- Key Attendees: Resident Engineer  
Contractor Superintendent  
Subcontractor representative(s), as applicable

### **Weekly Project Progress Meetings**

- Standing Item on the Agenda will be Construction Safety and Project Phasing
- Key Attendees: City of Auburn Representative / Airport Manager  
Design Engineer Construction Administrator  
Resident Engineer  
Contractor Project Manager  
Contractor Superintendent  
Subcontractor representative(s)

Prior to the start of construction activities, the Contractor shall be required to provide a complete schedule for the project. At each of the weekly project meetings, the Contractor will be required to provide at least a 2-week "look ahead" schedule. Should the overall schedule change during the course of construction, the overall schedule will be updated and distributed to stakeholders as required.

## **Schedule**

The following schedule is anticipated:

Bid Documents Posted:	November 21, 2024
Pre-bid Meeting:	December 4, 2024
Bid Opening:	December 20, 2024
Grant Application:	December 2024
Grant Award:	Estimated June 2025
Notice of Award:	Estimated July 2025
Notice to Proceed:	TBD
Construction Start:	TBD
Substantial Completion:	TBD

## FAA/Airport Coordination

The airport currently operates under radio frequency communication only. Any closure of work areas require a 72-hour notice to give sufficient time for posting NOTAM's. The Resident Project Engineer (RPR) shall be coordinated with for transitioning work areas, and an inspection of a work area must be done by both the RPR and the airport prior to the opening of any work area. FAA SSC/Tech Ops must be notified before beginning construction. If any changes in the CSPP take place, the CSPP must be resubmitted to FAA and may be subjected to a 45-day review period.

## 2. Phasing

### Work Area 1 – Construct T-Hangar and Taxilane

Work Area 1 is 150 Calendar Days and includes erosion control best management practices, clearing, grading, paving, t-hangar construction, airfield marking, drainage installation, topsoil, seeding, mulching, installation of automatic gate, utilities, incidental grading along the proposed permanent perimeter fence, installation of the new fence, and removal of the existing fence. During this time frame, there is a 25' height restriction. Work Area 1 is outside of all runway safety areas and does not require any closures.

### Work Area 2 – Connect Taxilane to Taxiway A

Work Area 2 is located between the Taxiway A Object Free Area limits and to the Runway Safety Area adjacent to the work area. Work Area 2 is a total of fourteen (14) days concurrent with Work Area 1 and includes grading, paving, airfield marking, topsoil, seeding, mulching, and airfield electrical. There is a partial closure of Taxiway A from the taxiway hold area to the Based Aircraft Apron during Work Area 2. At this time, pilots will be able to back taxi to the run-up area adjacent to Runway 4 end and the closed portion of Work Area 2. All work within the TOFA/TLOFA require the area to be closed prior to commencement of work. A NOTAM is required for the partial closure of Taxiway and a NOTAM may be required for any work completed along the RSA per 7460 determinations. See Section 9 Notification of Construction Activities.

See Appendix B Construction Safety and Phasing Plans for work area specifics.

## 3. Areas and Operations Affected by the Construction Activity

The affected areas and operations for this project includes Taxiway A. Work will be performed both "Landside" outside the airport fence and "Airside" within the Airport Operations Area (AOA). All work locations within the AOA Movement Area will require coordination and advanced notification in accordance with Section 1 – *Coordination*. The phasing of the work allows for

vehicles to navigate through the overall project area for both normal and emergency operations to take place through the extent of the project.

During Work Area 1, the contractor must remain outside the Taxiway A safety area, Taxiway A object free area, and all other active areas within the AOA. The limits of these areas shall be depicted with safety area delineators.

During Work Area 2, a portion of Taxiway A will be closed, barricades and no entry signs will be placed, the limits of RSA defined with safety area delineators, and all NOTAMS issued during this work. This work area includes impacts to the PAPI system that require coordination with the airport and may require a NOTAM.

See Appendix B Construction Safety and Phasing Plans.

### **WORK AREA 1**

- Location: New T-hangar location
- Duration: Project Dates TBD  
150 Calendar Days

### **WORK AREA 2**

- Location: New T-hangar location
- Duration: Project Dates TBD  
14 Calendar Days Concurrent with Work Area 1

### **TOTAL DURATION:**

**One-Hundred fifty (150) Calendar Days**

PROJECT	Construct New T-Hangar and Taxilane	
PHASE	Work Area 1	
SCOPE OF WORK	Construct New T-Hangar and Taxilane outside of Taxiway A TOFA 150 Calendar Days	
OPERATIONAL REQUIREMENTS	Normal (Existing)	Work Area 1 (Anticipated)
RW 4-22 RDC	B-II Small	NO CHANGE
RW 4 Declared Distances	TORA: 5,001 & TODA: 5,001 ASDA 5,001 & LDA: 5,001	NO CHANGE NO CHANGE
RW 4 Approach Procedures	Wind indicator, Segmented circle, MALSR	NO CHANGE
RW 4 NAVAIDS	ILS, PAPI	NO CHANGE
RW 22 Declared Distances	TORA: 5,001 & TODA: 5,001  ASDA 5,001 & LDA: 5,001	NO CHANGE  NO CHANGE
RW 22 Approach Procedures	Wind indicator, Segmented circle	NO CHANGE
RW 22 NAVAIDS	PAPI, REILS	NO CHANGE
Taxiway A ADG Aircraft	III	NO CHANGE
Taxiway B ADG Aircraft	III	NO CHANGE
Taxiway C ADG Aircraft	III	NO CHANGE
ACTC (hours open)	NO ATCT	NO CHANGE
ARFF Index	NO On-site ARFF	NO CHANGE
Special Conditions	NONE	NONE

PROJECT	Construct New T-Hangar and Taxilane	
PHASE	Work Area 2	
SCOPE OF WORK	Construct New Taxilane in Taxiway A TOFA 14 Consecutive Calendar Days	
OPERATIONAL REQUIREMENTS	Normal (Existing)	Work Area 2 (Anticipated)
RW 4-22 RDC	B-II Small	NO CHANGE
RW 4 Declared Distances	TORA: 5,001 & TODA: 5,001 ASDA 5,001 & LDA: 5,001	NO CHANGE NO CHANGE
RW 4 Approach Procedures	Wind indicator, Segmented circle, MALSR	NO CHANGE
RW 4 NAVAIDs	ILS, PAPI	NO CHANGE
RW 22 Declared Distances	TORA: 5,001 & TODA: 5,001  ASDA 5,001 & LDA: 5,001	NO CHANGE  NO CHANGE
RW 22 Approach Procedures	Wind indicator, Segmented circle	NO CHANGE
RW 22 NAVAIDs	PAPI, REILS	NO CHANGE
Taxiway A ADG Aircraft	III	NO CHANGE
Taxiway B ADG Aircraft	III	NO CHANGE
Taxiway C ADG Aircraft	III	NO CHANGE
ACTC (hours open)	NO ATCT	NO CHANGE
ARFF Index	NO On-site ARFF	NO CHANGE
Special Conditions	NONE	TW A PARTIAL CLOSURE

## 4. Protection of NAVAIDS

Before commencing construction activities or operating construction equipment near a NAVAID, the Contractor shall coordinate, through the Engineer and the Owner to evaluate the effect of construction activity and the required distance to keep away from the NAVAID to protect it. There shall be no construction activities, equipment operation, materials storage, or vehicle parking near any NAVAIDs. When Runway 4 is operational, its associated NAVAIDs shall be operational. The Contractor will not be permitted within the critical areas of any active NAVAID. Interference from construction equipment or activities which may affect any NAVAID for low visibility operations shall require a shutdown notification through a NOTAM. If these conditions are absolutely necessary for the construction to progress, a NOTAM will need to be issued per Section 10. All construction activities near a NAVAID must not obstruct access to the equipment for maintenance by Airport personnel.

The Contractor shall contact FAA Tech Ops to locate all existing NAVAID utilities within the project limits. Contractor shall be responsible for protecting any NAVIs as required during construction. Prior to initiation of any construction in the field, the Contractor shall provide a written notice (return receipt requested) to each of the impacted utility companies, as applicable. The Contractor shall provide the Engineer with a copy of the receipt of said written notification to each of the utility companies. This requirement is in addition to any other state laws regarding public notification prior to excavation.

Within the project site, there is an airport owned PAPI that will be impacted. Coordination is required with the RPR and Airport for any outages prior to work commencement. A NOTAM may need to be placed for this work.

## 5. CONTRACTOR ACCESS

### Location of Stockpile Construction Materials and Stored Equipment

Stockpiled materials and equipment storage are not permitted within the Runway Object Free Area/ Taxiway Object Free Area (ROFA/TOFA) or Obstacle Free Zone (OFZ) of an operational runway or taxiway. Stockpiled materials will not exceed 25' in height. All equipment when not in use shall be removed from the ROFA for storage. Stockpiled material will be constrained in a manner to prevent movement resulting from either aircraft jet blast or wind conditions in excess

of ten miles per hour. In addition, stockpiled material will have silt fence located around the material to prevent FOD from moving onto the airfield pavements or polluting watercourses.

Stockpiles within Airport Operations Area shall be located as shown on the Construction Safety and Phasing Plans in Appendix B.

Temporary stockpiles may be located at the Contractors staging area or other locations within the work zone which do not encroach on any protected operational areas approved by the engineer.

**Ingress and Egress Procedures:**

- a. The Contractor shall control all construction access through the construction entrances as shown in the plans in Appendix B at all times. Haul routes and staging areas, including employee parking, for this project are to be as shown on Airside phasing plan.
- b. Contractor's vehicles will not be allowed access to portions of the Airport, other than the work zones, haul routes, and staging areas. Contractor employees shall remain in the designated closed work areas and haul routes only. All contractor employees at the beginning of each working day shall be notified of areas that can be accessed during the days' work, as well as reminded of open and active areas. The gate shall remain closed when not in use. If the gate is to remain open, the Contractor must provide a gate guard to restrict entrance to the site.
- c. All construction employee vehicles will be parked in the designated staging area. Contractor will be permitted to store equipment needed for the immediate work on hand within the work zone as approved by the Engineer. All equipment will be parked in the designated work zone, outside of all controlled aircraft operations areas (i.e. Runway Object Free Areas (ROFA) or Taxiway Object Free Areas (TOFA)) at the close of work each day and whenever it is not in use. All equipment booms shall be lowered at the close of each day's work or when stored.
- d. Each Contractor's motorized vehicle operating on airport property shall be equipped with an operating amber flashing beacon displayed in full view above the vehicle. The Contractor's construction equipment shall have a checkered flag. The 3' x 3' flag shall be made of 1'x 1' international orange and white squares. The flag should be placed at the highest point on the vehicle to allow for an unobstructed view of the flag. Any vehicles not meeting these criteria will be denied access to the work zones until the problem is rectified. Any vehicle operating on the movement areas during hours of darkness, or reduced



visibility, must be equipped with a flashing beacon, the color of which is in accordance with local or state codes.

- e. In addition, all Contractors vehicles shall have the company identification plainly visible on both sides of the vehicle in order to identify the vehicle. The signage may be applied either by using tape or a water-soluble paint to facilitate removal. Magnetic signs are also acceptable. Any vehicles transporting fuel or other potentially harmful substances shall be equipped with a spill control plan and required decontamination equipment as required by Federal, State and local regulations.
- f. Because work takes place both “Landside” and “Airside”, the contractor must coordinate the fence work so that there is an intact fence at all times. If the contractor is performing work inside the fence, the gate shall remain closed when not in use. If the gate is to remain open for work/hauling, the contractor must provide a gate guard to restrict entrance to the airport.
- g. The contractor will have access to closed work areas only. Work areas will not be closed/reopened without coordination or without approval from the Airport and proper NOTAMs in place.

#### **Radio Communications:**

- a. Auburn-Lewiston Municipal Airport is an untowered Airport. Therefore, the Contractor shall continuously monitor all local air traffic using the local Airfield FAA Unicom radio frequency and communicate with any pilots using this frequency, as required. The Contractor shall monitor a radio at all times and be aware of air traffic. ALL AIRCRAFT HAVE THE RIGHT-OF-WAY AT ALL TIMES. If the Contractor is within an active movement area and are not under a closure NOTAM, the Contractor shall leave the active area immediately.
- b. The Contractor’s escort personnel and Contractor superintendent, as well as the Resident Engineer, will monitor the Unicom air traffic control frequency of 122.800 MHz at all times to maintain situational awareness. See Section 13, *Special Conditions*.
- c. The Contractor shall not access any of the active airport without prior communication with either the RPR or the Airport.

## **6. WILDLIFE MANAGEMENT**

The Contractor will be diligent in the management of Foreign Object Debris (FOD) and trash in

order to prevent attractions for wildlife. In addition, the Contractor will ensure that the Airport's permanent or temporary perimeter fences within and near the work areas are secured at all times, and especially at the end of each work day. The Contractor will be conscientious about the potential of wildlife potentially breaching the Airport perimeter fence during the work day. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

- Trash. Food scraps from construction personnel must be properly disposed.
- Standing water
  - There shall be no standing water permitted during construction. Grading requirements must meet FAA standards.
- Seed mixture

The Contractor will not be responsible for wildlife management for this project.

## 7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

Special care and measures will be taken to prevent Foreign Object Debris / Damage (FOD) when working in an airport environment. The Contractor will be held responsible for implementing an approved FOD Management Plan as a part of the SPCD. The FOD Management Plan will have procedures for prevention, regular cleanup, and containment of construction material and debris. The Contractor will ensure all vehicles related to the construction project using paved surfaces in the AOA will be free of any debris that could create a FOD hazard. Special attention will be given to the cleaning of cracks and pavement joints. All taxiways, aprons, and runways must remain clean. Waste containers with attached lids will be required on construction sites.

Special attention should be given to securing lightweight construction material (concrete insulating blankets, tarps, insulation, etc.). Specific securing procedures and/or chain link enclosures may be required.

The Contractor will utilize sweepers (as required by the General Conditions of the Contract Documents) and water trucks on an as needed basis and as directed by the Engineer to control dust and foreign object debris control. The Contractor will sweep all affected movement and non-movement ramp areas at the end of each work day and as required throughout the work day, or as directed by the RPR or Airport Personnel.

## 8. HAZARDOUS MATERIAL (HAZMAT) MANAGEMENT

Contractors operating construction vehicles and equipment on the Airport must be prepared to expeditiously contain and clean-up spills resulting from fuel, hydraulic fluid, or other chemical fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. To that end, the Contractor is required to develop and implement onsite spill prevention and response procedures for vehicle operations. The Contractor will incorporate these procedures into the SPCD. This includes maintenance of appropriate MSDS data and appropriate prevention and response equipment on-site.

Although hazardous materials are not anticipated on this project, the Contractor will be required to submit procedures as part of the SPCD, which details how their company manages and handles hazardous materials, for circumstances which may occur on this project.

The Contractor will not be bringing hazardous materials onto the Airport property, unless it is a regulated material necessary for the completion of the project. All precautions will be undertaken by the Contractor for the safe handling and management of hazardous materials.

## 9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

The following is information and procedures for immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport.

- A. Refer to the attached contact/list of responsible representatives in Appendix A.
- B. **Notices to Airmen (NOTAM).** Only the Airport operator may initiate or cancel NOTAMs on Airport conditions, and is the only entity that can close or open a runway or taxiway. The Airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about Airport conditions resulting from construction with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The Airport operator must file and maintain a list of authorized representatives with the FSS. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA-owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator.

- C. Any NOTAMs for planned airfield closures for this project must be coordinated through the Airport Operations Manager and the Airport's duly appointed construction management representative. Reference to **Section 2** Phasing for planned closure and cautions for this project, which require issuance of a NOTAM.
- D. **Emergency notification procedures.** In the event of an emergency, the Contractor will be required to contact emergency services by **calling 911**.
- E. In the event of an aircraft emergency, severe weather conditions, or any issue as determined by the Airport Operations which may affect aircraft operations, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project will be identified and shared at the pre-construction meeting among the various parties. Specific emergency notification procedures will be incorporated into the Contractor's SPCD.
- F. Procedures and methods for addressing any planned or emergency response actions on the airfield concerning this project will be established by the contractor and implemented prior to the start of construction.
- G. **Notification to the FAA.**
  - 1. **Part 77.** Any person proposing construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e. cranes, graders, other equipment) on Airports. FAA Form 7460-1, Notice of Proposed Construction or Alteration, shall be used for this purpose and submitted to FAA via the Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) website. OEAAA cases were submitted for an overall construction equipment height of 25', as well as three crane locations with 50' height restrictions. If the contractor requires additional submissions for either equipment exceeding 25' or new crane locations, an additional OEAAA 7460-1 must be submitted and may be subjected to a 45-day review period.
  - 2. **Part 157.** It is not anticipated that Part 157 notifications will be required for this project. With some exceptions on other projects, Title 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that the Airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Airports Regional or District Office.

3. **NAVAIDS.** For emergency (short-notice) notification about impacts to FAA-owned NAVAIDS, contact Airport Operations.
  - a. FAA-owned. There are no anticipated impacts to FAA-owned NAVAIDS.
4. **7460-1 Notice of Proposed Construction or Alteration.** It is not anticipated that any equipment used during construction will exceed the defined Part 77 departure/approach surfaces. However, the work is located within the Airport AOA and meets other filing requirements of 14 CFR Part 77 for a 7460-1 Notice of Proposed Construction or Alteration to identify the work zone. OEAAA notifications were submitted for the both permanent building and fence location and heights.

## 10. INSPECTION REQUIRMENTS

At the conclusion of each work day, the Contractor will ensure that all debris is properly cleared and excavations are properly backfilled or protected prior to contacting Airport Operations, through the Resident Engineer, to inspect the work area and all haul routes prior to the Contractor leaving the site for the day. The Contractor will also complete the Daily Safety Inspection Checklist shown in FAA Advisory Circular 150/5370-2G "Operational Safety on Airports during Construction" and as included in Appendix D. The Contractor will keep a copy on-site during Construction.

Throughout the project, work areas will be inspected prior to reopening. Work areas shall not be closed/opened without approval from the Airport and proper NOTAMs in place. At the conclusion of the project, a final inspection will be conducted with the Contractor, Resident Engineer, Airport Operations, MaineDOT and the FAA. The Contractor will rectify any deficiencies for site security and safety prior to acceptance of the project.

## 11. UNDERGROUND UTILITIES

The Contractor is responsible for locating all underground utilities before any excavation begins for the project. The Contract Documents identify the location of known electrical/communication conduits and duct banks and drainage lines located within the work zones.

See Section 4, Protection of NAVAIDS, for FAA-owned NAVAID facilities.

The Contractor will locate and/or arrange for the location of all the underground utilities within the work zone. Full coordination between FAA, Airport Operations, Resident Engineer, and

construction personnel will be exercised to ensure that all Airport power and control cables are fully protected prior to any excavation. Locations of cabling and other underground utilities will be marked prior to beginning excavation.

## 12. PENALTIES

Airport maintains a ZERO TOLERANCE POLICY against security and safety violations. All violators will be subject to: (1) stop all work on the project upon the plan being violated until the violation has been corrected, and (2) removal of the individual from the AOA.

## 13. SPECIAL CONDITIONS

The Contractor will receive notification from Airport Operations when special conditions require the construction site to be vacated as outlined in Section 9 – Notification of Construction Activities. In any event, extreme care should be exercised should construction personnel identify any ARFF or other public safety vehicle moving toward the Runway with emergency lights displayed. This will generally mean that an emergency situation is imminent.

Airport Operations, at their discretion, may suspend work at any point during construction if there are any occasions that may impact the integrity of safety at the Airport.

## 14. RUNWAY AND TAXIWAY VISUAL AIDS

General: The Contractor will ensure that, in areas where aircraft will be operating, it is clearly and visibly separated from construction areas. Airport Operations and the Engineer, throughout the duration of the construction project, will verify that these areas remain clearly marked and visible at all times and that markings, lighting, and signs remain in place and operational. Airport markings, lighting, and signs must be clearly visible to pilots, and must not be misleading, confusing or deceptive. All devices must be secured in place to prevent movement by propwash, wing vortices, or other wind currents and will be constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact. All temporary lighting, signage or barriers located within the RSA or TSA must be frangible.

Markings: Markings shall be in accordance with latest revision of FAA Advisory Circular 150/5340-1, "Standards for Airport Markings" as required by the construction.

Lighting: Lighting shall be in accordance with latest revision of FAA Advisory Circulars 150/5340-330, "Design and Installation Details for Airport Visual Aids", 15/5345-50, "Specification for Portable Runway and Taxiway Lights", and 150/5345-53, "Airport lighting Certification Program". Lights must be disconnected/covered during Work Area 2 as shown on the safety and phasing plans. See Appendix B Construction Safety and Phasing Plans.

Closed Runways and Taxiways:

- A. Permanently Closed Runways: Not applicable to this project.
- B. Temporarily Closed Runways: Not applicable to this project
- C. Partially Closed Runways: Not applicable to this project
- D. Temporarily Closed Taxiways:
  - a. Work Area 2 : Taxiway A from Taxiway A run-up area to based aircraft apron.
- E. Temporarily Closed Airport: Not applicable to this project.

Lighting and Visual NAVAIDS: Not applicable to this project

Airfield Signs:

- Signs to be disconnected with each corresponding work area and shall conform to AC 15/5345-44, "Specification for Runway and Taxiway Signs", 150/5345-50, "Specification for Portable Runway and Taxiway Lights", and 150/5345-53, "Airport Lighting Certification Program" Signs must be disconnected/covered during Work Area 2 as shown on the safety and phasing plans. See Appendix B Construction Safety and Phasing Plans.

## 15. MARKING SIGNS FOR ACCESS ROUTES

Haul routes in the field will be marked, as required, with the use of eighteen-inch (18") traffic cones and signs meeting the requirements of the Manual of Uniform Traffic Control Devices (MUTCD).

## 16. HAZARD MARKING AND LIGHTING

General: Hazard marking and lighting is required throughout the construction period to prevent pilots from entering areas closed to aircraft, and also to prevent construction personnel from entering any areas open to aircraft. Areas affected by construction that are normally open to aircraft, vehicles, or airport personnel will be clearly delineated by prominent, comprehensible warning indicators. Hazard marking and lighting will also be used to identify localized construction operations, such as open manholes, areas under repair, stockpiled material, waste areas and

areas subject to jet blast. Contractor vehicles shall be properly marked as described in Section 5d of this document.

Prior to the commencement of construction activities, the Contractor will clearly identify the allowable limits of work through construction fence and safety area delineators. This area will account for less obvious construction-related hazards and include markings to identify the following, at a minimum:

- FAA, airport and National Weather Service facilities cables and power lines
- Airport surfaces, such as RSA, OFA, and OFZ
- Other sensitive areas

See Appendix B Construction Safety and Phasing Plans for details.

Equipment:

Channelizer Cones/Barricades. Contractor to provide channelizer cones or low-profile barricades to delineate closed airfield movement areas. The channelizer cones will be high visibility orange with reflective white bands, or white with orange reflective bands. The low-profile barricades will be high visibility orange with reflective white bands, or white with orange reflective bands. For night time closures, channelizer cones and low-profile barricades will have red flashing lights. The maximum height of the channelizer cones will be forty-two inches (42”), including the red flashing light, while the maximum height for low-profile barricades will be eighteen inches (18”), exclusive of lights. Channelizer cones and low-profile barricades will be weighted to protect against inadvertent movement from wind currents and prop or jet wash. Material used to weight the barricades will be securely attached to prevent FOD. The interval between channelizer cones will be no greater than four feet (4’), while the low-profile barricades will be interconnected together.

Lights: Lights must be red. Channelizer cones will be equipped with one (1) light (red in color), either steady burning or flashing. Lights must meet the luminescence requirements of the State Highway Department. Lights will be operated between sunset and sunrise, as well as during periods of low visibility when the Airport is open for operations. Lights shall have a spacing at not greater than ten feet (10’) apart. Lights may be operated by photocell; however, the Contractor may need to manually turn lights on during the day when visibility is low.



Supplement Barricades: Supplement barricades with signs (e.g. “No Entry”, “No Vehicles”) will be provided as needed by the contractor and as shown on the Construction Safety and Phasing Plans in Appendix B.

Maintenance: The Contractor will maintain lighted channelizer cones/barricades. The Contractor will provide a person on call, twenty-four (24) hours each day for emergency maintenance of lighted channelizer cones and low-profile barricades. Lights and placement of all types of barricades will be checked at least once each day by the Contractor during working days and Airport Operations during non-working days.

## 17. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS

Work will not be performed within the Runway 4-22 safety area (RSA).

Open trenches exceeding 3 inches in depth and 5 inches in width are not permitted within the limits of safety areas of operational runways or taxiways.

No work will be performed within any runway or taxiway safety areas, or taxiway object free areas, without a closure. Specifically, Work Area 2 requires a partial closure of Taxiway A. No equipment, stored materials, and stockpiled material will be allowed to penetrate active approach surfaces at any time.

## 18. OTHER LIMITATIONS

As noted in Section 13 – Special Conditions, construction operations may be suspended at the discretion of Airport Operations. Situations that may cause suspensions of operations include, but are not limited to, safety or security concerns.

In addition, the Contractor will be subject to the following additional limitations during construction:

- No tall equipment (cranes, concrete pumps, and so on) unless a 7460-determination letter is issued for such equipment.
- No open flames, flare pots or torches will be permitted.
- No blasting will be permitted.

**CSPP Appendix A – Key Personnel Contact List**

<b>KEY PERSONNEL CONTACT LIST</b>		
<b><u>Emergency: (24-hour line)</u></b>		<b>911</b>
<b>Jonathan P LaBonte</b> <b>Airport Manager</b> Cell: (207-333-6601) 60 Court Street Auburn, ME 04210 Fax: N/A E-Mail: <a href="mailto:j.labonte@auburnmaine.gov">j.labonte@auburnmaine.gov</a>		
<b>Alan Lambert</b> <b>Maine DOT</b> Office: (207) 816-0351 Aviation Program 16 State House Station Augusta, ME 04333 E-Mail alan.d.lambert@maine.gov		
<b>Jason Homiak</b> <b>FAA Airports Division</b> Office: (781) 238-7609 FAA Airports Division ANE-600 New England Division 1200 District Avenue Burlington, MA 01803 E-mail: Jason.R.Homiak@faa.gov		
<b>Dan Howard</b> <b>FAA Tech Ops</b> Office: N/A FAA Airports Division ANE-600 New England Division 1200 District Avenue Burlington, MA 01803 E-mail: dan.howard@faa.gov		
<b>UNICOM Frequency:</b>		<b>122.800 MHz</b>
<b>Police (Auburn, Maine):</b>		Non Emergency: (207)-333-6650 <b><u>Emergencies: CALL 911</u></b>
<b>Fire/EMS (Auburn, Maine):</b>		Non Emergency: (207)-333-6633 <b><u>Emergencies: CALL 911</u></b>

KEY PERSONNEL CONTACT LIST – CONT.		
<b>TBD</b> Office: Cell:  E-Mail:	<b>Resident Engineer</b> TBD TBD  xxx@mjinc.com	McFarland Johnson 53 Regional Drive Concord, NH 03301
<b>John Gorham</b> Office: Cell:  E-Mail:	<b>Project Manager</b> (603) 225-2978 (603) 545-2959  jgorham@mjinc.com	McFarland Johnson 53 Regional Drive Concord, NH 03301
<b>CONTRACTOR</b> Office: Cell:  E-Mail:	<b>Site Superintendent</b> TBD TBD  TBD	<b>TBD</b>
<b>CONTRACTOR</b> Office: Cell:  E-Mail:	<b>Project Manager</b> TBD TBD  TBD	<b>TBD</b>
<b>SUBCONTRACTOR</b> Office: Cell:  E-Mail:	<b>Site Superintendent/Foreman</b> TBD TBD  TBD	<b>TBD</b>

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## **Appendix B**

### **Construction Safety and Phasing Plans**

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CONSTRUCTION SAFETY AND PHASING

TOTAL CONTRACT DURATION: 150 CALENDAR DAYS

DESCRIPTION OF WORK AREAS

WORK AREA 1: WORK AREA 1 CONSISTS OF WORK OUTSIDE THE TAXIWAY A OBJECT FREE AREA.

WORK AREA 2: WORK AREA 2 CONSISTS OF WORK INSIDE THE TAXIWAY OBJECT FREE AREA. WORK AREA 2 CLOSES A PORTION OF TAXIWAY A FROM THE BASED AIRCRAFT APRON TO THE TAXIWAY A RUN-UP AREA. DURING THIS CLOSURE, AIRCRAFT WILL BACK TAXI ON RUNWAY 4 TO THE RUN-UP AREA ADJACENT TO WORK AREA 2.

WORK AREA 1 SUMMARY

DURATION: 150 CALENDAR DAYS  
CLOSURES: NONE  
LIQUIDATED DAMAGES: \$5000 BEYOND 150 CALENDAR DAYS

PRIMARY WORK TO BE COMPLETED:

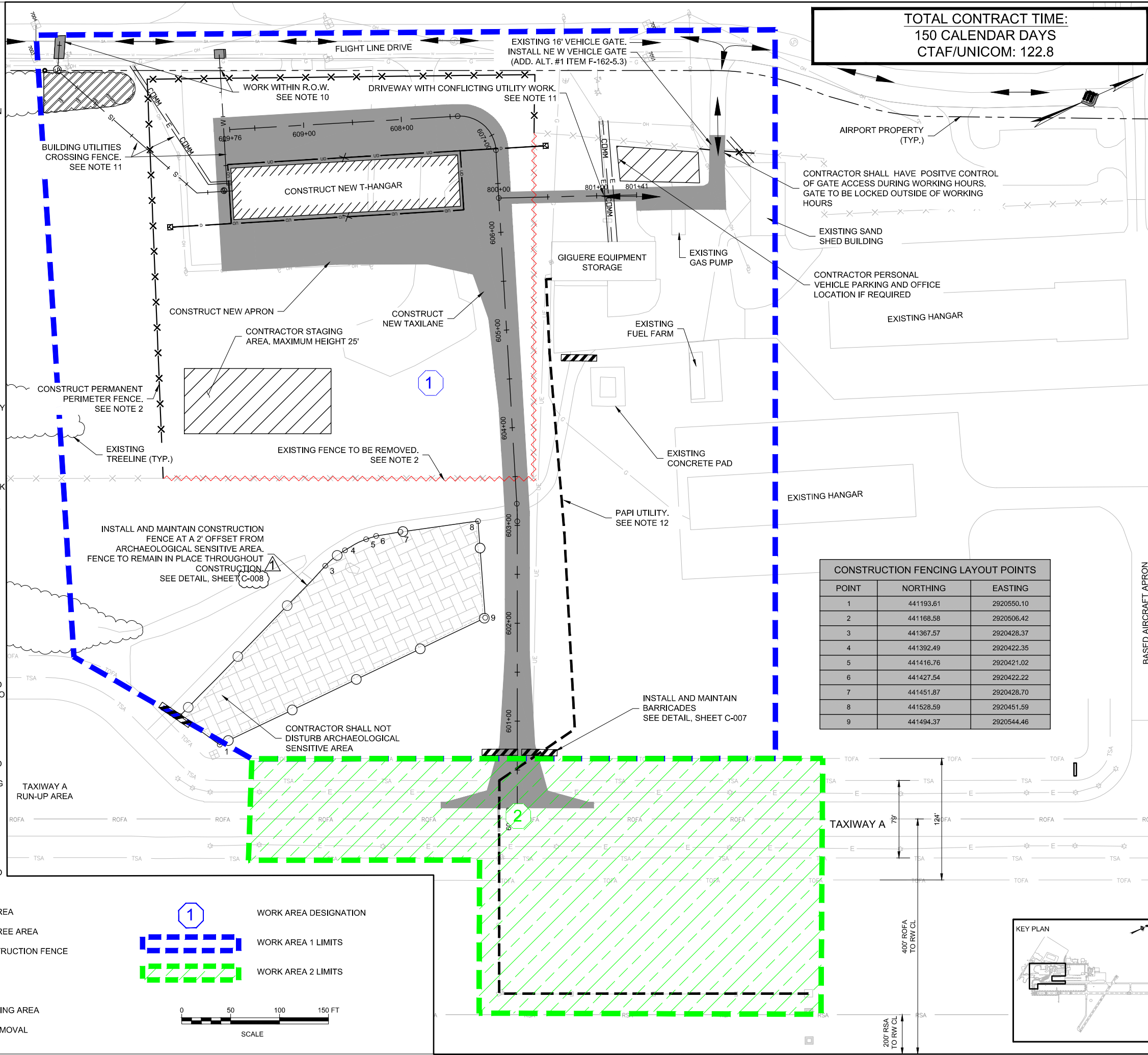
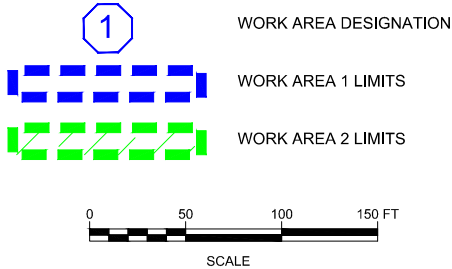
- EROSION CONTROL BMP
- EARTHWORK
- GRADING
- UTILITY INSTALL
- PAPI INSTALL
- FENCE REMOVAL/INSTALLATION
- PAVING
- HANGAR CONSTRUCTION
- MARKING
- DRAINAGE INSTALLATION

OVERALL NOTES

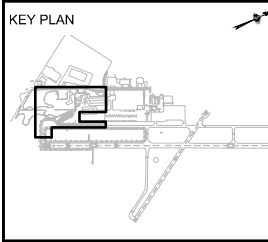
1. PRIOR TO THE START OF ANY WORK, CONTRACTOR SHALL INSTALL CONSTRUCTION FENCE AROUND THE ARCHEOLOGICAL SENSITIVE AREA.
2. CONTRACTOR SHALL MAINTAIN THE AIRPORT SECURITY AND WILDLIFE PERIMETER BARRIER THROUGH TEMPORARY AND PERMANENT MEASURES AT NO ADDITIONAL COST. CONTRACTOR WILL PLACE LIGHTED BARRICADES TO THE APPROVAL OF THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND THE AIRPORT PRIOR TO THE CLOSURE OF ANY AREAS.
3. ALL CONSTRUCTION PERSONNEL AND EQUIPMENT WILL REMAIN WITHIN ACTIVE WORK AREA LIMITS.
4. ALL WORK WILL BE PERFORMED IN THE DESIGNATED WORK AREA. ANY CLOSURE TO BE COORDINATED WITH THE RPR AND THE AIRPORT WITH A MINIMUM OF 72 HOURS NOTICE IN ADVANCE.
5. WORK AREAS WILL BE CLEAR FROM FOREIGN OBJECT DEBRIS (FOD) PRIOR TO LEAVING THE AIRPORT WHEN CROSSING ACTIVE PAVEMENT. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A VACUUM SWEEPER WITH DEDICATED OPERATOR AT ALL TIMES AND WILL PROVIDE ADEQUATE SWEEPING AND MAINTENANCE OF THE HAUL ROUTES.
6. ALL PAVEMENT AFFECTED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
7. IF WORK BEGINS AFTER APRIL 30TH THE ENGINEER SHALL CONDUCT AN UPLAND SANDPIPER BIRD SURVEY WILL BE CONDUCTED. ANY SANDPIPER ACTIVITY MAY DELAY CONSTRUCTION UNTIL BREEDING SEASON IS OVER (SEPTEMBER 1)
8. TREE REMOVAL IS RESTRICTED FROM JUNE 1 TO AUGUST 15.
9. CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY AND PERFORM ALL TRAFFIC CONTROL MEASURES REQUIRED TO CONDUCT WORK WITHIN RIGHT OF WAY (R.O.W.) WHILE MAINTAINING ACCESS TO EXISTING ACCESS DRIVES ON ADJACENT PROPERTIES (INCIDENTAL TO ITEM M-200-1).
10. CONTRACTOR SHALL PHASE INSTALLATION OF UTILITIES WITH CONFLICTING INFRASTRUCTURE AT NO ADDITIONAL COST.
11. CONTRACTOR SHALL PROVIDE TEMPORARY MEASURES TO MAINTAIN PAPI OPERATIONAL DURING CONSTRUCTION IF REQUIRED. OR INSTALL NEW PAPI CIRCUIT WHILE KEEPING THE PAPI OPERATIONAL
12. EXISTING SERVICE ROAD WILL BE CLOSED DURING CONSTRUCTION. CONTRACTOR SHALL INSTALL BARRICADES AS SHOWN.
13. ALL CONSTRUCTION SAFETY AND PHASING PLAN WORK IS INCIDENTAL TO ITEM M-200-1.
14. SINGLE LANE ROAD CLOSURE IS REQUIRED FOR WORK ON FLIGHT LINE DRIVE
15. WORK IN FLIGHT LINE DRIVE RESTRICTED FROM NOV.15 TO APRIL 15

LEGEND:

- TSA — TAXIWAY SAFETY AREA  
— TOFA — TAXIWAY OBJECT FREE AREA  
○ — TEMPORARY CONSTRUCTION FENCE  
▨ BARRICADE  
↔ HAUL ROUTE  
▨ CONTRACTOR STAGING AREA  
~~~ EXISTING FENCE REMOVAL



| CONSTRUCTION FENCING LAYOUT POINTS |           |            |
|------------------------------------|-----------|------------|
| POINT                              | NORTHING  | EASTING    |
| 1                                  | 441193.61 | 2920550.10 |
| 2                                  | 441168.58 | 2920506.42 |
| 3                                  | 441367.57 | 2920428.37 |
| 4                                  | 441392.49 | 2920422.35 |
| 5                                  | 441416.76 | 2920421.02 |
| 6                                  | 441427.54 | 2920422.22 |
| 7                                  | 441451.87 | 2920428.70 |
| 8                                  | 441528.59 | 2920451.59 |
| 9                                  | 441494.37 | 2920544.46 |



Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



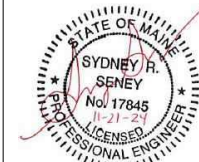
Team:

Architect:  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

Structural/MEP Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



ISSUED FOR BID

| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01  
Drawn By: MRB  
Checked By: JTG  
Issue: ISSUED FOR BID  
Date: 11/21/2024  
Scale: 1" = 50'

Drawing Title:

CONSTRUCTION  
SAFETY & PHASING  
PLAN - OVERALL &  
WORK AREA 1

Drawing No.:

C-005



WORK AREA 2 SUMMARY

WORK AREA 2 INCLUDES THE AREA INSIDE THE TAXIWAY A OBJECT FREE AREA.

- DURATION: 14 CALENDAR DAYS CONCURRENT WITH WORK AREA CLOSURES: TAXIWAY A FROM TAXIWAY A RUN-UP AREA TO BASED AIRCRAFT APRON.  
LIQUIDATED DAMAGES: NONE  
RESTRICTIONS:
- TAXIWAY A LIGHTING MUST BE INSTALLED AND OPERATIONAL PRIOR TO RE-OPENING TAXIWAY.
  - NEW TAXILANE SHALL BE PAVED OR TEMPORARILY STABILIZED PRIOR TO OPENING TAXIWAY A.

PRIMARY WORK TO BE COMPLETED:

- EROSION CONTROL BMP
- EARTHWORK
- GRADING
- AIRFIELD ELECTRICAL
- PAPI INSTALL
- PAVING
- MARKING
- DRAINAGE INSTALLATION






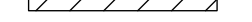

OVERALL NOTES

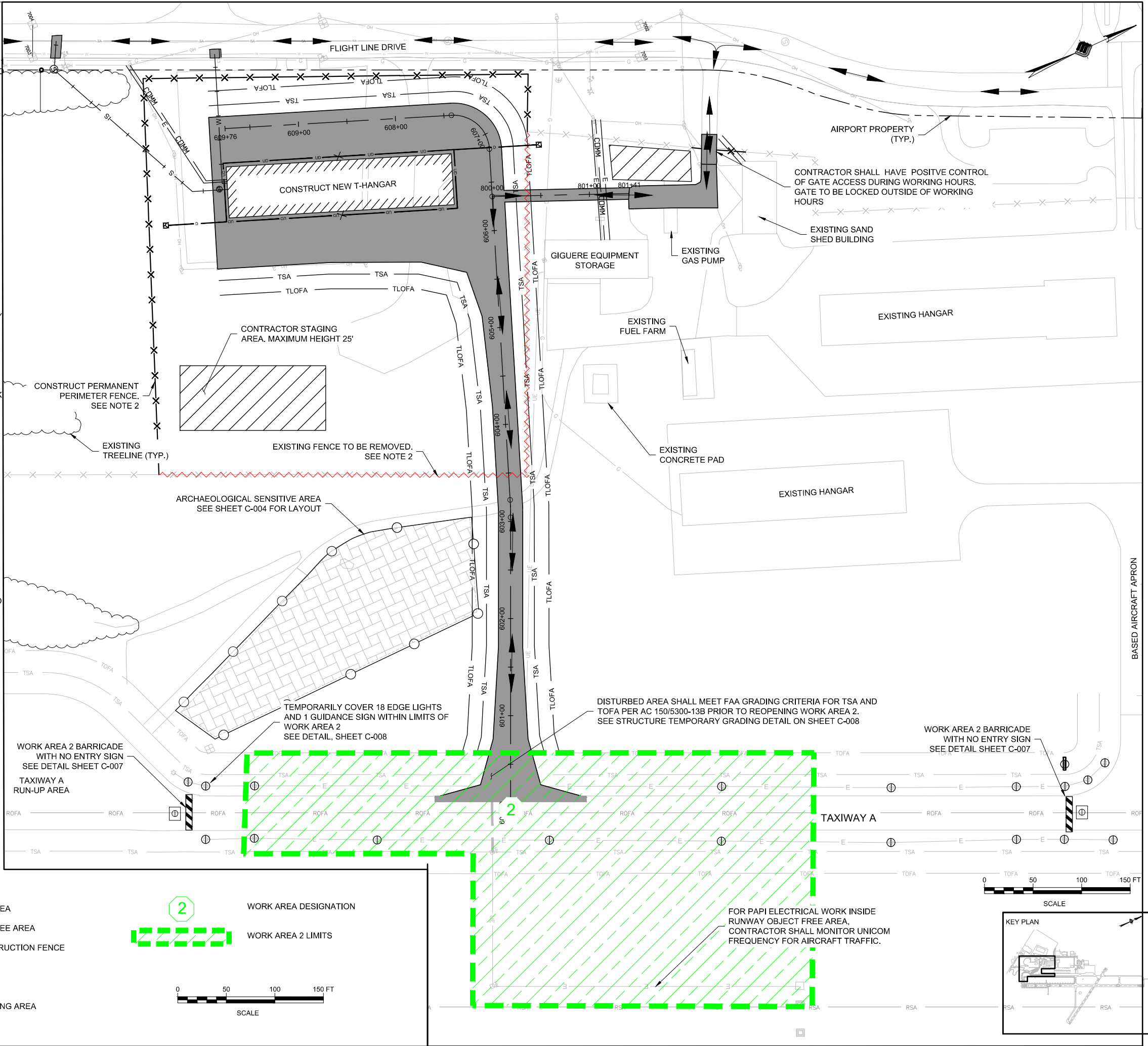
- PRIOR TO THE START OF ANY WORK, CONTRACTOR SHALL INSTALL CONSTRUCTION FENCE AROUND THE ARCHEOLOGICAL SENSITIVE AREA.
- CONTRACTOR SHALL MAINTAIN THE AIRPORT SECURITY AND WILDLIFE PERIMETER BARRIER THROUGH TEMPORARY AND PERMANENT MEASURES AT NO ADDITIONAL COST.
- CONTRACTOR WILL PLACE LIGHTED BARRICADES TO THE APPROVAL OF THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND THE AIRPORT PRIOR TO THE CLOSURE OF ANY AREAS.
- ALL CONSTRUCTION PERSONNEL AND EQUIPMENT WILL REMAIN WITHIN ACTIVE WORK AREA LIMITS.
- ALL WORK WILL BE PERFORMED IN THE DESIGNATED WORK AREA. ANY CLOSURE TO BE COORDINATED WITH THE RPR AND THE AIRPORT WITH A MINIMUM OF 72 HOURS NOTICE IN ADVANCE.
- WORK AREAS WILL BE CLEAR FROM FOREIGN OBJECT DEBRIS (FOD) PRIOR TO LEAVING THE AIRPORT WHEN CROSSING ACTIVE PAVEMENT. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A VACUUM SWEEPER WITH DEDICATED OPERATOR AT ALL TIMES AND WILL PROVIDE ADEQUATE SWEEPING AND MAINTENANCE OF THE HAUL ROUTES.
- ALL PAVEMENT AFFECTED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
- IF WORK BEGINS AFTER APRIL 30TH THE ENGINEER SHALL CONDUCT AN UPLAND SANDPIPER BIRD SURVEY WILL BE CONDUCTED. ANY SANDPIPER ACTIVITY MAY DELAY CONSTRUCTION UNTIL BREEDING SEASON IS OVER (SEPTEMBER 1)
- TREE REMOVAL IS RESTRICTED FROM JUNE 1 TO AUGUST 15.
- CONTRACTOR SHALL OBTAIN ALL PERMITS NECESARY AND PERFORM ALL TRAFFIC CONTROL MEASURES REQUIRED TO CONDUCT WORK WITHIN RIGHT OF WAY (R.O.W.) WHILE MAINTAINING ACCESS TO EXISTING ACCESS DRIVES ON ADJACENT PROPERTIES (INCIDENTAL TO ITEM M-200-1).
- CONTRACTOR SHALL PHASE INSTALLATION OF UTILITIES WITH CONFLICTING INFRASTRUCTURE AT NO ADDITIONAL COST.
- CONTRACTOR SHALL PROVIDE TEMPORARY MEASURES TO MAINTAIN PAPI OPERATIONAL DURING CONSTRUCTION IF REQUIRED. OR INSTALL NEW PAPI CIRCUIT WHILE KEEPING THE PAPI OPERATIONAL
- EXISTING SERVICE ROAD WILL BE CLOSED DURING CONSTRUCTION. CONTRACTOR SHALL INSTALL BARRICADES AS SHOWN.
- ALL CONSTRUCTION SAFETY AND PHASING PLAN WORK IS INCIDENTAL TO ITEM M-200-1.
- SINGLE LANE ROAD CLOSURE IS REQUIRED FOR WORK ON FLIGH TLNE DRIVE
- WORK IN FLIGHT LINE DRIVE RESTRICTED FROM NOV.15 TO APRIL 15

PAPI NOTES

- NEW PAPI CABLE MUST BE INSTALLED PRIOR TO TAXILANE CONSTRUCTION DUE TO CONFLICT OF NEW TAXILANE WITH EXISTING PAPI CABLE.
- NEW PAPI CABLE CAN BE INSTALLED INDEPENDENT OF TAXILANE WORK IN WORK AREA 2. TIME USED TO INSTALL PAPI CABLE WILL BE DEDUCTED FROM THE 14 DAY DURATION.

LEGEND:

- |                                                                                     |                              |
|-------------------------------------------------------------------------------------|------------------------------|
|  | TAXIWAY SAFETY AREA          |
|  | TAXIWAY OBJECT FREE AREA     |
|  | TEMPORARY CONSTRUCTION FENCE |
|  | BARRICADE                    |
|  | HAUL ROUTE                   |
|  | CONTRACTOR STAGING AREA      |
|  | EDGE LIGHT COVER             |



Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

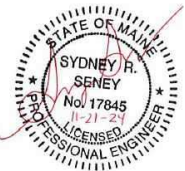
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



ISSUED FOR BID

| No.      | Date     | Revision |
|----------|----------|----------|
| 12.11.24 | ADDENDUM | NO.2     |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: 1" = 50'

Drawing Title:

CONSTRUCTION  
SAFETY &  
PHASING PLAN -  
WORK AREA 2

Drawing No.:

C-006



CONSTRUCTION SAFETY AND PHASING NOTES:

1.

THE CONTRACTOR WILL SUBMIT A WRITTEN SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) TO THE RESIDENT PROJECT REPRESENTATIVE (RPR), LEWISTON AIRPORT OPERATIONS/MANAGEMENT (LEW) AND FAA FOR REVIEW AND APPROVAL PRIOR TO MOBILIZATION AND BEFORE ANY CONSTRUCTION IS ALLOWED TO BE PERFORMED. ANY DELAY IN THE ISSUANCE OF THE NOTICE TO PROCEED DUE TO THE FAILURE BY THE CONTRACTOR TO OBTAIN AN APPROVED SPCD WILL NOT BE GROUNDS FOR ANY CONTRACT TIME EXTENSION. THE CONTRACTOR WILL BECOME KNOWLEDGEABLE OF THE REQUIREMENTS AND PROCEDURES OF THE FAA ADVISORY CIRCULAR NO. 150/5370-2G (OR CURRENT EDITION) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" AND THE APPROVED "CONSTRUCTION SAFETY AND PHASING PLAN" (CSPP), AND INCORPORATE RELEVANT ITEMS INTO THE SPCD WHICH IS REQUIRED TO MEET OR EXCEED THE PROJECT'S CSPP REQUIREMENTS. THE SPCD WILL BE MODIFIED AND UPDATED AS REQUIRED THROUGHOUT THE PROJECT TO ADDRESS EACH PHASE AND/OR SUB PHASE AS WORK PROGRESSES. SOME, BUT NOT ALL OF THE ITEMS, TO BE ADDRESSED IN THE SPCD ARE AS FOLLOWS:

• IDENTIFICATION AND QUALIFICATIONS OF DEDICATED SAFETY & SECURITY POINT OF CONTACT

• WORK SCHEDULING, COORDINATION, AND NOTIFICATION PROCEDURES OF CONSTRUCTION ACTIVITIES.

• AIRFIELD COMMUNICATIONS AND 24-HOUR EMERGENCY NOTIFICATION PROCEDURES.

• CONSTRUCTION OPERATIONS ADJACENT TO OR WITHIN SAFETY AREAS, OBJECT FREE AREAS, NAVAID CRITICAL AREAS, AND APPROACH SURFACES. (I.E. GRADING, HAULING MATERIALS, ETC.)

• METHODS AND REQUIREMENTS FOR SEPARATING CONSTRUCTION AREAS FROM AIRPORT OPERATIONS AREAS (AOA).

• AIRPORT OPERATIONS AREAS.

• PREVENTING INTERFERENCE WITH AIRPORT OWNED OR FAA OWNED NAVAID (PAPI, ILS, LOC, OR OTHER) EQUIPMENT AND CRITICAL AREAS.

• CONTROL OF FOREIGN OBJECT DEBRIS (FOD) AND DUST.

• CONSTRUCTION VEHICLE REQUIREMENTS, PROCEDURES AND DRIVER TRAINING FOR ESCORT DRIVERS.

• OPERATIONS WITHIN MOVEMENT AND NON-MOVEMENT AREAS TO PREVENT RUNWAY INCURSIONS.

• CONTRACTOR ACCESS POINTS, VEHICLE CROSSING LOCATIONS, SECURITY FENCING AND GATES, AND EMPLOYEE SECURITY TRAINING.

• PROCEDURES, REQUIREMENTS, AND COORDINATION OF RUNWAY AND/OR TAXIWAY CLOSURES, INCLUDING NOTICE TO AIRMEN (NOTAM) COORDINATION

• LIGHTED CHANNELIZER CONE PLACEMENT LOCATIONS, AND TEMPORARY CONSTRUCTION SIGN LOCATIONS.

• PROCEDURES FOR MANAGING HAZARDOUS MATERIALS

• PROCEDURES FOR LOCATING & PROTECTING EXISTING UNDERGROUND UTILITIES

2.

THESE SAFETY AND PHASING PLANS HAVE BEEN APPROVED BY THE FAA AND LEW AIRPORT OPERATIONS. COMBINING, MODIFYING, OR ALTERNATING WORK AREAS WITHOUT APPROVAL OF THE FAA AND LEW AIRPORT OPERATIONS THROUGH THE RPR WILL NOT BE ALLOWED. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR PREPARE THEIR BID BASED ON THE CONSTRUCTION PHASING SHOWN IN THESE DOCUMENTS. APPROVED MODIFICATIONS WILL RESULT IN NO ADDITIONAL PROJECT DURATION OF ADDITIONAL COST TO THE OWNER. ANY PROPOSED CHANGES FROM THE CONTRACTOR WILL BE SUBMITTED THROUGH THE RPR/ENGINEER WHO WILL SUBMIT IT TO THE AIRPORT AND FAA. PROPOSED CHANGES MAY NOT BE ACCEPTED.

3.

ALL OF THE CONTRACTOR'S AND SUBCONTRACTOR'S EMPLOYEES WILL HAVE A "TAILGATE" SAFETY MEETING EVERY SHIFT CHANGE OR START OF EACH DAY PRIOR TO ANY WORK WITH THE RPR AND LEW OPERATIONS PRESENT TO REVIEW THE DAY'S WORK AND SAFETY PROCEDURES. THIS DAILY COORDINATION OF THE CONSTRUCTION ACTIVITIES WILL BE HELD TO CLEARLY IDENTIFY THE LIMITS OF WORK FOR THE DAY. THE CONTRACTOR WILL NOT EXCEED THE LIMITS OF WORK WITHOUT APPROVAL FROM THE RPR. IN ADDITION, A SIGN-IN SHEET WILL BE KEPT FOR THE ATTENDANCE AT THIS MEETING.

4.

THE CONTRACTOR WILL PROVIDE A COMPETENT SAFETY PERSON (WHO ALSO COULD BE THE SUPERINTENDENT OR OTHER SUPERVISORY PERSON) FAMILIAR WITH AIRPORT SAFETY TO MONITOR CONSTRUCTION ACTIVITIES. THIS INDIVIDUAL WILL BE RESPONSIBLE FOR MONITORING CONSTRUCTION ACTIVITIES AND PERSONNEL TO ENSURE THAT THEY ADHERE TO THE SAFETY REQUIREMENTS ESTABLISHED BY THE CONTRACT DOCUMENTS (INCLUDING THE CSPP), THE SPCD, THE REGULATIONS AND REQUIREMENTS OF THE AIRPORT, FAA, AND OTHER APPLICABLE AGENCIES. THIS COMPETENT SAFETY PERSON AND SUPERVISORY PERSON (IF DIFFERENT) WILL BE EQUIPPED WITH CONTRACTOR PROVIDED RADIOS FOR MONITORING FAA FREQUENCY, AND COMMUNICATING WITH LEW OPERATIONS AND THE RPR.

5.

THE CONTRACTOR WILL PROVIDE A POINT OF CONTACT TO THE OWNER AND RPR WHO CAN BE CONTACTED AT ANY TIME THROUGHOUT THE COURSE OF THE CONTRACT. THIS INDIVIDUAL WILL BE CAPABLE OF COORDINATING AN IMMEDIATE RESPONSE TO CORRECT ANY CONSTRUCTION RELATED ACTIVITY THAT MAY ADVERSELY AFFECT THE OPERATIONAL SAFETY OF THE AIRPORT.

6.

UPON RECEIPT OF APPROVAL FOR A CLOSURE AND BEFORE EQUIPMENT ENTERS THE AIRFIELD FOR CONSTRUCTION WORK TO COMMENCE, THE WORK AREA WILL BE SECURED WITH ALL LIGHTING EQUIPMENT, CHANNELIZER CONES, AND SAFETY BARRICADES. THE WORK AREA WILL BE CLEARLY DELINEATED AND ALL SAFETY REQUIREMENTS WILL BE APPROVED BY THE RPR PRIOR TO BEGINNING ANY WORK.

7.

CONSTRUCTION SIGNS (I.E. "CONSTRUCTION TRAFFIC" WITH ARROWS, "NO UNAUTHORIZED VEHICLES BEYOND THIS POINT" OR OTHER STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICE (MUTCD) SIGNS) WILL BE LOCATED AT THE WORK AREA EGRESS/INGRESS POINTS AND/OR OTHER DESIGNATED LOCATIONS. THERE WILL BE NO SEPARATE PAYMENT FOR PROVIDING THESE SIGNS (INCIDENTAL TO ITEM M-200 MAINTENANCE AND PROTECTION OF TRAFFIC).

8.

THE CONTRACTOR WILL VERIFY THAT NO PAVEMENT LIPS OR PAVEMENT EDGES EXCEED 3 INCHES WITHIN ALL ACTIVE AIRCRAFT OPERATIONAL AREAS, AS DEFINED BY THE CSPP.

9.

TEMPORARY TAXIWAY CLOSURES AND/OR RUNWAY CLOSURES IN ACCORDANCE WITH THE CSPP ARE SUBJECT TO WIND/WEATHER AVAILABILITY AND ARE SUBJECT TO A RECALL TIME TO BE DETERMINED BY LEW OPERATIONS AND AS OUTLINED IN THE CSPP.

10.

IF WORKING UNDER A TAXIWAY CAUTION ALLOWED BY AN APPROVED CSPP, ALL ADJACENT PAVEMENTS WILL BE AVAILABLE FOR AN UNLIMITED NUMBER OF AIRCRAFT OPERATIONS. THE CONTRACTOR WILL CONDUCT WORK IN SUCH A MANNER THAT NO INTERFERENCE WITH AIRCRAFT OPERATIONS WILL OCCUR. THE CONTRACTOR WILL HAVE A FULL-TIME RADIO ESCORT AT EACH WORK AREA WHICH IS BEING WORKED ON UNDER A CAUTION. THE CONTRACTOR WILL RELOCATE PERSONNEL AND EQUIPMENT AT LEAST 62 FEET (ADG II TOFA) FROM THE TAXIWAY CENTERLINE TO ALLOW SAFE PASSAGE OF AIRCRAFT, AS REQUIRED.

11.

THE CONTRACTOR WILL PROVIDE A MINIMUM OF ONE (1) RADIO VEHICLE ESCORTS AT ALL TIMES AND AT LEAST TWO (2) RADIO VEHICLE ESCORTS DURING HEAVY HAULING OPERATIONS, WITH A LICENSED DRIVER WITH EXPERIENCE AND KNOWLEDGE OF WORKING ON AIRPORTS, TO DIRECT CONSTRUCTION TRAFFIC TO AND FROM THE WORK AREAS WHEN INSIDE THE AIRPORT OPERATIONS AREA (AOA) AT ALL TIMES UNLESS OTHERWISE OUTLINED IN THE CSPP. ADDITIONAL ESCORTS MAY BE REQUIRED DURING MILLING, EXCAVATION AND PAVING OPERATIONS AND AS DETERMINED BY THE RPR AND LEW
- OPERATIONS DEPENDING ON CONTRACTOR OPERATIONS. THE CONTRACTOR WILL STAGE VEHICLES COMING ONTO THE AOA AT THE GATE, AND BE ESCORTED, WITH A MAXIMUM OF 3 VEHICLES IN CONVOY BEHIND THE ESCORT VEHICLE, TO THE WORK AREAS, RADIO VEHICLE ESCORT WILL HAVE RADIOS CAPABLE OF COMMUNICATING WITH RPR AND LEW AIRPORT OPERATIONS AND NOT USING THE FAA FREQUENCY
- SECTION

50' MIN.

3'

8" MIN.

EXISTING GROUND

EXISTING PAVEMENT

NON WOVEN GEOTEXTILE FABRIC

CONTRACTOR HAUL ROUTE

50' MIN.

12' MIN

EXISTING PAVEMENT

PLAN VIEW
- STABILIZED CONSTRUCTION ENTRANCE NOTES:

1.

LENGTH - NOT LESS THAN 50 FEET.

2.

THICKNESS - NOT LESS THAN 8".

3.

WIDTH - 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.

4.

GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.

5.

SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

6.

MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.

7.

WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

8.

PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.
- STABILIZED CONSTRUCTION ENTRANCE DETAIL  
N.T.S.  
(INCIDENTAL TO ITEM M-200-1)
- Flagger location

Traffic flow

Traffic flow

Device Spacing ~ See "Channelization Device Spacing", Page 652(15)

Cones

Flagger location

C

B

A

50' to 100'

Var.

Variable

C

See "Sign Spacing Table", Page 652(15)

Taper Area

Buffer Space See 652(15)

Work Space

Termination Area

ROAD WORK AHEAD

ONE LANE ROAD AHEAD

Supplemental Panel (Optional)

W20-4 48" x 48"

W20-7a 36" x 36"

W20-1 48" x 48"

W13-1 24" x 24"

XXX MPH

XXX FEET
- SINGLE LANE CLOSURE DETAIL  
N.T.S.  
(INCIDENTAL TO ITEM M-200-1)
- 
- SUPPLEMENT LOW PROFILE BARRICADES WITH NO ENTRY SIGN AT ALL ACTIVE TAXIWAY CROSSINGS AS SHOWN ON C-006 (INCIDENTAL TO ITEM M-200-1)
- 
- AVIATION BARRICADE NOTES:

1.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED BARRICADES.

2.

BARRICADES WILL BE PLACED END TO END TO CREATE A CONTINUOUS BARRIER.

3.

BARRICADES WILL BE ADEQUATELY WEIGHTED TO WITHSTAND HIGH WINDS AND / OR JET BLAST.

4.

CONTRACTOR WILL MOVE BARRICADES AT THE DIRECTION OF THE RPR OR AIRPORT OPERATIONS.
- WATER BALLASTED LOW PROFILE LIGHTED SAFETY BARRICADE  
N.T.S.  
(INCIDENTAL TO ITEM M-200-1)
- FLUORESCENT ORANGE POLYETHYLENE TRAFFIC CONE WITH A MINIMUM OF TWO WHITE REFLECTIVE BANDS, 4'-6" IN WIDTH

3' WOODEN GRADE STAKE

18"
- SA DELINEATION MARKER NOTES:
1.

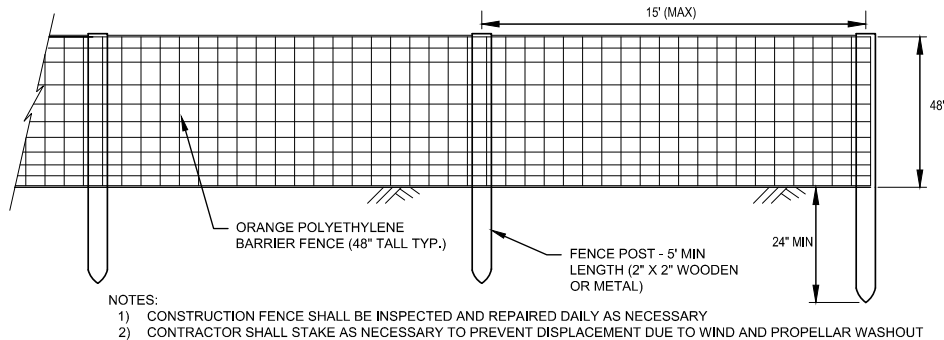
MARKER CONES WILL BE SPACED AT 20 FEET ON CENTER TO PROTECT THE SAFETY AREA AND WILL BE PLACED 60 FEET FROM RUNWAY CENTERLINE.

2.

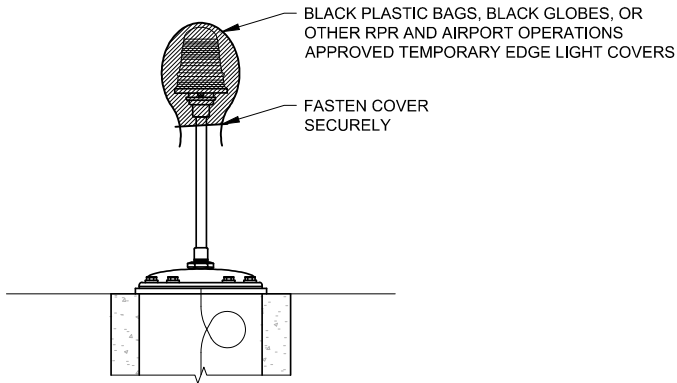
CONTRACTOR WILL FREQUENTLY INSPECT MARKER CONES AND WILL RELOCATE ANY MISALIGNED CONES.

3.

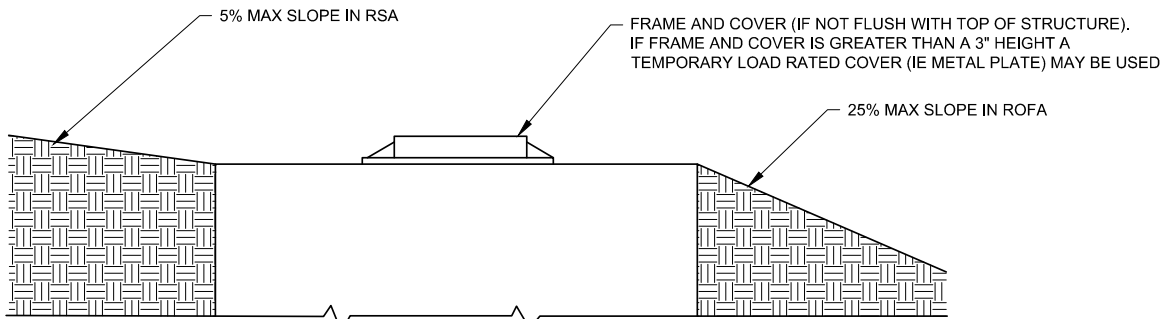
TRAFFICE CONES WILL BE ADEQUATELY SECURED TO WITHSTAND HIGH WINDS AND / OR JET BLAST BY USING GRADE STAKES AS SHOWN.
- WORK AREA DELINEATION MARKER  
NOT TO SCALE  
(BASE BID)(INCIDENTAL TO ITEM M-200-1)
- Project:
- CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE
- 45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210
- Client:
- 
- Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631
- 
- McFarland Johnson  
53 Regional Drive  
Concord, NH 03301
- 
- Fennick  
McCredie  
Architecture
- Team:
- Architect:  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900
- Structural/MEP Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421
- Civil Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421
- Stamp:
- 
- ISSUED FOR BID
- | No. | Date       | Revision      |
|-----|------------|---------------|
| A   | 12.11.2024 | ADDENDUM NO.2 |
- Job No.: 19186.01
- Drawn By: MRB
- Checked By: JTG
- Issue: ISSUED FOR BID
- Date: 11/21/2024
- Scale: NTS
- Drawing Title:
- CONSTRUCTION  
SAFETY &  
PHASING  
DETAILS (1 OF 2)
- Drawing No.:
- C-007



**CONSTRUCTION FENCE DETAIL**  
N.T.S.  
(INCIDENTAL TO ITEM M-200-1)



**TEMPORARY EDGE LIGHT COVER DETAIL**  
N.T.S.  
(INCIDENTAL TO ITEM M-200-1)



**STRUCTURE TEMPORARY GRADING DETAIL**  
N.T.S.  
(INCIDENTAL TO ITEM M-200-1)

Project:

**CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE**

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



**Auburn-Lewiston  
Municipal Airport**  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631



**McFarland Johnson**  
53 Regional Drive  
Concord, NH 03301



**Fennick  
McCredie  
Architecture**

Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

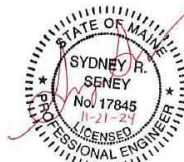
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



**ISSUED FOR BID**

| No. | Date | Revision |
|-----|------|----------|
|-----|------|----------|

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: NTS

Drawing Title:

**CONSTRUCTION  
SAFETY &  
PHASING  
DETAILS (2 OF 2)**

Drawing No.:

**C-008**

## **Appendix C**

### **Safety and Phasing Plan Checklist**

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**APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST**

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

**Table C-1. CSPP Checklist**

| Coordination                                                                                                                                                  | Reference      | Addressed? |    |    | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|----|----|---------|
|                                                                                                                                                               |                | Yes        | No | NA |         |
| General Considerations                                                                                                                                        |                |            |    |    |         |
| Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified. | <u>2.5</u>     | X          |    |    |         |
| Operational safety is a standing agenda item for construction progress meetings.                                                                              | <u>2.5</u>     | X          |    |    |         |
| Scheduling of the construction phases is properly addressed.                                                                                                  | <u>2.6</u>     | X          |    |    |         |
| Any formal agreements are established.                                                                                                                        | <u>2.5.3</u>   |            |    | X  |         |
| Areas and Operations Affected by Construction Activity                                                                                                        |                |            |    |    |         |
| Drawings showing affected areas are included.                                                                                                                 | <u>2.7.1</u>   | X          |    |    |         |
| Closed or partially closed runways, taxiways, and aprons are depicted on drawings.                                                                            | <u>2.7.1.1</u> | X          |    |    |         |
| Access routes used by ARFF vehicles affected by the project are addressed.                                                                                    | <u>2.7.1.2</u> |            |    | X  |         |
| Access routes used by airport and airline support vehicles affected by the project are addressed.                                                             | <u>2.7.1.3</u> |            |    | X  |         |
| Underground utilities, including water supplies for firefighting and drainage.                                                                                | <u>2.7.1.4</u> | X          |    |    |         |

| Coordination                                                                                                                        | Reference                              | Addressed? |    |    | Remarks |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------|----|----|---------|
|                                                                                                                                     |                                        | Yes        | No | NA |         |
| Approach/departure surfaces affected by heights of temporary objects are addressed.                                                 | <u>2.7.1.5</u>                         | X          |    |    |         |
| Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings. | <u>2.7.1</u>                           | X          |    |    |         |
| Temporary changes to taxi operations are addressed.                                                                                 | <u>2.7.2.1</u>                         |            |    | X  |         |
| Detours for ARFF and other airport vehicles are identified.                                                                         | <u>2.7.2.2</u>                         |            |    | X  |         |
| Maintenance of essential utilities and underground infrastructure is addressed.                                                     | <u>2.7.2.3</u>                         | X          |    |    |         |
| Temporary changes to air traffic control procedures are addressed.                                                                  | <u>2.7.2.4</u>                         |            |    | X  |         |
| <b>NAVAIDs</b>                                                                                                                      |                                        |            |    |    |         |
| Critical areas for NAVAIDs are depicted on drawings.                                                                                | <u>2.8</u>                             |            |    | X  |         |
| Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.               | <u>2.8</u>                             | X          |    |    |         |
| Protection of NAVAID facilities is addressed.                                                                                       | <u>2.8</u>                             | X          |    |    |         |
| The required distance and direction from each NAVAID to any construction activity is depicted on drawings.                          | <u>2.8</u>                             | X          |    |    |         |
| Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.         | <u>2.8, 2.13.1, 2.13.5.3.1, 2.18.1</u> | X          |    |    |         |
| <b>Contractor Access</b>                                                                                                            |                                        |            |    |    |         |
| The CSPP addresses areas to which contractor will have access and how                                                               | <u>2.9</u>                             | X          |    |    |         |

| Coordination                                                                                                                                                         | Reference               | Addressed? |    |    | Remarks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|----|----|---------|
|                                                                                                                                                                      |                         | Yes        | No | NA |         |
| the areas will be accessed.                                                                                                                                          |                         |            |    |    |         |
| The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.                                                                               | <u>2.9</u>              | X          |    |    |         |
| The location of stockpiled construction materials is depicted on drawings.                                                                                           | <u>2.9.1</u>            | X          |    |    |         |
| The requirement for stockpiles in the ROFA to be approved by FAA is included.                                                                                        | <u>2.9.1</u>            |            |    | X  |         |
| Requirements for proper stockpiling of materials are included.                                                                                                       | <u>2.9.1</u>            | X          |    |    |         |
| Construction site parking is addressed.                                                                                                                              | <u>2.9.2.1</u>          | X          |    |    |         |
| Construction equipment parking is addressed.                                                                                                                         | <u>2.9.2.2</u>          | X          |    |    |         |
| Access and haul roads are addressed.                                                                                                                                 | <u>2.9.2.3</u>          | X          |    |    |         |
| A requirement for marking and lighting of vehicles to comply with <u>AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport</u> , is included. | <u>2.9.2.4</u>          | X          |    |    |         |
| Proper vehicle operations, including requirements for escorts, are described.                                                                                        | <u>2.9.2.5, 2.9.2.6</u> |            |    | X  |         |
| Training requirements for vehicle drivers are addressed.                                                                                                             | <u>2.9.2.7</u>          |            |    | X  |         |
| Two-way radio communications procedures are described.                                                                                                               | <u>2.9.2.9</u>          | X          |    |    |         |
| Maintenance of the secured area of the airport is addressed.                                                                                                         | <u>2.9.2.10</u>         | X          |    |    |         |
| <b>Wildlife Management</b>                                                                                                                                           |                         |            |    |    |         |
| The airport operator's wildlife management procedures are addressed.                                                                                                 | <u>2.10</u>             | X          |    |    |         |

| Coordination                                                                                                                                                                                                   | Reference                      | Addressed? |    |    | Remarks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------|----|----|---------|
|                                                                                                                                                                                                                |                                | Yes        | No | NA |         |
| Foreign Object Debris Management                                                                                                                                                                               |                                |            |    |    |         |
| The airport operator’s FOD management procedures are addressed.                                                                                                                                                | <u>2.11</u>                    | X          |    |    |         |
| Hazardous Materials Management                                                                                                                                                                                 |                                |            |    |    |         |
| The airport operator’s hazardous materials management procedures are addressed.                                                                                                                                | <u>2.12</u>                    | X          |    |    |         |
| Notification of Construction Activities                                                                                                                                                                        |                                |            |    |    |         |
| Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.                                              | <u>2.13</u>                    | X          |    |    |         |
| Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified. | <u>2.13.1</u>                  | X          |    |    |         |
| A list of local ATO/Technical Operations personnel is included.                                                                                                                                                | <u>2.13.1</u>                  | X          |    |    |         |
| A list of ATCT managers on duty is included.                                                                                                                                                                   | <u>2.13.1</u>                  |            |    | X  |         |
| A list of authorized representatives to the OCC is included.                                                                                                                                                   | <u>2.13.2</u>                  |            |    | X  |         |
| Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.                                          | <u>2.8, 2.13.2, 2.18.3.3.9</u> | X          |    |    |         |
| Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.                                                                          | <u>2.13.2</u>                  | X          |    |    |         |
| Emergency notification procedures for medical, fire fighting, and police                                                                                                                                       | <u>2.13.3</u>                  | X          |    |    |         |



| Coordination                                                                                                                       | Reference                                 | Addressed? |    |    | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------|----|----|---------|
|                                                                                                                                    |                                           | Yes        | No | NA |         |
| response are addressed.                                                                                                            |                                           |            |    |    |         |
| Coordination with ARFF personnel for non-emergency issues is addressed.                                                            | <u>2.13.4</u>                             |            |    | X  |         |
| Notification to the FAA under 14 CFR parts 77 and 157 is addressed.                                                                | <u>2.13.5</u>                             | X          |    |    |         |
| Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.                      | <u>2.13.5.3.2</u>                         |            |    | X  |         |
| <b>Inspection Requirements</b>                                                                                                     |                                           |            |    |    |         |
| Daily and interim inspections by both the airport operator and contractor are specified.                                           | <u>2.14.1, 2.14.2</u>                     | X          |    |    |         |
| Final inspections at certificated airports are specified when required.                                                            | <u>2.14.3</u>                             | X          |    |    |         |
| <b>Underground Utilities</b>                                                                                                       |                                           |            |    |    |         |
| Procedures for protecting existing underground facilities in excavation areas are described.                                       | <u>2.15</u>                               | X          |    |    |         |
| <b>Penalties</b>                                                                                                                   |                                           |            |    |    |         |
| Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.                         | <u>2.16</u>                               | X          |    |    |         |
| <b>Special Conditions</b>                                                                                                          |                                           |            |    |    |         |
| Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed. | <u>2.17</u>                               | X          |    |    |         |
| <b>Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs</b>                                               |                                           |            |    |    |         |
| The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.                               | <u>2.18.1</u>                             | X          |    |    |         |
| Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.                                                | <u>2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4</u> | X          |    |    |         |

| Coordination                                                                                                                                                                                                                                                                                                        | Reference                              | Addressed? |    |    | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------|----|----|---------|
|                                                                                                                                                                                                                                                                                                                     |                                        | Yes        | No | NA |         |
| The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.                                                                                                                                                                                  | <u>2.18.2</u>                          | X          |    |    |         |
| Detailed specifications for materials and methods for temporary markings are provided.                                                                                                                                                                                                                              | <u>2.18.2</u>                          |            |    | X  |         |
| The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified. | <u>2.18.3</u>                          | X          |    |    |         |
| The use of a lighted X is specified where appropriate.                                                                                                                                                                                                                                                              | <u>2.18.2.1.2</u> ,<br><u>2.18.3.2</u> | X          |    |    |         |
| The requirement for signs to conform to <u>AC 150/5345-44</u> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.                                   | <u>2.18.4</u>                          | X          |    |    |         |
| <b>Marking and Signs For Access Routes</b>                                                                                                                                                                                                                                                                          |                                        |            |    |    |         |
| The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.                                                                                                 | <u>2.18.4.2</u>                        | X          |    |    |         |
| <b>Hazard Marking and Lighting</b>                                                                                                                                                                                                                                                                                  |                                        |            |    |    |         |
| Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.                                                                                                                                                   | <u>2.20.1</u>                          | X          |    |    |         |

| Coordination                                                                                                                                                                                                             | Reference       | Addressed? |    |    | Remarks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|----|----|---------|
|                                                                                                                                                                                                                          |                 | Yes        | No | NA |         |
| Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.                                                                                     | <u>2.20.1</u>   | X          |    |    |         |
| The CSPP considers less obvious construction-related hazards.                                                                                                                                                            | <u>2.20.1</u>   | X          |    |    |         |
| Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.                                                         | <u>2.20.2.1</u> |            |    | X  |         |
| The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.                                                                                                              | <u>2.20.2.1</u> | X          |    |    |         |
| Red lights meeting the luminance requirements of the State Highway Department are specified.                                                                                                                             | <u>2.20.2.2</u> | X          |    |    |         |
| Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high. | <u>2.20.2.3</u> | X          |    |    |         |
| Barricades are specified to indicate construction locations in which no part of an aircraft may enter.                                                                                                                   | <u>2.20.2.3</u> | X          |    |    |         |
| Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.                                                                                                                    | <u>2.20.2.5</u> | X          |    |    |         |
| Markings for temporary closures are specified.                                                                                                                                                                           | <u>2.20.2.5</u> |            |    | X  |         |
| The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.                                                                  | <u>2.20.2.7</u> | X          |    |    |         |

| Coordination                                                                                                                                                                                          | Reference                            | Addressed? |    |    | Remarks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------|----|----|---------|
|                                                                                                                                                                                                       |                                      | Yes        | No | NA |         |
| Work Zone Lighting for Nighttime Construction                                                                                                                                                         |                                      |            |    |    |         |
| If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.              | <u>2.21</u>                          | X          |    |    |         |
| Protection of Runway and Taxiway Safety Areas                                                                                                                                                         |                                      |            |    |    |         |
| The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.                                                   | <u>2.22.1.1</u> ,<br><u>2.22.3.1</u> | X          |    |    |         |
| The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM. | <u>2.22.1.2</u> ,<br><u>2.22.3.2</u> |            |    | X  |         |
| Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.                                                           | <u>2.22.3.3</u>                      | X          |    |    |         |
| The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.                           | <u>2.22.1.4</u>                      | X          |    |    |         |
| Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.                                                          | <u>2.22.1.4</u>                      | X          |    |    |         |
| The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.                                                                                         | <u>2.22.1.4</u>                      | X          |    |    |         |
| Grading and soil erosion control to maintain RSA/TSA standards are                                                                                                                                    | <u>2.22.3.5</u>                      | X          |    |    |         |

| Coordination                                                                                                                                                                       | Reference         | Addressed? |    |    | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|----|----|---------|
|                                                                                                                                                                                    |                   | Yes        | No | NA |         |
| addressed.                                                                                                                                                                         |                   |            |    |    |         |
| The CSPP specifies that equipment is to be removed from the ROFA when not in use.                                                                                                  | <u>2.22.2</u>     | X          |    |    |         |
| The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.                                             | <u>2.22.3</u>     | X          |    |    |         |
| Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.                                                                      | <u>2.22.4</u>     | X          |    |    |         |
| Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included. | <u>2.22.4.3.6</u> | X          |    |    |         |
| Provisions for protection of runway approach/departure areas and clearways are included.                                                                                           | <u>2.22.6</u>     | X          |    |    |         |
| <b>Other Limitations on Construction</b>                                                                                                                                           |                   |            |    |    |         |
| The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.                  | <u>2.23.1.2</u>   | X          |    |    |         |
| The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.                                                                      | <u>2.23.1.3</u>   | X          |    |    |         |

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## **Appendix D**

### **Daily Safety Inspection Checklist**

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**APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST**

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

**Table D-1. Potentially Hazardous Conditions**

| <b>Item</b>                                                                                                                                                                                                                                                                                | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Excavation adjacent to runways, taxiways, and aprons improperly backfilled.                                                                                                                                                                                                                |                                   |                                   |
| Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.                                        |                                   |                                   |
| Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.                                                                                                                                                                                      |                                   |                                   |
| Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.                                                                                                                                                                   |                                   |                                   |
| Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown. |                                   |                                   |
| Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and                                                                                                             |                                   |                                   |

| <b>Item</b>                                                                                                                                                                                                                                                                                                                                                               | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| approach zones.                                                                                                                                                                                                                                                                                                                                                           |                                   |                                   |
| Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.                                                                                                                                                             |                                   |                                   |
| Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.                                                        |                                   |                                   |
| Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.                                                                                                                           |                                   |                                   |
| Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards. |                                   |                                   |
| Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.                                                                                                                                                                                                  |                                   |                                   |
| Obliterated or faded temporary markings on active operational areas.                                                                                                                                                                                                                                                                                                      |                                   |                                   |
| Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.                                                                                                                                                                                                                             |                                   |                                   |

| Item                                                                                                                                                                                                                                                                                                  | Action Required (Describe) | No Action Required (Check) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|
| Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.                                                                                                                                                                         |                            |                            |
| Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications. |                            |                            |
| Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.                                                                                                                                                                                                   |                            |                            |
| Lack of radio communications with construction vehicles in airport movement areas.                                                                                                                                                                                                                    |                            |                            |
| Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.                                                                                                       |                            |                            |
| Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.                                         |                            |                            |
| Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.                                                                                                                                                                |                            |                            |
| Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).                                                                                                                                                    |                            |                            |

| <b>Item</b>                                                                                                                                                                                                              | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits. |                                   |                                   |
| Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.                                                                                                        |                                   |                                   |
| Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.                                                                                    |                                   |                                   |
| Site burning, which can cause possible obscuration.                                                                                                                                                                      |                                   |                                   |
| Construction work taking place outside of designated work areas and out of phase.                                                                                                                                        |                                   |                                   |

## **Appendix E**

### **Safety Plan and Compliance Document (SPCD)**

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## APPENDIX E

### SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

This document **MUST** be submitted and approved prior to the Notice to Proceed being issued.

**Name of Contractor:** \_\_\_\_\_

**Project Name:**   **Construct New T-Hangar and Taxilane  
Auburn-Lewiston Municipal Airport, Auburn, ME**

Please check appropriate box for each of sections. If the Construction Phasing and Safety Plan will be followed without exception for any given topic, the "No Supplemental Information" box may be checked. If not, provide supplemental information components and comment as applicable (add attachments as needed). Any comments below will be discussed and require approval of the Airport prior to issuance of a Notice to Proceed.

- (1)   **Coordination.** Discuss details of proposed safety meetings with the airport operator and with contractor and subcontractor employees.

☐ **No Supplemental Information**                      ☐ **Supplemental Information as follows:**

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- (2)   **Phasing.** Discuss proposed construction schedule elements:

☐ **No Supplemental Information**                      ☐ **Supplemental Information as follows:**

- (a) Planned duration of each phase:

Provide anticipated duration for each work phase via attachment.

- (b) Daily start and finish of construction, including "night only" construction:

Provide anticipated daily start/finish for each phase via attachment.

- (c) Duration of construction activities during:

(i) Normal runway operations \_\_\_\_\_

(ii) Closed runway operations \_\_\_\_\_

(iii) Modified runway "Aircraft Reference Code" usage \_\_\_\_\_

- (3)   **Areas and operations affected by the construction activity.** Areas and operations are identified in the CSPP.

☐ **No Supplemental Information**                      ☐ **Supplemental Information as follows:**

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- (4) **Protection of NAVAIDs.** Discuss specific methods proposed to protect operating NAVAIDs.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

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- (5) **Contractor access.** Provide the following:

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (a) Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other):

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- (b) Listing of individuals requiring driver training (for certificated airports and as requested). \_\_\_\_\_

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- (c) Radio communications.

(i) Types of radios and backup capabilities. \_\_\_\_\_

(ii) Who will be monitoring radios. \_\_\_\_\_

(iii) Whom to contact if the ATCT cannot reach the contractor's designated person by radio. \_\_\_\_\_

- (d) Details on how the contractor will escort material delivery vehicles. \_\_\_\_\_

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- (6) **Wildlife management.** Discuss the following:

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (a) Methods and procedures to prevent wildlife attraction \_\_\_\_\_

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- (b) Wildlife reporting procedures \_\_\_\_\_

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- (7) **Foreign Object Debris (FOD) management.** Discuss equipment and methods for control of FOD, including construction debris and dust.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

Provide anticipated equipment and methods via attachment.



- (8) **Hazardous material (HAZMAT) management.** Discuss equipment and methods for responding to hazardous spills.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

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- (9) **Notification of construction activities.** Provide the following:

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

(a) Contractor points of contact \_\_\_\_\_

(b) Contractor emergency contact \_\_\_\_\_

(c) Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator \_\_\_\_\_

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- (10) **Inspection requirements.** Discuss daily (or more frequent) inspections and special inspection procedures.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

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- (11) **Underground utilities.** Discuss proposed methods of identifying and protecting underground utilities.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

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- (12) **Penalties.** Penalties are identified in the CSPP.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

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- (13) **Special conditions.** Discuss proposed actions for each special condition identified in the CSPP as required.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

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**(14) Runway and taxiway visual aids.** Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:

(a) Equipment and methods for covering signage and airfield lights \_\_\_\_\_

\_\_\_\_\_

(b) Equipment and methods for temporary closure markings (paint, fabric, other) \_\_\_\_\_

\_\_\_\_\_

(c) Types of temporary Visual Guidance Slope Indicators (VGSI) \_\_\_\_\_

\_\_\_\_\_

**(15) Marking and signs for access routes.** Discuss proposed methods of demarcating access routes for vehicle drivers.

☐ No Supplemental Information

☐ Supplemental Information as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(16) Hazard marking and lighting.** Discuss proposed equipment and methods for identifying excavation areas.

☐ No Supplemental Information

☐ Supplemental Information as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**(17) Protection of runway and taxiway safety areas.** Including object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

☐ No Supplemental Information

☐ Supplemental Information as follows:

(a) Equipment and methods for maintaining Taxiway Safety Area standards \_\_\_\_\_

\_\_\_\_\_

(b) Equipment and methods for separation of construction operations from aircraft operations, including details of barricades \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**(18) Other limitations on construction** These are identified in the CSPP.

☐ No Supplemental Information

**Supplemental Information as follows:**

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**LIST OF ATTACHMENTS PROVIDED AS PART OF THE SAFETY PLAN COMPLIANCE DOCUMENT:**

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

**Contractor's Certification and Acknowledgement**

I have read the Project Construction Safety and Phasing Plan (CSPP) for the above referenced project, which has been approved by FAA on \_\_\_\_\_, 20\_\_\_\_, and certify the Contractor and its subcontractors will abide by it as written, unless any additions and changes are approved by the Auburn-Lewiston Municipal Airport in writing. This Safety Plan Compliance Document (SPCD) will conform to the CSPP and will provide additional safety information for the Project.

---

CONTRACTOR

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Signature

---

Printed Name and Title

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Date

## **TECHNICAL SPECIFICATIONS**

operations for the following workweek. The schedule shall be given to the Engineer/RPR by the end of the work week, proceeding the week covered by the schedule. The weekly schedule shall be subject to the approval of the Engineer/RPR, and shall include as a minimum, the following:

1. Major work items to be accomplished.
2. Subcontractors to be on-site.
3. Names of each Contractor's and Subcontractor's personnel to be on-site.
4. Type and quantity of equipment to be on-site.
5. Areas of the site where construction is scheduled.
6. Any anticipated closing of facilities that will be required.
7. Other information requested by the Owner or Engineer/RPR.

A daily schedule shall be provided to the Engineer/RPR each morning of activities that will be accomplished that day. The daily schedule may be verbal. The Engineer/RPR may disallow work that is not included in the current weekly work schedule.

**001-1.17 ON-SITE SUPERVISION.** The Contractor shall have a competent superintendent on the work site **at all times** that workers of the Contractor and/or Subcontractors are on-site.

Any time that work is proceeding without the Contractor's superintendent on-site by the Prime Contractor, Subcontractors and Vendors will result in an immediate suspension of work by the Owner. If a suspension of work order is issued, the Contractor shall secure and maintain the site during the period of the suspension of work. No additional compensation will be considered for work performed in preparation of the suspension of work or maintenance of the site during the suspension. No additional Contract time or compensation will be considered for delays or work required by the Contractor for failure to have a competent superintendent on-site at all times.

The superintendent(s) shall be fully authorized to act as the Contractor's agent on the project. The superintendent shall be capable of reading and thoroughly understanding the Plans and Specifications and shall receive and fulfill instructions from the Engineer/RPR or the Owner. The superintendent(s) shall be experienced in the type and nature of the work to be completed.

**001-1.18 CONTRACTOR "ON-CALL NAMES AND PHONE NUMBERS".** The Contractor shall provide the Engineer/RPR and the Airport Manager with the name(s) and telephone number(s) of persons (two (2) minimum) that can be contacted before or after work hours for emergency situations affecting the construction. The Contractor shall be "on call" at all times during the length of the construction period until the end of the Warranty Period as described in the Supplemental General Provisions. The Contractor contact information shall be provided to the Engineer/RPR one (1) week prior to the Pre-Construction Conference.

**001-1.19 ADDITIONAL RESIDENT ENGINEER/PROJECT REPRESENTATIVE SERVICES.** The Owner has established a Resident Project Representative budget based on the contract duration. If the Contractor's work schedule exceeds the Total Contract Time for the project, the Contractor agrees to pay the Owner the Liquidated Damages described in the Contract Documents as compensation for additional Resident Project Representative work efforts.

**001-1.20 CONTRACTOR'S AUTHORIZED AREA.** The Contractor shall not have access to the whole

- Laboratory mixing and compaction temperatures.
- Supplier recommended mixing and compaction temperatures.
- Plot of the combined gradation on the 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.
- Asphalt Pavement Analyzer (APA) results. Not required.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

**Table 1. Asphalt Design Criteria**

| Test Property                                     | Value                                      | Test Method |
|---------------------------------------------------|--------------------------------------------|-------------|
| Number of blows/gyrations                         | 50                                         |             |
| Air voids (%)                                     | 3.5                                        | ASTM D3203  |
| Percent voids in mineral aggregate (VMA), minimum | See Table 2                                | ASTM D6995  |
| TSR <sup>1</sup>                                  | not less than 80 at a saturation of 70-80% | ASTM D4867  |

<sup>1</sup> Test specimens for TSR shall be compacted at  $7 \pm 1.0$  % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply, be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

**Item P-620 Runway and Taxiway Marking**

**DESCRIPTION**

**620-1.1** This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR). The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

**MATERIALS**

**620-2.1 Materials acceptance.** The Contractor shall furnish manufacturer’s certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer’s surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

**620-2.2 Marking materials.**

**Table 1. Marking Materials**

| Paint <sup>1</sup>                    |        |                     |                          | Glass Beads <sup>2</sup> |                          |
|---------------------------------------|--------|---------------------|--------------------------|--------------------------|--------------------------|
| Type                                  | Color  | Fed Std. 595 Number | Application Rate Maximum | Type                     | Application Rate Minimum |
| Waterborne, Type II                   | White  | 37925               | 115 ft <sup>2</sup> /gal | Type III                 | 10 lb/gal                |
| Waterborne, Type II                   | Yellow | 33538 or 33655      | 115 ft <sup>2</sup> /gal | Type III                 | 10 lb/gal                |
| Waterborne, Type II                   | Black  | 37038               | 115 ft <sup>2</sup> /gal | None                     | None                     |
| Temporary Marking Waterborne, Type II | ALL    | See above           | 230 ft <sup>2</sup> /gal | None                     | None                     |

<sup>1</sup> See paragraph 620-2.2a

<sup>2</sup> See paragraph 620-2.2b



**a. Paint.** Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

**Waterborne.** Paint shall meet the requirements of Federal Specification TT-P-1952F, Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

**b. Reflective media.** Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type III.

Glass beads for red and pink paint shall meet the requirements for Type I, Gradation A

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

## CONSTRUCTION METHODS

**620-3.1 Weather limitations.** Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures does not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

**620-3.2 Equipment.** Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

**620-3.3 Preparation of surfaces.** Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminants that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

**a. Preparation of new pavement surfaces.** The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

**b. Preparation of pavement to remove existing markings.** Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

**Item L-110 Airport Underground Electrical Duct Banks and Conduits****DESCRIPTION**

**110-1.1** This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits and removal of existing duct banks. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

**EQUIPMENT AND MATERIALS****110-2.1 General.**

**a.** All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

**b.** Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, that comply with these specifications, at the Contractor's cost.

**c.** All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

**d.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

**e.** All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by

the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

**110-2.2 Steel conduit.** Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mils of asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions. In lieu of PVC coated RGS, corrosion wrap tape shall be permitted to be used where RGS is in contact with direct earth."

**110-2.3 Plastic conduit.** Plastic conduit and fittings shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

**110-2.4 Split conduit.** Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

**110-2.5 Conduit spacers.** Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high grade, high density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

**110-2.6 Concrete.** Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

**110-2.7 Precast concrete structures.** Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

**110-2.8 Flowable backfill.** Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

**110-2.9 Detectable warning tape.** Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

## CONSTRUCTION METHODS

**110-3.1 General.** The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade; in other locations, the top of the duct bank or underground conduit shall be not less than 18 inches (0.5 m) below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound (90 kg) test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill may alternatively be used

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

**a.** Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

**110-3.2 Duct banks.** Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches (0.5 m) below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet (1 m) beyond the edges of the pavement or 3 feet (1 m) beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches (75 mm) thick prior to its initial set. The Contractor shall space the conduits not less than 3 inches (75 mm) apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches (75 mm) thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot (1.5-m) intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, 8 inches (200 mm) minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch (75-mm) wide tape only for single conduit runs. Utilize the 6-inch (150-mm) wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24 inches (600 mm) in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

**110-3.3 Conduits without concrete encasement.** Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement

shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches (100 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch (6.3 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

**110-3.4 Markers.** The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word "DUCT" or "CONDUIT" on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

**110-3.5 Backfilling for conduits.** For conduits, 8 inches (200 mm) of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

**110-3.6 Backfilling for duct banks.** After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 "Excavation and Embankment" except that the material used for backfill shall be select material not larger than 4 inches (100 mm) in diameter. In addition to the requirements of Item P-152, where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet (76 m) of duct bank or one work period's construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

**110-3.7 Restoration.** Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include topsoiling, fertilizing, liming, seeding, and mulching shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

**110-3.8 Ownership of removed cable.** The Contractor shall obtain ownership of removed cable and shall properly dispose of the cable materials off the Airport site.

## METHOD OF MEASUREMENT

**110-4.1** Underground conduits and duct banks shall be measured by the linear feet (meter) of conduits and duct banks installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

## BASIS OF PAYMENT

**110-5.1** Payment will be made at the contract unit price per linear foot for each type and size of conduit and duct bank completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.



Payment will be made under:

|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| Item L-110-5.1  | Non-Encased Electrical Duct Bank, 1-way 2-inch- per linear foot (meter)      |
| Item L-110-5.2  | Concrete Encased Electrical Duct Bank, 4-way 4-inch- per linear foot (meter) |
| Item L-110-5.3a | Removal and Disposal of Direct Buried Cable- per linear foot (meter)         |
| Item L-110-5.3b | Removal and Disposal of Conduit- per linear foot (meter)                     |
| Item L-110-5.4  | Non-Encased Electrical Duct Bank, 2-way 4-inch- per linear foot (meter)      |

### REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

#### Advisory Circular (AC)

|                |                                                         |
|----------------|---------------------------------------------------------|
| AC 150/5340-30 | Design and Installation Details for Airport Visual Aids |
| AC 150/5345-53 | Airport Lighting Equipment Certification Program        |

#### ASTM International (ASTM)

|           |                                                                                            |
|-----------|--------------------------------------------------------------------------------------------|
| ASTM A615 | Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement |
|-----------|--------------------------------------------------------------------------------------------|

#### National Fire Protection Association (NFPA)

|         |                                |
|---------|--------------------------------|
| NFPA-70 | National Electrical Code (NEC) |
|---------|--------------------------------|

#### Underwriters Laboratories (UL)

|                  |                                                               |
|------------------|---------------------------------------------------------------|
| UL Standard 6    | Electrical Rigid Metal Conduit - Steel                        |
| UL Standard 514B | Conduit, Tubing, and Cable Fittings                           |
| UL Standard 514C | Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers      |
| UL Standard 1242 | Electrical Intermediate Metal Conduit Steel                   |
| UL Standard 651  | Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings |
| UL Standard 651A | Type EB and A Rigid PVC Conduit and HDPE Conduit              |

### END OF ITEM L-110

**SECTION 011000****SUMMARY****PART 1 GENERAL****1.01 PROJECT**

- A. Project Name: Construct New T-Hangar and Taxilane
- B. Owner's Name: Auburn-Lewiston Municipal Airport.
- C. Engineer's Name: McFarland Johnson, Inc.
- D. This project includes the construction of a new 10-bay t-hangar, related utilities, adjacent apron pavement, and a taxilane. The project also includes an alternative additive for a motorized gate. Construction will include erosion control best management

**1.02 OWNER OCCUPANCY**

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

**1.03 CONTRACTOR USE OF SITE AND PREMISES**

- A. Construction Operations: Limited to areas noted on Drawings.
  - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Provide access to and from site as required by law and by Owner:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Utility Outages and Shutdown:
  - 1. Limit disruption of utility services to hours the site is unoccupied.
  - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
  - 3. Prevent accidental disruption of utility services to other facilities.

**1.04 SPECIFICATION SECTIONS APPLICABLE TO EVERY CONTRACT**

- A. Unless otherwise noted, provisions of the sections listed below apply to every contract. Specific items of work listed under individual contract descriptions constitute exceptions.

**B. Section 012513 - Product Substitution Procedures**

- C. Section 013000 - Administrative Requirements.
- D. Section 013216 - Construction Progress Schedule.
- E. Section 014000 - Quality Requirements.
- F. Section 014100 – Regulatory Requirements
- G. Section 014117 - Utilities Notification**
- H. Section 014200 - References.**
- I. Section 015532 - Maintenance of Aircraft Operations Area (AOA) Traffic**
- J. Section 016000 - Product Requirements.
- A. Section 017419 – Construction Waste Management and Disposal
- K. Section 017000 - Execution and Closeout Requirements.**
- L. Section 017329 - Cutting and Patching**
  
- M. Section 017800 - Closeout Submittals.
- N. Section 017900 - Demonstration and Training**

**PART 2 PRODUCTS - NOT USED****PART 3 EXECUTION - NOT USED****END OF SECTION**

**SECTION 012513  
SUBSTITUTION PROCEDURES**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

**1.02 RELATED REQUIREMENTS**

- A. Section **012516** - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).
- B. Section **012516** -Substitution Request Form - During Construction: Required form for substitution requests made after award of contract (During construction).

**1.03 DEFINITIONS**

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.

**PART 2 PRODUCTS - NOT USED****PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
  - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
  - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 6. Agrees to reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- B. A Substitution Request for specified installer constitutes a representation that the submitter:
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.

1. Forms included in the Project Manual are adequate for this purpose, and must be used.
- E. Limit each request to a single proposed substitution item.

### 3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions: **7 calendar days**
- B. Submittal Form (before award of contract): **012516 - Substitution Request Form, including:**
  1. **MJ205 – Contractor /Sub-contractor / Supplier Buy American Certification**
  2. **MJ-206 - Contractor Submittal Form**
  3. **MJ 207 - Sub-Contractor Submittal Form**

### 3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
  1. Submit substitution requests by completing the form in Section 006325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Engineer will consider requests for substitutions only within 15 days after date of Agreement.

### 3.04 RESOLUTION

- A. Engineer may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Engineer will notify Contractor in writing of decision to accept or reject request.

### 3.05 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, **Engineers** Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

### 3.06 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

**END OF SECTION**

## SECTION 012516 - SUBSTITUTION REQUEST FORM

To: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Date: \_\_\_\_\_  
From: \_\_\_\_\_  
Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

---

Section Title: \_\_\_\_\_ Description: \_\_\_\_\_  
Section No.: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

---

Proposed Substitution: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
Trade Name: \_\_\_\_\_ Model No./Color: \_\_\_\_\_  
Installer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
History: ☐ New Product ☐ 1 – 4 years old ☐ 5 – 10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

☐ Point-by-point comparative data attached – REQUIRED BY ENGINEER

---

Reason for not providing specified item: \_\_\_\_\_

\_\_\_\_\_

## Similar Installation:

Project: \_\_\_\_\_ Architect: \_\_\_\_\_  
Address: \_\_\_\_\_ Owner: \_\_\_\_\_  
\_\_\_\_\_ Date Installed: \_\_\_\_\_

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

---

Savings to Owner for accepting substitution: \_\_\_\_\_ (\$ \_\_\_\_\_ ).

Proposed substitution changes Contract Time: \_\_\_\_\_

☐ No ☐ Yes [Add] [Deduct] \_\_\_\_\_ days.

---

Supporting Data Attached: ☐ Submittal Cover Sheet ☐ Drawings ☐ Product Data

☐ Samples ☐ Tests ☐ Reports

☐ MJ-205 Contractor /Sub-contractor / Supplier Buy American  
Certification

☐ MJ-206 Contractor Submittal Form

☐ MJ-207 Subcontractor Submittal Form

☐ Other \_\_\_\_\_

---

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product including meeting LEED credit requirements, where applicable
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be correct in all respects.

---

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

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

Telephone: \_\_\_\_\_

Attachments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

---

ARCHITECT'S REVIEW AND ACTION

- ☐ Substitution approved – Make submittals per Division 01 Section "Substitution Procedures."  
☐ Substitution approved as noted – Make submittals per Division 01 Section "Substitution Procedures."  
☐ Substitution rejected – Use specified materials.  
☐ Substitution Request received too late – Use specified materials.

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

---

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E  
☐ Other \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

END OF FORM



SECTION 01 30 00  
ADMINISTRATIVE REQUIREMENTS

**PART 1 GENERAL**

## 1.1 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

## 1.2 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Pre-construction conference.
- D. Site mobilization conference.
- E. Progress meetings.
- F. Special meetings.
- G. Construction progress documentation.
- H. Daily Construction Reports
- I. Work Documentation - Periodic Site Observations
- J. Pre-Construction Inspection and Audio Video Recording Site Conditions
- K. Progress photographs.
- L. Requests for Interpretation (RFI) procedures.
- M. Submittals
1. Submission Requirements
  2. Submittal Schedule
  3. Submittal Coordination
  4. Submittals for review, information, and project closeout.
  5. Number of copies of submittals.
  6. Submittal procedures.
  7. Submittal Review

## 1.3 RELATED REQUIREMENTS

- A. **DIVISION 2 – SPECIAL PROVISIONS/SUPPLEMENTAL GENERAL PROVISIONS – FORMS, SHOP DRAWINGS AND SUBMITTALS**
- B. Section 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE: Form, content, and administration of schedules.

- C. Section 01 60 00 - PRODUCT REQUIREMENTS: General product requirements.
- D. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Additional coordination requirements.
- E. Section 01 78 00 - CLOSEOUT SUBMITTALS: Project record documents; operation and maintenance data; warranties and bonds.

#### 1.4 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to **Engineer** :
  - 1. Requests for Interpretation (RFI).
  - 2. Requests for substitution.
  - 3. Shop drawings, product data, and samples.
  - 4. Test and inspection reports.
  - 5. Design data.
  - 6. Manufacturer's instructions and field reports.
  - 7. Applications for payment and change order requests.
  - 8. Progress schedules.
  - 9. Coordination drawings.
  - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
  - 11. Closeout submittals.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.1 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
  - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g., supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punch list, and any other document any participant wishes to make part of the project record.
  - 2. Contractor and **Engineer** are required to use this service.
  - 3. It is Contractor's responsibility to submit documents in allowable format.
  - 4. Subcontractors, suppliers, and **Engineer's** consultants are to be permitted to use the service at no extra charge.

5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, [www.adobe.com](http://www.adobe.com), or Bluebeam PDF Revu, [www.bluebeam.com](http://www.bluebeam.com)), unless such software capability is provided by the service provider.
  6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
  7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.
- C. Submittal Service: **Examples of possible systems are listed below:**
1. Submittal Exchange (tell: 1-800-714-0024): [www.submittalexchange.com/#sle](http://www.submittalexchange.com/#sle).
  2. EADOC LLC (tel: 1-877-305-3844): [www.eadocsoftware.com/#sle](http://www.eadocsoftware.com/#sle).
  3. Newforma ConstructEx: [www.newforma.com/products/constructex/#sle](http://www.newforma.com/products/constructex/#sle).
  4. Viewpoint: [www.viewpoint.com/viewpointone/#sle](http://www.viewpoint.com/viewpointone/#sle).
  5. Procore: [www.procore.com/#sle](http://www.procore.com/#sle).
  6. Or similar system approved by **Engineer** and Owner.
- D. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of **Engineer** and Contractor participating; further training is the responsibility of the user of the service.
- E. Project Closeout: **Engineer** will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

### 3.2 PRE-CONSTRUCTION CONFERENCE

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
1. Owner.
  2. **Engineer**.
  3. Contractor.
  4. Local FAA
  5. Other persons are required to attend as the **Engineer** may direct or the Contractor may wish to have present.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
  2. Submission of executed bonds and insurance certificates.
  3. Distribution of Contract Documents.
  4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  5. Submission of initial Submittal schedule.

6. Designation of personnel representing the parties to Contract and **Engineer**.
  7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  8. Scheduling.
  9. Review of Construction Safety and Phasing Plan (CSPP).
- D. Record minutes and distribute copies within five days after meeting to participants, with copies to **Engineer**, Owner, participants, and those affected by decisions made.

### 3.3 SITE MOBILIZATION CONFERENCE

- A. In addition to the pre-construction conference, the **Engineer** may schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Contractor.
  2. Owner.
  3. **Engineer**.
  4. Contractor's superintendent.
  5. Major subcontractors.
  6. Other persons are required to attend as the **Engineer** may direct or the Contractor may wish to have present.
- C. Agenda:
1. Use of premises by Owner, Contractor, and subcontractors(s).
  2. Owner's requirements.
  3. Construction facilities and controls provided by Owner.
  4. Temporary utilities provided by Owner.
  5. Survey and building layout.
  6. Barricading and protection of the public, dust barriers.
  7. Security and housekeeping procedures.
  8. Schedules.
  9. Project Coordination
  10. Application for payment procedures.
  11. Procedures for testing and inspection.
  12. Procedures for maintaining record documents.
  13. Requirements for start-up of equipment.
  14. Inspection and acceptance of equipment put into service during construction period.
  15. Review of Construction Safety and Phasing Plan (CSPP).

- D. Record minutes and distribute copies within five days after meeting to participants, with two copies to **Engineer**, Owner, participants, and those affected by decisions made.

### 3.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance
  - 1. Required:
    - a. Contractor.
    - b. Owner.
    - c. **Engineer**.
    - d. Contractor's superintendent.
    - e. Major subcontractors.
    - f. Each applicator, installer, and supplier whose work is on-going or scheduled.
    - g. Subcontractors, vendors, suppliers shall be present at meetings upon the request of Contractor.
  - 2. Attendee Authority: Subcontractors and supplier representatives present at meetings shall have authority to act for a make commitment for, the entity which they represent.
  - 3. Restricted Attendance: Owner and **Engineer** reserve the right to expel or exclude from any Progress Meeting any person(s) or company representative(s) without statement of reason or excuse.
- D. Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of Construction Safety and Phasing Plan (CSPP) and Safety Plan Compliance Document (SPCD).
  - 3. Review of Work progress.
  - 4. Field observations, problems, and decisions.
  - 5. Identification of problems that impede, or will impede, planned progress.
  - 6. Review of submittals schedule and status of submittals.
  - 7. Review of RFIs log and status of responses.
  - 8. Review of off-site fabrication and delivery schedules.
  - 9. Maintenance of progress schedule.
  - 10. Corrective measures to regain projected schedules.
  - 11. Planned progress during succeeding work period.
  - 12. Coordination of projected progress.
  - 13. Maintenance of quality and work standards.
  - 14. Effect of proposed changes on progress schedule and coordination.

15. Other business relating to Work.

- E. Record minutes and distribute copies within five days after meeting to participants, with copies to **Engineer**, Owner, participants, and those affected by decisions made.

### 3.5 SPECIAL MEETINGS

- A. Special Meetings requested by the Owner or **Engineer**: The Contractor along with any requested or necessary sub-contractors, applicators, vendors, or material suppliers shall attend additional meetings when requested by the Owner or **Engineer** as they deem necessary. Such meetings may be convened on short notice if conditions at the project site so require and attendance is mandatory. The Owner and **Engineer** are not limited as to the number of additional meetings that may be requested, or the agenda for such meetings.

### 3.6 CONSTRUCTION PROGRESS DOCUMENTATION

- A. Construction Schedule
1. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
  2. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
  3. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  4. Include written certification that major contractors have reviewed and accepted proposed schedule.
  5. Within 10 days after joint review, submit complete schedule.
  6. Submit updated schedule with each Application for Payment.
- B. Contract Progress Reporting
1. Construction Schedule updates
    - a. During progress of Work, revise and resubmit with Application for Payment in accordance with the provisions of the General Conditions and Supplementary Conditions.
    - b. Maintain progress schedule with project progress and utilize the plan in planning, coordinating, and performing the Work under this contract.
    - c. Furnish copies of the Progress schedule, and revisions, to all sub-contractors, installers, equipment vendors and suppliers.
    - d. Update schedule showing actual progress of Work in Progress, identify Work started and completed during the previous update period. Show estimated time required to complete each activity started but not yet completed, and reflect any changes in the schedule.
    - e. Prepare a Schedule Analysis for submission with revised project schedules. The Schedule Analysis shall include a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates, and an explanation of corrective action to be taken. All activities that are behind schedule by more than two weeks shall be addressed individually in the Schedule Analysis.

- f. Submit revised schedules with attached Schedule Analysis, weekly and with each application for payment; clearly identify changes since the previous version. Indicate estimated percentage of completion for each item of Work at each submission.

### 3.7 INTEGRATED PROJECT TEAM SCHEDULE REVIEW SESSIONS

- A. The General Contractor is responsible for scheduling, coordinating, and conducting monthly schedule review sessions.
- B. Items of Agenda:
  1. Review completed work
  2. Review of off-site fabrication and delivery schedules
  3. Review of current location in overall project schedule.
  4. Planned construction activities for upcoming 4 weeks
  5. Identify potential delays
  6. Identify corrective measures to regain projected schedules.
- C. Attendance is required by Contractor's Project Manager and Superintendent, **Engineer**, Owner's Project Manager, and all trades relevant to the review.

### 3.8 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
  1. Date.
  2. High and low temperatures, and general weather conditions.
  3. List of subcontractors at Project site.
  4. List of separate contractors at Project site.
  5. Approximate count of personnel at Project site.
    - a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
  6. Major equipment at Project site.
  7. Material deliveries.
  8. Safety, environmental, or industrial relations incidents.
  9. Meetings and significant decisions.
  10. Unusual events (submit a separate special report).
  11. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
  12. Meter readings and similar recordings.
  13. Emergency procedures.
  14. Directives and requests of Authority(s) Having Jurisdiction (AHJ).
  15. Change Orders received and implemented.

16. Testing and/or inspections performed.
17. Signature of Contractor's authorized representative.

C. Look Ahead Activity Reports: Prepare each week throughout the term of construction a listing of upcoming construction activities. Each weekly report shall include a listing of planned construction activities for the upcoming 2 weeks (14 calendar days). Submit a Look Ahead Activity Report at each job meeting to all participants. If no meeting is planned on a given week, email the reports directly to both **Engineer** /Engineer and Owner.

1. Maintain a record of all Look Ahead Activity Reports in a 3-ring binder in the Contractor's field office and make available for review by **Engineer** /Engineer and Owner.

D. Special Reports

1. Unusual Event Reporting: When an event of an unusual and significant nature occurs at Project Site, whether or not related directly to the Work, prepare and submit a special report. List Chain of events, persons or effects, and similar pertinent information.

### 3.9 WORK DOCUMENTATION - PERIODIC SITE OBSERVATIONS

A. Observe and maintain a record of tests. Record the following:

1. Specification section number, product(s), and name of subcontractor or installer.
2. Name of testing agency and name of inspector.
3. Name of manufacturer's representative present.
4. Date, time and duration of tests.
5. Retesting required.

B. Observe start-up and adjustments; record time and date of equipment start-up and results.

C. Observe equipment demonstrations to Owner; record items and additional information required for operation and maintenance manuals.

D. Assist **Engineer** /Engineer with final inspections. Prepare list of items to be completed and corrected.

### 3.10 PRE-CONSTRUCTION INSPECTION

A. The Contractor shall conduct a preconstruction inspection of the worksite and notify the Owner in writing of any existing damage to the property or any unsafe conditions at the site prior to commencing the Work

B. AUDIO VIDEO RECORDING SITE CONDITIONS

1. Contractor shall submit a quality audio-video recording documenting Pre-Construction field conditions for the entire project and adjacent areas within 50 feet of the limits of work.
2. The Pre-Construction video shall be submitted to the Owner and Consulting **Engineer** as one or more MP4 files viewable on Windows Media Player.
3. The video(s) must be accepted by the Owner prior to commencing any Work or using any Contractor laydown areas.



## 3.11 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Photography Type: Digital; electronic files.
  - a. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to **Engineer**. The photographs are to include: major elements of the construction prior to and after the completion of portions of the construction.
- C. In addition to periodic, recurring views, take photographs of each of the following events:
  - 1. T-Hangar
    - a. Completion of site clearing.
    - b. Underground utilities.
    - c. Foundations, including footings, foundation walls, insulation, and vapor barrier.
    - d. Assembly of Hangar Structure
    - e. Enclosure of building, upon completion, Hangar roof and siding.
    - f. Completion of Hangar Doors installation
    - g. Final completion, minimum of ten (10) photos.
- D. Views:
  - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
  - 2. Consult with **Engineer** for instructions on views required.
  - 3. Provide factual presentation.
  - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- E. Digital Photographs: 24-bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
  - 1. Delivery Medium: Via email.
  - 2. File Naming: Include project identification, date and time of view, and view identification.
  - 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
  - 4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

## 3.12 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
  - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when

- an item of work is described differently at more than one place in Contract Documents.
2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
  2. Prepare in a format and with content acceptable to Owner.
  3. Prepare using software provided by the Electronic Document Submittal Service.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
    - a. Approval of submittals (use procedures specified elsewhere in this section).
    - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
    - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Discrete and consecutive RFI number, and descriptive subject/title.
  2. Issue date, and requested reply date.
  3. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
  4. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
  2. Note dates of when each request is made, and when a response is received.
  3. Highlight items requiring priority or expedited response.
- G. Review Time: **Engineer** will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated

response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.

- H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
  - 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.

### 3.13 SUBMITTALS

- A. **All submittals must comply with DIVISION 2 – SPECIAL PROVISIONS/SUPPLEMENTAL GENERAL PROVISIONS – FORMS, SHOP DRAWINGS AND SUBMITTALS**
- B. SUBMISSION REQUIREMENTS:
  - 1. Furnish **Engineer** with the following submittal types:
    - a. **Each shop drawing and submittal shall be accompanied by a signed copy of Certificate of BUY AMERICAN compliance (MJ205 – Contractor /Sub-contractor / Supplier Buy American Certification)**
    - b. Schedules
    - c. Shop Drawings **must include (MJ-206 Contractor Submittal Form and/or MJ 207 (Sub-Contractor Submittal Form)**
    - d. Product Data, Manufacturers' Instructions and Certificates and similar submissions
    - e. Emergency Addresses
- C. SUBMITTAL SCHEDULE:
  - 1. Submit to **Engineer** for review a schedule for submittals in tabular format.
    - a. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
    - b. Coordinate with Contractor's construction schedule and schedule of values.
    - c. Format schedule to allow tracking of status of submittals throughout duration of construction.
    - d. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
    - e. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
      - 1) For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

2. If the Contractor fails to submit a Submittal Schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

D. SUBMITTAL COORDINATION:

1. General: The Contractor is fully responsible for delay in the delivery of materials, progress of the Work and damages incurred due to Contractor's failure to submit, revise and resubmit submissions in accordance with the requirements herein, and in a coordinated and timely manner.
2. Make submittals in a proper and timely fashion, allowing for administrative procedures, **Engineer's** review, corrections to submissions and re-submittal, if necessary, and fabrication of products without delaying the project. Minimum processing times required by **Engineer** are in SUBMITTAL PROCEDURES.
3. No extension of Contract Time will be authorized due to failure to transmit submittals sufficiently in advance of scheduled performance of Work.
4. The Contractor is fully responsible for delay in the delivery of materials or progress of work caused by late review of shop drawings due to failure of the contractor to submit, revise, or resubmit shop drawings in adequate time to allow **Engineer** checking and processing of each submission.
5. Make submittals of similar items, systems, or those specified in a single specification together.
6. Make submittals for products which other products are contingent upon, first.
7. The Contractor shall review all submittals for compliance with the Contract Documents, approve and submit to the Consulting **Engineer** Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents

E. SUBMITTALS FOR REVIEW:

1. When the following are specified in individual sections, submit them for review:
  - a. Product data.
  - b. Design data.
  - c. Shop drawings.
  - d. Samples for selection.
  - e. Samples for verification.
  - f. Transparency labels.
2. Submit to **Engineer** for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
3. Samples will be reviewed for aesthetic, color, or finish selection.
4. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

F. SUBMITTALS FOR INFORMATION:

1. When the following are specified in individual sections, submit them for information:

- a. Design data.
- b. Sustainability design submittals and reports.
- c. Certificates.
- d. Test reports.
- e. Inspection reports.
- f. Manufacturer's instructions.
- g. Manufacturer's field reports.
- h. Other types indicated.
- i. Submit for **Engineer's** knowledge as contract administrator or for Owner.

G. SUBMITTALS FOR PROJECT CLOSEOUT:

1. Submit Correction Punch List for Substantial Completion.
2. Submit Final Correction Punch List for Substantial Completion.
3. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
  - a. Project record documents, including As-Built drawings.
  - b. Operation and maintenance data.
  - c. Warranties.
  - d. Bonds.
  - e. DBE – Utilization and Final Participation Information.
  - f. Construction Material Testing and Acceptance Reports.
  - g. Contractor's Final Statement of Completion (including final payment request and signed affidavit).
  - h. Project photographs – depicting major elements of the construction prior to and after the completion of construction.
  - i. Other types as indicated.
4. Submit for Owner's benefit during and after project completion.

H. NUMBER OF COPIES OF SUBMITTALS:

1. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
2. Samples: Submit the number specified in individual specification sections; Two of which will be retained by **Engineer** .
  - a. After review, produce duplicates.
  - b. Retained samples will not be returned to Contractor unless specifically so stated.

I. SUBMITTAL PROCEDURES:

1. General Requirements:
  - a. Use a single transmittal for related items.
  - b. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.

- c. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
  - 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. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
    - 1) Upload submittals in electronic form to Electronic Document Submittal Service website.
    - 2) General submission of physical submittals, deliver to **Engineer** at the following Address:
      - a) **McFarland Johnson, Inc.**
      - b) **53 Regional Drive, Concord NH, 03301**
  - f. Schedule submittals to expedite the Project, and coordinate submission of related items.
    - 1) For each submittal for review, allow 10 working days excluding delivery time to and from the Contractor.
      - a) Complex Systems (Structural, Mechanical, Electrical) may require longer than 10 working days for review each time shop drawings are submitted or resubmitted.
      - b) Simultaneous submission of a large number of shop drawings and product data may require longer than 10 working days for review.
    - 2) For sequential reviews involving **Engineer's** consultants, Owner, or another affected party, allow an additional 5 working days.
    - 3) For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to **Engineer's** approval, allow an additional 30 days.
    - 4) Reprocessing of submittals: For submittals requiring re-submittal, reprocessing time required shall be the same as first submittal.
  - g. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
  - h. Provide space for Contractor and **Engineer** review stamps.
  - i. When revised for resubmission, identify all changes made since previous submission.
  - j. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
- 2. Product Data Procedures:
    - a. Submit only information required by individual specification sections.
    - b. Collect required information into a single submittal.
    - c. Submit concurrently with related shop drawing submittal.
    - d. Do not submit (Material) Safety Data Sheets for materials or products.
  - 3. Shop Drawing Procedures:

- a. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
  - b. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings.
    - 1) Show adjacent conditions and related work. Show accurate field dimensions where appropriate.
    - 2) Identify materials and products shown. Note all conditions which require coordination with other trades and special installation procedures.
    - 3) Show gage and thickness of materials.
    - 4) Indicate welding details and joint types.
    - 5) Show every component of fabricated items, notes regarding manufacturing process coatings and finishes, identifying numbers conforming to the Contract Documents (i.e., Stair numbers, Door Numbers and similar items), dimensions, and appropriate trade names.
    - 6) Show anchorage and fastening details, including type, size, and spacing.
    - 7) Review each submittal for conformity with the Contract requirements prior to submittal, certify such review on each drawing with Contractor's stamp, signature and date. Reference on shop drawings to other sections, installers, suppliers, or trade(s) shall designate the appropriate specification sections, and the term "by others" shall not be used.
    - 8) Size of Format: Not less than 8-1/2 by 11 inches, and no larger than 30 by 42 inches, except for templates, patterns and similar full-size drawings.
  - c. Do not reproduce Contract Documents to create shop drawings.
  - d. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
4. Samples Procedures:
- a. Transmit related items together as single package.
  - b. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
  - c. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

J. SUBMITTAL REVIEW:

1. Submittals for Review: **Engineer** will review each submittal, and approve, or take other appropriate action.
2. Submittals for Information: **Engineer** will acknowledge receipt and review. See below for actions to be taken.
3. **Engineer's** actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
  - a. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
4. **Engineer's** and consultants' actions on items submitted for review:

- a. The **Engineer's** stamp shall contain the following date (Engineering consultant review stamps may vary in language, but intent of language is similar.
  - 1) NO EXCEPTIONS TAKEN
  - 2) NOTE MARKINGS - RESUBMISSION NOT REQUIRED
  - 3) REJECTED
  - 4) NOT REVIEWED - SEE EXPLANATION
- b. The **Engineer** will insert the date of action taken and an identification of the person taking the action.
- c. Submittal grading
  - 1) NO EXCEPTIONS TAKEN - No Corrections, No marks
  - 2) NOTE MARKINGS - RESUBMISSION NOT REQUIRED - Minor corrections required are as noted; all items can be fabricated as noted, without further correction and resubmission of original submission; checking is complete and all corrections are deemed obvious without ambiguity,
  - 3) REJECTED - Submittal is rejected as not in accord with the Contract Documents, too many corrections, or other justifiable reasons. When returning submission, **Engineer** will state reasons for rejection. Correct and resubmit, do not fabricate.
  - 4) NOT REVIEWED - SEE EXPLANATION - When returning submission, **Engineer** will state reasons for lack of review.
- d. Review/approval neither extends nor alters any contractual obligations of the **Engineer** , Engineer, Contractor.

END OF SECTION



SECTION 01 32 16  
CONSTRUCTION PROGRESS SCHEDULE

**PART 1 GENERAL**

## 1.1 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

## 1.2 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, with network analysis diagrams and reports.

## 1.3 RELATED SECTIONS

- A. Section 01 10 00 - SUMMARY: Work sequence.
- B. Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS
- C. Section 01 40 00 - QUALITY REQUIREMENTS

## 1.4 REFERENCE STANDARDS

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.
- B. M-H (CPM) - CPM in Construction Management - Project Management with CPM 2015.

## 1.5 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loaded Schedule: Project Schedule that shall be cost-loaded on a summary level consistent with the Schedule of Values.
- C. CPM Schedule: Critical path method scheduling, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
  - 1. Float time is not for the exclusive use or benefit of either Owner or General contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
  - 2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- H. Major Area: A story of construction, a separate building, or a similar significant construction element.
- I. Milestone: A key or critical point in time for reference or measurement.
- J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- K. Calendar Day: Any day of the week, including weekends and holidays.
- L. Work Day: Any day of the work week, excluding weekends and holidays.
- M. Milestone Slippage (Delays): The number of calendar days beyond the Contract and/or Milestone completion date. Types of delays are:
  - 1. GC and Subcontractor caused delay,
  - 2. Delays beyond the control of the GC,
  - 3. Concurrent Delays – delays caused by both the GC and Subcontractor and beyond the control of the GC.
- N. Types of Schedules:
  - 1. Pre-construction Schedule – schedules prepared and updated prior to Guaranteed Maximum Price (FIXED FEE) Schedule.
  - 2. Baseline (FIXED FEE) Schedule – schedule that is referenced in the FIXED FEE. In the event the FIXED FEE agreement is a partial FIXED FEE, the latest FIXED FEE schedule shall be the Baseline (FIXED FEE) Schedule.
  - 3. Recovery Schedule – schedule that is prepared by the GC to recover delays due to actions (or non-actions) by the GC and their Subcontractors.
  - 4. Time Impact Analysis (TIA)/Time Entitlement Analysis (TEA) – schedule prepared by the GC to demonstrate time impact and/or entitlement due to changes and/or conditions beyond the control of the GC.

## 1.6 SUBMITTALS

- A. All submittals shall be made in accordance with the requirements specified in Section 01 30 00 - **ADMINISTRATIVE REQUIREMENTS**. All construction-related submittals shall be made utilizing the Electronic Project Management System.
- B. Project Schedule: Submit on Project Management System.
- C. Within 10 days after date of Agreement, submit preliminary schedule.
  - 1. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

2. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  - a. Include written certification that major contractors have reviewed and accepted proposed schedule.
3. Within 10 days after joint review, submit complete schedule.
4. Submit updated schedule with each Application for Payment.
5. Submit in PDF format.

#### 1.7 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 24 x 36 inches.
- C. Sheet Size: Multiples of 8-1/2 x 11 inches.
- D. Scale and Spacing: To allow for notations and revisions.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULES

- A. In addition to the Construction Schedules, The Contractor shall prepare a Submittal Schedule, coordinated with the Construction Schedule.

#### 3.2 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a Gantt/Bar progress schedule.

#### 3.3 CONTENT

- A. Activity: Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
  1. Activity Duration: Define activities with appropriate level of detail and time duration necessary to manage the Project.
  2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  3. Submittal Review Time: Include review and re-submittal times indicated in Section 013000 - **ADMINISTRATIVE REQUIREMENTS** in schedule. Coordinate submittal review times in the Project Schedule with Submittals Schedule.
  4. Startup and Testing Time: Include not less than 7 days for startup and testing.
  5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Design Professional's administrative procedures necessary for certification of Substantial Completion.

- B. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
  2. Work Restrictions: Show the effect of pertinent Work restrictions on the Project Schedule.
  3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Permits
    - b. Implementation and termination of temporary utility.
    - c. Subcontract awards.
    - d. Submittals.
    - e. Purchases.
    - f. Mockups.
    - g. Fabrication.
    - h. Deliveries.
    - i. Installation.
    - j. Tests and inspections.
    - k. Adjusting.
    - l. Startup and placement into final use and operation.
  4. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
  5. Schedule shall include all trades indicated on the Schedule of Values.
  6. Define activities on which the work is dependent, including:
    - a. Submittal of shop drawings, equipment schedules, samples, color submission, coordination drawings, templates, fabrication and material delivery times.
    - b. **Engineer's**/Engineer's review of shop drawings, equipment schedules, samples, and templates.
- C. Milestones: Include Milestone Dates indicated in the Contract Documents in schedule, including, but not limited to, the date established in the Initial Notice, the dates for Substantial Completion and Final Completion and the Interim Milestones defined in the GC Agreement.
- D. Contract Modifications: For each proposed contract modification and/or change order request and concurrent with its submission, prepare a time-impact (or entitlement) analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule and milestones. The request shall include the cost estimate, fragment schedule, and the remaining milestone table comparing the most recent accepted schedule/update and the change request dates.
- E. Identify each item by specification section number.
- F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

- G. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- H. Conclude all activities on one common end date, show contract completion date as a milestone activity on the Schedule.
- I. Provide legend for symbols and abbreviations used.

### 3.4 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
  - 1. Preceding and following event numbers.
  - 2. Activity description.
  - 3. Estimated duration of activity, in maximum 20-day intervals.
  - 4. Earliest start date.
  - 5. Earliest finish date.
  - 6. Actual start date.
  - 7. Actual finish date.
  - 8. Latest start date.
  - 9. Latest finish date.
  - 10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
  - 11. Monetary value of activity, keyed to Schedule of Values.
  - 12. Percentage of activity completed.
  - 13. Responsibility.
- D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- E. Required Reports: List activities in sorts or groups:
  - 1. By preceding work item or event number from lowest to highest.
  - 2. By amount of float, then in order of early start.

### 3.5 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with **Engineer** at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.

- C. After review, revise as necessary as result of review, and resubmit within 10 days.

### 3.6 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.
- G. Schedule Updates to include, but are not limited to:
  - 1. Approved changes to the Contract.
  - 2. Any "slippage" due to procurement delays, unforeseen conditions, weather and other delays.
- H. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

### 3.7 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 01 40 00  
QUALITY REQUIREMENTS

**PART 1 GENERAL****1.1 GENERAL PROVISIONS**

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

**1.2 SECTION INCLUDES**

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Contractor's design-related professional design services.
- F. Control of installation.
- G. Mock-ups.
- H. Manufacturers' field services.
- I. Defect Assessment.

**1.3 RELATED REQUIREMENTS**

- A. See Division 02-34 individual specification sections for testing and inspection required.
- B. Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS: Submittal procedures.
- C. Section 01 60 00 - PRODUCT REQUIREMENTS: Requirements for material and product quality.

**1.4 DEFINITIONS**

- A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.
- B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

**1.5 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES**

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

- B. Base design on performance and/or design criteria indicated in individual specification sections.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
  - 1. Structural Design for all structural components of the prefabricated metal building: As described in 13 34 19 – Metal Building Systems.

#### 1.6 SUBMITTALS

- A. **All submittals must comply with DIVISION 2 – SPECIAL PROVISIONS/SUPPLEMENTAL GENERAL PROVISIONS – FORMS, SHOP DRAWINGS AND SUBMITTALS**
- B. Refer to Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS, for submittal procedures.
- C. Design Data: Submit for **Engineer's** knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
  - 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
  - 2. Include required product data and shop drawings.
  - 3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
  - 4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to **Engineer** and to Contractor.
  - 1. Test report submittals are for **Engineer's** knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
  - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for **Engineer's** benefit as contract administrator or for Owner.



1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

#### 1.7 QUALITY ASSURANCE

- A. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in The **State of Maine**.

#### 1.8 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step-in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from **Engineer** before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

#### 3.2 MOCK-UPS

- A. Before assembling the Hangar Doors, provide a mock-up of the door assembly for one panel of the right side of both the top and bottom sections of a door. The mock-up is required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship. The Mock-up may remain as part of the final work.

- B. Notify Architect, seven (7) working days in advance of dates and times when mock-ups will be constructed.
- C. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- E. Obtain **Engineer's** approval of mock-ups before starting work, fabrication, or construction.
  - 1. **Engineer** will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
  - 2. Make corrections as necessary until **Engineer's** approval is issued.
- F. **Engineer** will use accepted mock-ups as a comparison standard for the remaining Work.
- G. Where mock-up has been accepted by Architect, it may be used in the final project.

### 3.3 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
  - 1. Provide qualified personnel at site. Cooperate with **Engineer** and Contractor in performance of services.
  - 2. Perform specified sampling and testing of products in accordance with specified standards.
  - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 4. Promptly notify **Engineer** and Contractor of observed irregularities or non-compliance of Work or products.
  - 5. Perform additional tests and inspections required by Architect.
  - 6. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
  - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Agency may not approve or accept any portion of the Work.
  - 3. Agency may not assume any duties of Contractor.
  - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
  - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
  - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
  - 3. Provide incidental labor and facilities:
    - a. To provide access to Work to be tested/inspected.

- b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
  - c. To facilitate tests/inspections.
  - d. To provide storage and curing of test samples.
  - 4. Notify **Engineer** and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
  - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
  - 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

#### 3.4 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

#### 3.5 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

## SECTION 01 4100 REGULATORY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section consists of:
1. Applicable codes and regulations.
  2. Trade union jurisdictions.
  3. Wage rate compliance.

#### 1.2 DEFINITIONS

- A. Regulations include laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, and rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.

#### 1.3 APPLICABLE CODES AND REGULATIONS

- A. All work shall be performed in accordance with the latest version, except as indicated otherwise, of all applicable codes including the following:
1. Building Code: MAINE UNIFORM BUILDING AND ENERGY CODE, *International Building Code*, 2015 edition, as published by the International Code Council, Inc. (ICC), adopted in January 23, 2018, as amended.
  2. Plumbing Code, *International Association of Plumbing and Mechanical Officials Uniform Plumbing Code*, 2021 Edition, as published by the International Code Council, Inc. (ICC), as amended.
  3. Electrical Code: *National Electrical Code* (NEC), 2020 edition, document NFPA 70, as published by National Fire Protection Association, adopted by MAINE UNIFORM BUILDING AND ENERGY CODE ("MUBEC"),
  4. Maine Fire Prevention Code, document NFPA 1 – Fire Prevention Code, 2018 Edition, as published by National Fire Protection Association
  5. Life Safety Code: NFPA 101 - Life Safety Code, 2018 Edition, as adopted and modified under the Maine Life Safety Standard, published under State Fire Marshal's Office, Main Department of Safety.
  6. Energy Code: International Energy Conservation Code, 2009 edition, as published by the International Code Council, Inc. (I.C.C.), as adopted by MAINE BUILDING AND ENERGY CODE ("MUBEC"), June 30, 2021, as amended.
  7. Accessibility Code: Maine Department of Labor, Bureau of Rehabilitation, State of Maine Accessibility Code.
  8. State of Maine Department of Transportation Standard Specifications, March 2020 edition as published by the State of Maine, Department of Transportation as amended.
  9. City of **Auburn** Appendix A of the Code of Ordinances, Zoning and Land Use Code, as amended.

10. National Fire Protection Association: NFPA 241 – Safeguarding Building Construction And Demolition Operations.
11. United States Occupational Safety and Health Administration (OSHA): Standard N°. 29-CFR-1926.59 - HAZARD COMMUNICATION STANDARD.
12. United States Department of Justice, N° 28 CFR Part 36 - AMERICANS WITH DISABILITIES ACT, (Public Law 101-336).
13. Byrd Anti-Lobbying Amendment, 31 USC1352.
14. Nondiscrimination Provisions of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972 (as amended), Section 504 of the Rehabilitation Act of 1973 (as amended), the Age Discrimination Act of 1973 (as amended) and the regulations issued pursuant thereto by NEH (Code of Federal Regulations, Title 45, Chapter XI).
15. The Drug-Free Workplace Act of 1988, 41 USC 701.

- B. Publication Dates: Where the date of issue of a code or regulation is not specified, comply with the standard in effect as of date of Contract Documents, or as otherwise required by authorities having jurisdiction.

#### 1.4 TRADE UNION JURISDICTIONS

- A. Maintain current information on jurisdictional matters, regulations, actions and pending actions; and administer/supervise performance of Work in a manner which will minimize possibility of disputes, conflicts, delays, claims or losses.

#### 1.5 WAGE RATE COMPLIANCE

- A. The General Contractor is responsible to ensure that the rate per hour to be paid to mechanics, apprentices, teamsters, laborers and other workers employed on the Work shall not be less than the approved wage rates applicable to this project. A legible copy of the approved rates, along with equal opportunity requirements, shall be posted on a weatherproof bulletin board outside the field office and be clearly visible for review by all workers.

**PART 2 - PRODUCTS** (Not Used)

**PART 3 - EXECUTION** (Not Used)

**END OF SECTION**

**SECTION 014533****CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Code-required special inspections.
- B. Testing services incidental to special inspections.
- C. Submittals.
- D. Manufacturers' field services.
- E. Fabricators' field services.

**1.02 RELATED REQUIREMENTS**

- A. Section 014000 - Quality Requirements.
- B. Section 016000 - Product Requirements: Requirements for material and product quality.

**1.03 ABBREVIATIONS AND ACRONYMS**

- A. AHJ: Authority having jurisdiction.
- B. IAS: International Accreditation Service, Inc.
- C. NIST: National Institute of Standards and Technology.

**1.04 DEFINITIONS**

- A. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.
- B. Code or Building Code: Commercial Building Code of the MUBEC and MUBC
- C. Special Inspection:
  - 1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
  - 2. Special inspections are separate from and independent of tests and inspections conducted by Owner or Contractor for the purposes of quality assurance and contract administration.

**1.05 REFERENCE STANDARDS**

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

- B. AISC 360 - Specification for Structural Steel Buildings; 2022, with Errata (2023).
- C. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2024.
- D. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.
- E. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
- F. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2023.
- G. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2021.
- H. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars; 2018, with Amendment (2020).
- I. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2021.
- J. IAS AC291 - Accreditation Criteria for Special Inspection Agencies AC291; 2019.
- K. ICC (IBC)-2018 - International Building Code; 2018.

#### **1.06 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
  - 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
  - 3. Submit certification that Special Inspection Agency is acceptable to AHJ.
  - 4. Submit documentation that Special Inspection Agency is accredited by IAS according to IAS AC291.
- C. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
  - 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
  - 3. Submit certification that Testing Agency is acceptable to AHJ.
  - 4. Submit documentation that Testing Agency is accredited by IAS according to IAS AC89.

D. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Engineer and one to the AHJ.

1. Include:
  - a. Date issued.
  - b. Project title and number.
  - c. Name of Special Inspector.
  - d. Date and time of special inspection.
  - e. Identification of product and specifications section.
  - f. Location in the Project.
  - g. Type of special inspection.
  - h. Date of special inspection.
  - i. Results of special inspection.
  - j. Compliance with Contract Documents.
2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.

E. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Engineer and one to AHJ.

1. Include:
  - a. Date issued.
  - b. Project title and number.
  - c. Name of inspector.
  - d. Date and time of sampling or inspection.
  - e. Identification of product and specifications section.
  - f. Location in the Project.
  - g. Type of test or inspection.
  - h. Date of test or inspection.
  - i. Results of test or inspection.
  - j. Compliance with Contract Documents.

F. Certificates: When specified in individual special inspection requirements, Special Inspector shall submit certification by the manufacturer, fabricator, and installation subcontractor to Engineer and AHJ, in quantities specified for Product Data.

1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

#### **1.07 SPECIAL INSPECTION AGENCY**



- A. Owner or Engineer will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.
- B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.
- C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

#### **1.08 TESTING AND INSPECTION AGENCIES**

- A. Owner or Engineer may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

#### **1.09 QUALITY ASSURANCE**

- A. Special Inspection Agency Qualifications:
  - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
  - 2. Accredited by IAS according to IAS AC291.
- B. Testing Agency Qualifications:
  - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
  - 2. Accredited by IAS according to IAS AC89.
- C. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION**

#### **3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL**

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
  - 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.

2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

### **3.02 SCHEDULE OF SPECIAL INSPECTION SERVICES**

- A. Refer to Table after this section "Schedule of Special Inspection Services"

### **3.03 SPECIAL INSPECTIONS FOR SOILS**

- A. Refer to Table after this section "Schedule of Special Inspection Services"

### **3.04 SPECIAL INSPECTIONS FOR WIND RESISTANCE**

- A. Not Required.

### **3.05 CONTRACTOR DUTIES AND RESPONSIBILITIES**

- A. Contractor Responsibilities, General:
  1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
  2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
  3. Provide incidental labor and facilities:
    - a. To provide access to work to be tested or inspected.
    - b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
    - c. To facilitate tests or inspections.
    - d. To provide storage and curing of test samples.
  4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
  5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

### **3.06 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES**

- A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations.
  1. Observer subject to approval of Engineer.

- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

## Statement of Special Inspections

Project: *Auburn- Lewiston Municipal Airport Hangar*

Location: *80 Airport Drive, Auburn, ME*

Owner: *Auburn- Lewiston Airport*

Design Professional in Responsible Charge: *Chad E. Phillips, P.E.*

This Statement of Special Inspections is submitted in accordance with Section 1704.3 of the 2015 International Building Code. It includes a *Schedule of Special Inspection Services* applicable to the above-referenced Project as well as the identity of the individuals, agencies, or firms intended to be retained for conducting these inspections. If applicable, it includes *Requirements for Seismic Resistance* and/or *Requirements for Wind Resistance*. This *Statement of Special Inspections* encompass the following disciplines:

☒ Structural

☐ Mechanical/Electrical/Plumbing

☐ Architectural

☐ Other: \_\_\_\_\_

☐ Yes ☒ No

Are *Requirements for Seismic Resistance* included in the *Statement of Special Inspections*?

Are *Requirements for Wind Resistance* included in the *Statement of Special Inspections*? ☐ Yes ☒ No

The Special Inspector(s) shall keep records of all inspections and shall furnish interim inspection reports to the Building Official and to the Registered Design Professional in Responsible Charge at a frequency agreed upon by the Design Professional and the Building Official prior to the start of work. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge prior to completion of that phase of work. A *Final Report of Special Inspections* documenting required special inspections and corrections of any discrepancies noted in the inspections shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge at the conclusion of the project.

Frequency of interim report submittals to the Registered Design Professional in Responsible Charge:

\_\_\_ Weekly

X  Bi-Weekly

\_\_\_ Monthly

Other; specify: \_\_\_\_\_

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Statement of Special Inspections Prepared by:

Chad E. Phillips, P.E.

Type or print name

*Chad E Phillips*

12/9/24

Signature

Date

Building Official's Acceptance:

Signature

Date

Permit Number:

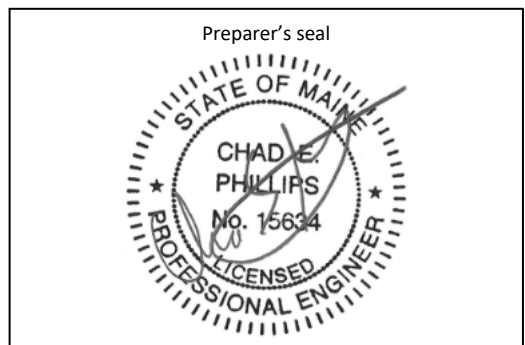
Frequency of interim report submittals to the Building Official:

\_\_\_ Monthly

\_\_\_ Bi- Monthly

\_\_\_ Upon Completion

Other; specify: \_\_\_\_\_



## **Quality Assurance for Seismic Resistance**

See the *Schedule of Special Inspections* for inspection and testing requirements

**Seismic Design Category:**   B  

**Statement of Special Inspection for Seismic Resistance Required (Yes/No):**   No  

Description of seismic force-resisting system subject to special inspection and testing for seismic resistance: **(Required for Seismic Design Categories C, D, E or F in accordance with IBC Sections 1705.12.1 through 1705.12.3, and 1707.13.1.)**

**Not required.**

Description of designated seismic systems subject to special inspection and testing for seismic resistance: **(Required for architectural, electrical and mechanical systems and their components that require design in accordance with Chapter 13 of ASCE 7, have a component importance factor,  $I_p$ , greater than one and are in Seismic Design Categories C, D, E or F.)**

**Not required.**

Description of additional seismic systems and components requiring special inspections and testing:

**(Required for systems noted in IBC Section 1705.12, Cases 3, 4 & 5 in Seismic Design Categories C, D, E or F.)**

**Not required.**

### **Statement of Responsibility:**

Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.

## **Quality Assurance for Wind Requirements**

See the *Schedule of Special Inspections* for inspection and testing requirements

**Nominal Design Wind Speed,  $V_{asd}$ :** 89 **m.p.h.**

**Wind Exposure Category:** C

**Statement of Special Inspection for Wind Resistance Required (Yes/No):** No

(Required in wind exposure Category B, where the nominal design wind speed,  $V_{asd}$ , is 120 miles per hour or greater. Required in wind exposure Category C or D, where the nominal design wind speed,  $V_{asd}$ , is 110 miles per hour or greater.) Description of main windforce-resisting system subject to special inspection for wind resistance: **(Required for systems noted in IBC Section 1705.11.1 and 1705.11.2)**

Description of windforce-resisting components subject to special inspection for wind resistance:  
**(Required for systems and components noted in IBC Section 1705.11.3)**

**Not required.**

### **Statement of Responsibility:**

Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.

| SCHEDULE OF SPECIAL INSPECTION SERVICES                                                                                                                          |                                                             |                            |                                 |        |                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------|---------------------------------|--------|----------------|
| PROJECT                                                                                                                                                          |                                                             |                            |                                 |        |                |
| MATERIAL / ACTIVITY                                                                                                                                              | SERVICE                                                     | APPLICABLE TO THIS PROJECT |                                 |        |                |
|                                                                                                                                                                  |                                                             | Y/N                        | EXTENT                          | AGENT* | DATE COMPLETED |
| <b>1704.2.5 Inspection of Fabricators</b>                                                                                                                        |                                                             |                            |                                 |        |                |
| Verify fabrication/quality control procedures                                                                                                                    | In-plant review (3)                                         | 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 (3) and field inspection                               | Y                          | Periodic                        |        |                |
| 3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)                                                                          | Field inspection                                            | Y                          | Periodic                        |        |                |
| 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 (3) and field inspection                               | Y                          | Observe or Perform as noted (4) |        |                |
| 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 (3) and field inspection                               | Y                          | Observe (4)                     |        |                |
| 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 (3) and field inspection                               | Y                          | Observe or Perform as noted (4) |        |                |
| d. Nondestructive testing (NDT) of welded joints: <i>see Commentary</i>                                                                                          |                                                             |                            |                                 |        |                |
| 1) Complete penetration groove welds 5/16" or greater in <i>risk category</i> III or IV                                                                          | Shop (3) or field ultrasonic testing - 100%                 | N                          | Periodic                        |        |                |
| 2) Complete penetration groove welds 5/16" or greater in <i>risk category</i> II                                                                                 | Shop (3) or field ultrasonic testing - 10% of welds minimum | Y                          | Periodic                        |        |                |
| 3) Thermally cut surfaces of access holes when material $t > 2"$                                                                                                 | Shop (3) or field magnetic Partical or Penetrant testing    | N                          | Periodic                        |        |                |
| 4) Welded joints subject to fatigue when required by AISC 360, Appendix 3, Table A-3.1                                                                           | Shop (3) or field radiographic or Ultrasonic testing        | N                          | Periodic                        |        |                |
| 5) Fabricator's NDT reports when fabricator performs NDT                                                                                                         | Verify reports                                              | Y                          | Each submittal (5)              |        |                |
| 6. Structural steel bolting:                                                                                                                                     | Shop (3) 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 (4) |        |                |
| b. Inspection tasks During Bolting (Observe the QA tasks listed in AISC 360, Table N5.6-2)                                                                       |                                                             | Y                          | Observe (4)                     |        |                |
| 1) Pre-tensioned and slip-critical joints                                                                                                                        |                                                             |                            |                                 |        |                |
| a) Turn-of-nut with matching markings                                                                                                                            |                                                             | Y                          | Periodic                        |        |                |
| b) Direct tension indicator                                                                                                                                      |                                                             | Y                          | Periodic                        |        |                |
| c) Twist-off type tension control bolt                                                                                                                           |                                                             | Y                          | Periodic                        |        |                |
| d) Turn-of-nut without matching markings                                                                                                                         |                                                             | Y                          | Continuous                      |        |                |
| e) Calibrated wrench                                                                                                                                             |                                                             | Y                          | Continuous                      |        |                |

| SCHEDULE OF SPECIAL INSPECTION SERVICES                                                                                                                                          |                                                |                            |                                           |        |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|-------------------------------------------|--------|----------------|
| PROJECT                                                                                                                                                                          |                                                |                            |                                           |        |                |
| MATERIAL / ACTIVITY                                                                                                                                                              | SERVICE                                        | APPLICABLE TO THIS PROJECT |                                           |        |                |
|                                                                                                                                                                                  |                                                | Y/N                        | EXTENT                                    | AGENT* | DATE COMPLETED |
| 2) Snug-tight joints                                                                                                                                                             |                                                |                            | 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 (4)                               |        |                |
| 7. Inspection of steel elements of composite construction prior to concrete placement in accordance with QA tasks listed in AISC 360, Table N6.1                                 | Shop (3) and field inspection and testing      | N                          | Observe or Perform as noted (4)           |        |                |
| <b>1705.3 Concrete Construction</b>                                                                                                                                              |                                                |                            |                                           |        |                |
| 1. Inspection of reinforcing steel and prestressing steel installation                                                                                                           | Shop (3) and field inspection                  | Y                          | Periodic                                  |        |                |
| 2. Reinforcing bar welding                                                                                                                                                       |                                                |                            |                                           |        |                |
| a. Verify weldability of reinforcing bars other than ASTM A706                                                                                                                   | Field inspection                               | N                          | Periodic                                  |        |                |
| b. Inspect single pass fillet welds, maximum 5/16"                                                                                                                               | Field inspection                               | N                          | Periodic                                  |        |                |
| c. Inspect all other welds.                                                                                                                                                      | Field inspection                               | N                          | Continuous                                |        |                |
| 3. Inspection of anchors cast in concrete                                                                                                                                        | Shop (3) and field inspection                  | Y                          | Periodic                                  |        |                |
| 4. Inspect anchors post-installed in hardened concrete members                                                                                                                   |                                                |                            |                                           |        |                |
| a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads                                                                | Field inspection                               | Y                          | Continuous                                |        |                |
| b. Mechanical anchors and adhesive anchors not defined in 4.a                                                                                                                    | Field inspection                               | Y                          | Periodic                                  |        |                |
| 5. Verify use of approved design mix                                                                                                                                             | Shop (3) and field inspection                  | Y                          | Periodic                                  |        |                |
| 6. Fresh concrete sampling, perform slump and air content tests and determine temperature of concrete                                                                            | Shop (3) and field inspection                  | Y                          | Continuous                                |        |                |
| 7. Inspection of concrete and shotcrete placement for proper application techniques                                                                                              | Shop (3) and field inspection                  | Y                          | Continuous                                |        |                |
| 8. Inspection for maintenance of specified curing temperature and techniques                                                                                                     | Shop (3) and field inspection                  | Y                          | Periodic                                  |        |                |
| 9. Inspection of prestressed concrete:                                                                                                                                           | Shop (3) and field inspection                  |                            |                                           |        |                |
| a. Application of prestressing force                                                                                                                                             |                                                | N                          | Continuous                                |        |                |
| b. Grouting of bonded prestressing tendons                                                                                                                                       |                                                | N                          | Continuous                                |        |                |
| 10. Erection of precast concrete members                                                                                                                                         |                                                |                            |                                           |        |                |
| a. Inspect in accordance with construction documents                                                                                                                             | Field inspection                               | N                          | In accordance with construction documents |        |                |
| b. Perform inspections of welding and bolting in accordance with Section 1705.2                                                                                                  | Field inspection                               | N                          | In accordance with Section 1705.2         |        |                |
| 11. 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                                  |        |                |
| 12. Inspection of formwork for shape, lines, location and dimensions                                                                                                             | Field inspection                               | Y                          | Periodic                                  |        |                |
| 13. Concrete strength testing and verification of compliance with construction documents                                                                                         | Field testing and review of laboratory reports | Y                          | Periodic                                  |        |                |
| <b>1705.6 Soils</b>                                                                                                                                                              |                                                |                            |                                           |        |                |



| SCHEDULE OF SPECIAL INSPECTION SERVICES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|------------|--------|----------------|------|---------|---------------|----|--|--|----|--|--|----|--|--|----|--|--|
| PROJECT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| MATERIAL / ACTIVITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SERVICE          | APPLICABLE TO THIS PROJECT |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  | Y/N                        | EXTENT     | AGENT* | DATE COMPLETED |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| 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 compacted fill, inspect subgrade and verify that site has been prepared properly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Field inspection | Y                          | Periodic   |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| <b>* INSPECTION AGENTS</b><br><table border="1"> <thead> <tr> <th>FIRM</th> <th>ADDRESS</th> <th>TELEPHONE NO.</th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td></tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                            |            |        |                | FIRM | ADDRESS | TELEPHONE NO. | 1. |  |  | 2. |  |  | 3. |  |  | 4. |  |  |
| FIRM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ADDRESS          | TELEPHONE NO.              |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| 4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| <p><i>Notes: 1. The inspection and testing agent(s) shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official prior to commencing work. The qualifications of the Special Inspector(s) and/or testing agencies may be subject to the approval of the Building Official and/or the Design Professional.</i></p> <p><i>2. The list of Special Inspectors may be submitted as a separate document, if noted so above.</i></p> <p><i>3. 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</i></p> <p><i>4. 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.</i></p> <p><i>5. 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.</i></p> |                  |                            |            |        |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| Are Requirements for Seismic Resistance included in the Statement of Special Inspections?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                            |            | No     |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
| Are Requirements for Wind Resistance included in the Statement of Special Inspections?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                            |            | No     |                |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                            |            | DATE:  | 12/9/2024      |      |         |               |    |  |  |    |  |  |    |  |  |    |  |  |

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## Section 01 55 32

## MAINTENANCE OF AIRCRAFT OPERATIONS AREA (AOA) TRAFFIC

**PART 1 - GENERAL**

## 1.1 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of other Sections of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

## 1.2 DESCRIPTION

- A. This Section is intended to include basic requirements for the maintenance of Aircraft Operations Area (AOA) traffic whenever work is to be performed within the AOA. The work under this Section consists of furnishing all means and measures required to maintain the safe and orderly movement of AOA traffic in and around the construction areas as shown on the Drawings.

## 1.3 GENERAL

- A. Comply with the requirements of the Maintenance of Traffic (MOT) shown on the Contract Drawings.
- B. Comply with the Safety Plan Compliance Document (SPCD).
- C. **Comply with Construction Safety & Phasing Plans (CSPP)**
- D. General Contractor is responsible for maintaining the optimum level of safety and operating efficiency of ground equipment and aircraft on the airport during construction. These responsibilities are based on the rules and regulations of Auburn-Lewiston Municipal Airport and the criteria contained in the current edition of the following Federal Aviation Administration (FAA) Advisory Circulars (AC):
  - 1. 150/5370-2, Operational Safety on Airports During Construction;
  - 2. 150/5370-10, Standards for Specifying Construction of Airports
  - 3. 150/5300-13, Airport Design.

## 1.4 RELATED REQUIREMENTS

- A. The Contract Documents contain several other provisions relating to safety for which Contractor's adherence is required.

## 1.5 SAFETY REQUIREMENTS DURING CONSTRUCTION

- A. The Contractor shall be responsible to comply with all prevailing Auburn-Lewiston Municipal Airport rules, regulations and requirements and the applicable FAA Advisory Circulars concerning construction operations and safety on an airport. The Contractor is cautioned about construction work to be performed within the proximity of all active runways, taxiways, taxi lanes and aprons. No work shall commence in these areas without first advising the RPR and obtaining the requisite approvals.
- B. Runways.

1. No construction equipment shall be permitted at the end of any active runway where the height of such equipment penetrates the 20:1 slope in the approach surface of the runway.
  2. No Construction equipment and/or activities shall be permitted within two hundred-fifty (250) lineal feet of the runway centerline (Aircraft Design Group (ADG) II). Prior approval from the Auburn-Lewiston Municipal Airport, the FAA and the RPR must be obtained should it be necessary to perform work within a lesser distance. All cranes, backhoes and other construction equipment working within four hundred (400) lineal feet of the centerline of a runway (ADG II) shall display a safety flag of the color, size and shape required by the Auburn-Lewiston Municipal Airport, FAA. All crane booms shall be lowered when not in use.
- C. Taxiways, Taxi lanes, Aprons.
1. Under no circumstance shall material, equipment and/or vehicles be stored in such a place as to create an obstruction to air navigation, nor shall they interfere with the free unobstructed movement of aircraft. No storage of equipment and/or material shall be permitted within the AOA. All storage of equipment and material shall be limited to the area(s) designated on the Contract Drawings. Stockpiled material shall be constrained in a manner to prevent movement resulting from aircraft jet blast or prop wash, or wind conditions in excess of ten (10) knots. Loose materials capable of causing damage to aircraft landing gears, propellers, or being ingested in jet engines shall not be stored anywhere in the vicinity of any active runway, taxiway, taxi lane or apron.
- D. Daily inspections.
1. At the start (within the first hour) and close of construction activity for the day, the site must be inspected by the contractor and Airport personnel to ensure compliance with FAA rules and regulations before the contractor leaves for the day. The contractor cannot vacate site until the inspection is complete and site secured for the evening. See Appendix B – CSPP daily checklist.

## PART 2 - PRODUCTS

### 2.1 MARKING AND LIGHTING OF CONSTRUCTION AREAS

- A. The Contractor shall be responsible to install and maintain all signage, marking, lighting and barricades as shown on the Contract Drawings delineating limits of construction including closed and hazardous areas. Provide a person, on a 24-hour basis, for emergency maintenance of all signage, marking, lighting and barricades required to be provided and installed.

### 2.2 BARREL/BARRICADES

- A. All construction areas, including closed and hazardous areas shall be identified by the use of barricades with alternate orange and white markings. The barricades shall be supplemented with orange flags at least 20 by 20 inches square, made and installed so that they are always in the extended position and properly oriented. During nighttime construction operations of the barricades shall be supplemented with flashing yellow lights. The intensity of the lights and spacing for barricades, flags and lights must be such as to clearly and adequately delineate the

construction areas including closed and hazardous areas. The location of such signage, marking, lighting and barricades shall be consistent with the requirements stated in the aforementioned paragraphs relevant to runways, taxiways, taxi lanes and aprons.

### 2.3 PLASTIC CHANNELIZER CONES

- A. Furnish, install and maintain temporary plastic channelizer cones in the locations shown on the Drawings, in accordance with the approved layout for each construction area and as directed by RPR.
- B. Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Drawings or ordered by the RPR.
- C. Plastic channelizer cones shall consist of a molded plastic cone. The assembly shall be designed to remain usable following vehicular impact.
  - 1. The cone shall consist of a stem and a base. The base shall be of sufficient weight to ensure stability of the cones when subjected to 100 mph jet blast.
  - 2. The dimensions of the various elements of the plastic barricade system shall be as follows:
    - a. Cones: Overall Height: 42"
- D. The top of the cones shall be designed to allow the mounting of portable solar powered barricade lights.

### 2.4 PLASTIC PROTECTIVE BARRIERS (WATER FILLED)

- A. Furnish, install and maintain temporary plastic protective barriers (water filled) in the locations shown on the Drawings, in accordance with the approved layout for each construction area and as directed by Owner.
- B. Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Drawings or ordered by the Owner.
- C. Plastic protective barriers shall consist of a molded plastic cone. The assembly shall be designed to remain usable following vehicular impact.
  - 1. The barrier shall be of sufficient weight to ensure stability of the barrier when subjected to 100 mph jet blast.
  - 2. The dimensions of the various elements of the plastic barricade system shall be as follows:
  - 3. Barrier: Overall Length: 8' and interlock with adjacent barrier  
Overall Height: 10" without lights
- D. The top of the barriers shall be designed to allow the mounting of portable solar powered barricade lights

### 2.5 TEMPORARY SITE ENCLOSURE FENCES

- A. Construction fence **at the Contractor's Option**: Provide an 8 foot high commercial grade chain link fence set in Plastic Protective Barriers (Water-Filled) around construction site; equip with vehicular and pedestrian gates and locks.
  - 1. Relocation of all fences and gates as required due to construction phasing. Relocations shall be provided at no additional cost to the Owner.

2. Vehicular and Pedestrian Gates: Build into fence at approved locations. Provide gates with cross-bracing, and hung on heavy strap hinges with post and hook for double gates. Provide heavy hasps and padlocks.
  - a. Provide a set of keys to Project Resident Engineer to facilitate emergency access.
- B. Emergency Key Cabinet: Provide emergency access key cabinet ("Knox Box"): medium duty, surface mounted. Locate emergency key cabinet in readily-accessible location outside of fence line. Provide keys for emergency key cabinet to Owner's designated representative(s).
  1. Inside emergency key cabinet maintain keys for fence entrance gates, and construction core keys for building, once it is closed in.
- C. Fence, General: Fence shall be industrial-grade, heavy-duty construction: Galvanized fabric with galvanized frame.
  1. Chain link fabric shall be made of coated-steel, 9 gage (0.148 inch) core wire woven in 2-inch uniform mesh, height (roll width) to suit fence height, with bottom selvage knuckled, top selvage twisted, with woven fabric having a minimum breaking strength of 1290 pounds.
    - a. Construction privacy and containment mesh: 80 to 85 percent privacy (15 to 20 percent open) 100 percent polyethylene mesh having weight of approximately 5.1 ounces per square yard, color green. Provide with four-ply sewn hems, reinforced with 2 inch wide 18 ounce vinyl-coated UV resistant polyester tape. Finish hem width is 1 inch. Furnish with number 2 size brass grommets at 12 to 18 inches on-center, along hemmed edges.
      - 1) No advertising signage, logos or graphics are permitted on screening.
  2. Framework: Type 1 seamless steel pipe, ASTM A-120, standard weight schedule 40, hydrostatic testing waived.
  3. Gate Posts: Standard weight pipe 2-7/8 inches OD nominal weight, 5.79 pounds per foot.
  4. Gate Frames: 2 inches OD standard weight pipe, 2.73 pounds. per foot with heavy malleable iron or pressed steel corner fittings securely riveted. Fabric to match the fence shall be installed in the frame by means of tension bars and hook bolts. Each frame to be equipped with 3/8 inches diameter adjustable truss rods.
  5. Bottom hinges to be ball and socket type designed to carry the weight of the gate on the post footing. Upper hinge to be wrap around adjustable type. All gates to be equipped for padlocking and with semi-automatic outer catches to secure gates in opened position.
  6. Fittings: Pressed steel or malleable iron, hot-dipped galvanized conforming to the requirements of ASTM A153. Tie wires shall be minimum nine-gage galvanized wire,. Attachment bolts shall be galvanized.
  7. Post Settings: Temporary Plastic Protective Barriers (Water-Filled ) bases are to be installed at all fence locations except perimeter Security Fences for relocation.
  8. Plastic Protective Barrier for fencing.

- a. Furnish, install and maintain temporary plastic protective barriers (water filled) in the locations shown on the Drawings, in accordance with the approved layout for each construction area and as directed by Owner.
- b. Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Drawings or ordered by the Owner.
- c. Plastic protective barriers shall consist of a molded plastic cone. The assembly shall be designed to remain usable following vehicular impact.
  - 1) The barrier shall be of sufficient weight to ensure stability of the barrier when subjected to 100 mph jet blast.
  - 2) The dimensions of the various elements of the plastic barricade system shall be as follows:
  - 3) Barrier: Overall Length: 8' and interlock with adjacent barrier  
Overall Height: 32" without lights
- d. The top of the barriers shall be designed to allow the mounting of portable solar powered barricade lights.

D. TEMPORARY PERIMETER SECURITY FENCES.

1. Temporary Fence on Barricade with barb wire, refer to Item F-162-5.4

### PART 3 - EXECUTION

#### 3.1 LOOSE MATERIALS AND DEBRIS.

- A. Loose materials shall be removed from the active portion of the AOA, placed in protected areas or otherwise secured to prevent dispersal into active portions of the AOA. The AOA is defined as all areas used or intended to be used for aircraft operations including active runways, aprons, taxiways, taxi lanes, etc. Debris shall be promptly removed from the AOA. Exercise care in the transportation of materials within the AOA. Materials tracked or spilled in the AOA shall be removed immediately. When hauling, loading, grading, or when any of the activities are likely to cause the deposit of loose materials in the AOA, it shall be immediately removed using powered vacuum sweepers, which shall continuously patrol the affected areas. The sweepers shall be supplemented by hand sweepers, loaders, trucks, etc., as necessary.

#### 3.2 VEHICLES AND MOBILE EQUIPMENT

- A. All vehicles and mobile equipment operating in the AOA shall be identified by three foot (3') square orange and white flags whenever such vehicle and equipment is operating on or about the AOA. In addition, such vehicles and equipment shall have the Contractor's name clearly affixed on each side of such vehicles and equipment, all in accordance with current Auburn-Lewiston Municipal Airport, FAA requirements. Revolving yellow beacon light mounted on the top of the vehicle or equipment shall be used during the period between 30 minutes before sunset and 30 minutes after sunrise. Beacon lights shall provide:
  1. Three hundred sixty degree (360°) azimuth coverage.
  2. Effective intensity in the horizontal plane not less than 40 or more than 400 candelas.
  3. Beam spread measured to 1/10 peak intensity extending from 10 degrees to 15 degrees above the horizontal.
  4. Sixty to ninety flashes per minute.

- B. All vehicles and mobile equipment not individually authorized by the Auburn-Lewiston Municipal Airport for independent operation in the AOA shall be operated under escort while in the AOA. The escort vehicle and its driver must be authorized by the Auburn-Lewiston Municipal Airport for escort duty and for operation within the AOA. If access to the construction, staging or storage sites requires the crossing of an active runway or taxiway, all vehicles shall be escorted across said runway or taxiway by either a Auburn-Lewiston Municipal Airport escort vehicle or a vehicle equipped with a VHF-AM Transceiver specifically authorized by the Auburn-Lewiston Municipal Airport to cross these operational pavements. No crossing of active taxiways or runways by vehicles so equipped shall be made without first obtaining specific clearance from the **Airport**.
- C. No crane shall be allowed on the work site until the equipment and its intended operation is approved by the Auburn-Lewiston Municipal Airport Airside Operations in accordance with the prevailing requirements, including but not limited to FAA form 7460. The FAA Form 7460 can take more than 90 days to acquire. If a crane is required by the Contractor, provisions must be made within the first month of NTP.. Provide the Auburn-Lewiston Municipal Airport designated Project Representative with not less than 24- hour advance written notice requesting crane access to the AOA.
- D. The Contractor shall notify **Airport** personnel one week before any crane necessary for T-Hangar Installation is scheduled to arrive. **AIRPORT** personnel shall notify the ATCT of the upcoming crane activity. **Airport** Operations will coordinate the NOTAM issuance and cancellation with the ATCT for all crane activities associated with T-Hangar.
- E. When access is approved by the Auburn-Lewiston Municipal Airport, the tip of the crane boom shall be identified by the orange and white flag mentioned above and, if appropriate, by red obstruction lights.

### 3.3 CLOSURES

- A. Prior to the commencement of any demolition or other work, which will cause an interruption or modification to existing aircraft operations, confer with, and obtain written authorization from the Auburn-Lewiston Municipal Airport Director of Operations and the Owner or its designated agent.
- B. When the construction operations require the closure of any runway, taxiway, apron, roadway, service gate, walkway, etc., notify the Owner or its designated agent not less than seventy-two (72) hours prior to need. No runway, taxiway, apron, roadway, service gate, walkway, etc., shall be closed without prior written authorization from the Auburn-Lewiston Municipal Airport Director of Operations and the Owner or its designated agent.
- C. If the Contractor requires access to operational areas not delineated on the Construction Safety & Phasing Plan Drawing(s), the Contractor shall participate in negotiations leading to the imposition of restrictions on airport operations in the affected areas; the Contractor shall strictly abide by all conditions imposed by the Auburn-Lewiston Municipal Airport relating to its entry and use of such areas and the Contractor shall not enter these areas until granted temporary, conditional entry clearance by the Auburn-Lewiston Municipal Airport Director of Operations.
- D. Trenching, excavation and other work requiring temporary runway or taxiway closure shall be limited to that amount of work that can be completed within the



hours of minimal operation. All ditches, excavations, etc., shall be restored prior to the end of the work period and affected pavement areas returned to service. This work shall be scheduled during hours of minimal operations. Unless otherwise noted in the Contract Documents, hours of minimal operation shall be defined as the hours between 11:00 P.M. and 7:00 A.M. daily. All other hours are considered hours of normal operation.

- E. Contractor may be required to pursue affected portions of the work on a continuous 24 hour per day basis during construction of the various phases and sub-phases shown on the Drawings and described in the Contract Documents (such as when runways or taxiways, aprons, service or access roadways or service gates are closed for operation or when hazards of any kind arise).

### 3.4 LIGHTS, LIGHT LINES, SIGNS AND PAVEMENT MARKINGS

- A. Red and blue lens, ground-mounted, taxiway marker lights, pavement markings, signs, lighted barricades and other measures shall be installed and maintained (except as provided herein below) on a 24-hour basis to delineate construction areas available to the Contractor and limits of aircraft operational areas. At the conclusion of each working day, the Contractor shall verify that the temporary lighting systems are in proper operation condition. The Contractor prior to leaving the site shall perform any necessary maintenance repairs. The detailed layout of marking, lights, signs and barricades and other measures for each construction area are shown on the Plans. The actual field installation of markings, lighting, barricades, signs, and other measures and attendant operational procedures shall be inspected by the Auburn-Lewiston Municipal Airport Airside Operations and any necessary changes or modifications will be promptly implemented by the Contractor as directed. The revised installation will be reinspected and approved by the RPR and the Auburn-Lewiston Municipal Airport before the Contractor may commence any construction or any other work, which revises operational procedures in each affected area.
- B. Provide all materials for installing pavement marking, marker lights, and lighted barricades.
- C. Connections to power supply for all temporary lighting systems shall be performed by the Contractor under the direction of the Auburn-Lewiston Municipal Airport Airfield Operations and Facilities Department.
- D. Maintenance of all temporary lighting systems shall be performed by the Contractor except the nighttime trouble shooting of temporary lighting connected to any airfield lighting system, which will be provided by the Auburn-Lewiston Municipal Airport Airfield Operations and Facilities Department.
- E. Install the temporary marker lights in the location shown on the Drawings or as directed by the Owner or its designated agent; provide cable connections to existing circuits and decommission or mask existing lights as shown on the Drawings. If no existing taxiway circuits are available, provide and install a constant current transformer including connections and cable runs as necessary to energize the temporary light units. All cable runs installed across pavement shall be made along existing pavement joints. Saw kerfs shall be sealed, using approved suitable sealant, after cable installation. Demonstrate the functional integrity of the temporary marker light system by field test before the system is approved by the Auburn-Lewiston Municipal Airport Airfield Operations and Facilities Department and the Owner or its designated agent for operational use.

- F. Maintain the temporary marker light system in full operational capability during the term of use. Each day at the close of work shift, test and repair the system as necessary to restore full operational capability. Provide 24-hour, 7 day per week maintenance service. Trained maintenance technicians shall be available and "On Call" at all times; provide the Owner or its designated agent with address and telephone numbers of the technicians so that they may be contacted at any time.
- G. Relocate and modify the temporary lightning systems as required to accommodate the progress of the construction.
- H. Upon completion of the work within an AOA, and temporary marker lights are no longer needed, remove all such temporary installation and restore the site prior to opening it to aircraft traffic. In particular all temporary pavement markings are to be removed. Final Approval and arbiter of removal of pavement markings by RE and Airport Operations.

### 3.5 OPERATIONS SAFETY INSPECTION

- A. The entire work site shall be inspected daily and more frequently if construction activities are of a nature that debris may be expected to accumulate on AOA pavements. Special inspections shall be conducted for each work area prior to return to service for aircraft service to verify that they are in satisfactory condition and that the overall work site and its activities are within the safety criteria set forth in the Contract Documents. Representatives of the Contractor, the Auburn-Lewiston Municipal Airport Operations, and Facilities Department, the Owner or its designated agent and the affected airlines shall conduct inspections jointly. These inspections shall cover the several safety items noted in and referred to by this Section the report of such inspections shall be filed with the Owner and its designated agent, using forms acceptable to the Owner or its designated agent.
- B. Any violations of the Safety Criteria found during these inspections shall be rectified immediately. If the Contractor cannot correct a violation on an immediate basis, the Contractor shall immediately notify the Owner or its designated agent. No area shall be approved for aircraft operations while it is in violation unless specifically authorized by the Auburn-Lewiston Municipal Airport Operations and Facilities Department, the Owner or its designated agent and the designated airline representative.

### 3.6 OPERATIONAL EMERGENCIES

- A. During periods of severe weather conditions or other operational emergencies, the Auburn-Lewiston Municipal Airport may direct the Contractor to relinquish areas under construction and to prepare the areas for aircraft operations. In this event the Owner or its designated agent will so direct the Contractor to evacuate the area and further, will specify the limits of the area to be evacuated, the term of evacuation and the conditions governing the restoration work necessary to prepare the area for aircraft operation. The Contractor shall promptly and fully comply with the Owner or its designated agent directive.

### 3.7 FINAL CLEANUP

- A. After work in any work area has been completed and before opening it to traffic, remove all temporary traffic control devices, temporary pavements, and other temporary work and devices installed for traffic control. Restore the site to its original condition or to the revised condition shown on the Drawings.

End of Section

Section 01 60 00  
PRODUCT REQUIREMENTS

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Definition of Terms
- B. Basic product requirements.
- C. General environmental requirements for products.
- D. Owner furnished products.
- E. Product delivery and handling requirements.
- F. Product storage and protection requirements.

**1.2 DEFINITION OF TERMS**

- A. "Products" is defined as new material, machinery, components, equipment, fixtures, and systems used in the Work. Products do not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for re-use.
- B. "Materials" are products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
- C. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.
- D. "Fasteners" include all products required for mechanical connections and include, but are not limited to: nails, screws, bolts, expansion bolts, chemical bolts, epoxy anchors, pins, powder-actuated devices, and similar fasteners, anchors, and connections.
- E. Definitions in this article are not intended to negate the meaning of other terms used in Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

**1.3 BASIC PRODUCT REQUIREMENTS**

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
  - 1. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. To the fullest extent possible, provide products of the same kind, from a single source.
- C. Provide interchangeable components of the same manufacturer, for similar components.

- D. When the Contractor has the option of selecting two or more products, ensure that products selected shall be compatible with products previously installed or approved.
- E. Provide all products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
- F. Galvanic Corrosion: Install materials in manner which will effectively isolate dissimilar metals which may potential for galvanic corrosion. Use non-absorptive dielectric material, isolation coatings, or other protective isolator approved by Architect.
  - 1. For non-humidity controlled environments, and all building shell components, the following applies:
    - a. For all fasteners, anchors, and connections, provide types of metal to prevent galvanic corrosion. Small anodic areas (fasteners) relative to the cathodic areas (field) should be avoided. Utilize same metal or more noble metals (cathodic) for fasteners and bolts.
      - 1) Apply corrosion-inhibiting pastes or compounds under heads of screws or bolts inserted into dissimilar metal surfaces whether or not the fasteners had been previously plated.
    - b. Use non-absorptive dielectric material, isolation coatings, or other protective isolator approved by Architect.
    - c. Seal faying edges to preclude the entrance of liquids.
- G. Fasteners, Anchors, and Connections: Provide all fasteners, anchors, and connections needed to safely, securely, and appropriately secure all Work permanently in place.
  - 1. General: The Contractor is solely responsible for the capacity, suitability, adequacy, and safety of all welded, fastened and anchored connections.
    - a. Comply with applicable code requirements regarding fastener selection and installation.
    - b. Provide at least two fasteners for each individual item being fastened.
    - c. Utilize fastener manufacturer's published load tables for working loads to assist in determining fastener size and space. Do not use ultimate load capacity in determining fastener selections.
    - d. Provide a minimum safety factor of 4.
    - e. Select and utilize fasteners having minimum galvanic corrosion factor (refer to above Paragraph F.)
    - f. Hydrogen embrittlement prevention:
      - 1) Do not use high-strength and low-alloy fasteners which have been subjected to an acid pre-treatment (because they can become brittle and fail), utilize instead equivalent capacity and size bi-metal, stainless steel or high strength aluminum fasteners, as appropriate to the conditions and materials where being used.
      - 2) Utilize low-hydrogen electrodes for welding high-strength steels to prevent hydrogen embrittlement.
  - 2. To permit the Contractor control over means and methods, some fastener conditions may not be fully defined in the Contract Documents. In particular, individual specification sections that require delegated independent

engineering. In such instances the Contractor is fully responsible to determine method of fastening appropriate for each condition. The Contractor shall take into consideration substrate material(s) and product(s) being fastened, live and dead loading, and both atmospheric and visual exposure considerations. Contractor is responsible to determine fastener type, material, finish, size, diameter, length and spacing.

3. Torque structural fasteners as recommended by fastener manufacturer, or as otherwise specified in the Contract Documents.

H. Permanent Labels and Nameplates:

1. Restrictions:
  - a. Do not provide exposed-to-view labels, nameplates, or trademarks which are not required by code, or regulations.
  - b. Do not expose manufacturers, suppliers, or installer's name, logo, or trade names on normally visible surfaces.
  - c. Do not provide labels, nameplates or trademarks when individual specification sections specifically exclude them.
  - d. All exposed-to-view advertising and name-brand labels shall be fully removed without damage to substrate finish.
2. Location for required labels: Required labels, approval plates and stamps shall be located on a concealed surface, or where required for observation after installation on accessible non-conspicuous surface.
3. Data Plates: Provide permanent data plate on each item of service-connected or power-operated equipment.
  - a. Data Plate Information: Include manufacturer, model, serial number, date of manufacture, capacity, ratings, power requirements, and all other similar essential data.
  - b. Locate data plates on easily accessible surface that is inconspicuous in occupied spaces.

1.4 GENERAL ENVIRONMENTAL REQUIREMENTS FOR PRODUCTS

- A. General: Prohibit the use of or incorporation into the work of materials which contain toxic, hazardous and harmful materials.
1. Hazardous materials: Defined as pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA), the International Agency for Research on Cancer (IARC) or regulated under OSHA Hazard Communication Standard, 29 CFR 1910.1200.
  2. Harmful materials: Defined as materials which contain the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.
  3. Owner restricted materials: Defined as all products to which the Owner has a reasonable objection because of its content, composition, properties, or characteristics.
- B. Vapors, Gases, Fumes, Odors:
1. General: Comply with all state and federal VOC requirements. Where ever possible use non-VOC materials.

- a. Limit use of products to the greatest extent possible which have "off-gassing", fumes, flammability, and other harmful characteristics.
  - 1) Prohibit use of products which contain substances that contribute significantly to the production of photochemical smog, tropospheric ozone, or poor indoor-air quality.
- b. Limit use of ozone-depleting compounds to the greatest extent possible. An ozone-depleting compound is any compound with an ozone-depletion potential greater than 0.01 (CFC 11 = 1).
- c. Use organic and biodegradable cleaners to the greatest extent possible.
2. Do not install, use for installation, and use for cleaning those materials which may produce objectionable (to Owner and public) vapors, gases, fumes, odors, or similar conditions.
3. Do not install or use products which may have possible chemical or biological reactions with other on-site materials.
- C. Toxicity of prefabricated wood products (composite wood and agrifiber products): Products shall contain no added urea-formaldehyde resins.
  1. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.
- D. Adhesives: Provide adhesives approved by the manufacturers of the products being adhered which are Low-VOC or non-VOC, non-flammable, water-proof after cured, odor free.
  1. Comply with **the following**:
    - a. Architectural Applications VOC Limit [g/L less water]
      - 1) Outdoor floor covering adhesives 250
      - 2) Non-membrane Roof Installation and Repair Adhesive 300
      - 3) Single-ply Roof Membrane Roof Installation and Repair Adhesive 250
    - b. Specialty Applications VOC Limit [g/L less water]
      - 1) Thin-Metal Laminating 780
      - 2) Waterproof Resorcinol Glue 170
    - c. Substrate Specific Applications VOC Limit [g/L less water]
      - 1) Flexible Vinyl 250
      - 2) Rubber 250
      - 3) Other Substrates 250
    - d. Adhesive Primers VOC Limit [g/L less water]
      - 1) Plastic Cement Welding 650
      - 2) Single-ply Roof Membrane 250
      - 3) Traffic Marking Tape 150
      - 4) Other 250
- E. Interior Paints: Provide products that comply with specified VOC limits, refer to Section 09 91 00 – PAINTING for additional requirements.
  1. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:

- a. Flat Paints and Coatings: VOC not more than 50 g/L.
  - b. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
  - c. Anti-Corrosive Coatings: VOC not more than 250 g/L.
  - d. Clear wood finishes:
    - 1) Varnishes: VOC not more than 350 g/L.
    - 2) Lacquer: VOC not more than 550 g/L.
  - e. Floor coatings: VOC not more than 100 g/L.
  - f. Sealers:
    - 1) Waterproofing sealers: VOC not more than 250 g/L.
    - 2) Sanding sealers: VOC not more than 275 g/L.
    - 3) All other sealers: VOC not more than 200 g/L.
  - g. Stains: VOC not more than 250 g/L.
- F. Sealants: Provide products that comply with specified VOC limits. Comply with **the following**. Refer to Section 07 92 00 – JOINT SEALANTS, and as specified herein, for additional requirements.
- 1. Only use sealants and primers that comply with the following limits for VOC content:
 

|                             |                            |
|-----------------------------|----------------------------|
| a. Sealants                 | VOC Limit [g/L less water] |
| 1) Architectural            | 250                        |
| 2) Single-Ply Roof Membrane | 450                        |
| 3) Non-membrane Roof        | 300                        |
| 4) Roadway                  | 250                        |
| 5) Marine Deck              | 760                        |
| 6) Other                    | 420                        |

|                             |                            |
|-----------------------------|----------------------------|
| a. Sealant Primers          | VOC Limit [g/L less water] |
| 1) Architectural Non Porous | 250                        |
| 2) Architectural Porous     | 775                        |
| 3) Marine Deck              | 760                        |
| 4) Other                    | 750                        |
- G. Safety Data Sheets (SDS) *{formerly Material Safety Data Sheets, MSDS}*: Obtain and maintain on-site record data sheets for each product brought onto the Site.
- 1. Maintain an organized file of Material Safety Data Sheets at the job-site for quick reference.
  - 2. Furnish SDS for all finishes, paints, coatings, curing compounds, sealers, adhesives, mastics, waterproofing, dampproofing, sealants, cleaning chemicals, carpets, upholstery, fabrics and all similar products.
- H. Cleaning and maintenance products:
- 1. Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products utilized. These procedures are for final Contractor cleaning of the project prior to substantial completion and for provided materials and products as required by the specific specification sections.
    - a. Where chemical products are recommended for these procedures, provide documentation to indicate that no component present in the cleaning product at more than 1% of the total mass of the cleaning



- product is a carcinogen or reproductive toxicant as defined in the lists in this specification section.
- b. For purposes of reporting, identification of product VOC contents shall not be limited to those regulated.
- 2. Avoid cleaning products containing alpha-pinene, d-limonene or other unsaturated carbon double bond alkenes due to chemical reactions with ozone to form aldehydes, acidic aerosols, and ultra fine particulate matter in indoor air.
- I. Establish written Contractor's safety and emergency response procedures for safety precautions, accidents, emergency conditions, and clean-up methods.

## 1.5 OWNER FURNISHED PRODUCTS

- A. Owner Furnished Products: As provided in the General Conditions, the Owner will provide products by others under a separate agreements.
  - 1. Owner's responsibilities regarding Owner furnished products:
    - a. Arrange for and deliver Owner reviewed shop drawings, product data, and samples to Contractor.
    - b. Coordinate delivery dates with Contractor
    - c. Arrange and pay for product delivery to site. Notify Contractor not less than 48 hours prior to scheduled delivery date.
      - 1) Deliver materials during Contractor's normal working hours.
    - d. On delivery, inspect products jointly with Contractor.
    - e. Submit claims for transportation damage, and replace damaged, defective, or deficient items.
    - f. Arrange for manufacturers' warranties, inspections, and service agreements.
  - 2. Contractor's responsibilities regarding Owner furnished products:
    - a. Scheduling of all Owner-furnished products.
      - 1) Periodically review with Owner throughout term of construction intended schedule of Owner-furnished items. Notify Owner, not less than 30 days prior to date when Owner furnished products are due on site.
    - b. Review Owner reviewed shop drawings, product data, and samples to Contractor.
      - 1) Obtain from Owner's vendors rough-in information.
      - 2) Coordinate all rough-in, blocking, and utility services required for Owner's furnished products.
    - c. Handle, store, and provide temporary protection.
    - d. Repair or replace items which are damaged after receipt.
    - e. Provide protection of installed work.
      - 1) Touch up and repair minor damage in manner satisfactory to Owner and Architect.
    - f. Package and label spare parts, and deliver to Owner.
    - g. When not installed under this Contract, the Contractor shall coordinate Owner installed work with interfacing work of this Contract. The

Contractor shall provide temporary protection and final cleaning of Owner installed products, except as directed otherwise.

3. Items noted in Drawings as “Not in Contract” or “N.I.C.”, identify work or products which either exist, or are furnished by Owner; such work requires coordination with the Work of this Contract and may even require installation by this Contractor.

- B. The Contractor has coordinating responsibility for Testing laboratory services as identified under Section 01 40 00 – **QUALITY REQUIREMENTS** and as specified under individual specification sections.

## 1.6 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer’s instructions and as specified in individual specification sections.
  1. Packing: Arrange for the return of packing materials, such as wood pallets, where economically feasible.
  2. Ductwork: All ductwork shall be sealed from time of manufacture, with seals intact upon delivery to construction site, and remain so, until ready for installation. Contractor is jointly responsible with HVAC subcontractor to ensure ducts are properly sealed and maintained.
    - a. Store ductwork in clean dry conditions and keep sealed while it is stored.
- B. Packaging: Deliver materials in recyclable or in reusable packaging such as cardboard, wood, paper, or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.
  1. General: Minimize packaging materials to maximum extent possible while still ensuring protection of materials during delivery, storage, and handling.
    - a. Unacceptable Packaging Materials: Polyurethane, polyisocyanurate, polystyrene, polyethylene, and similar plastic materials such as “foam” plastics and “shrink-fit” plastics.
    - b. Reusable Blankets: Deliver and store materials in reusable blankets and mats reclaimed by manufacturers or suppliers for reuse where program exists or where program can be developed for such reuse.
      - 1) Non-returnable containers should be donated to local and community organizations to the greatest extent possible to reduce quantity of disposed materials.
    - c. Pallets: Where pallets are used, suppliers shall be responsible to ensure pallets are removed from site for reuse or for recycling. Avoid use of virgin wood pallets whenever possible. It is preferable that pallets be manufactured from recycled wood and recycled plastic.
    - d. Corrugated Cardboard and Paper: Where paper products are used, recycle as part of construction waste management recycling program, or return to material’s manufacturer for use by manufacturer or supplier.
    - e. Sealants, Paint, Primers, Adhesives, and Coating Containers: Return to supplier or manufacturer for reuse where such program is available.
  2. Purchase materials in bulk where possible. Take measures to avoid individual packaging for volume purchases.

- C. Labeling of plastics used for packaging: Plastic is marked by manufacturers for type of plastic material in accordance with the Society of Plastic resin codes. Maintain marks, or sort by manufacturer's resin codes for recycling purposes.
  - 1. Type 1: Polyethylene Terephthalate (PET, PETE).
  - 2. Type 2: High Density Polyethylene (HDPE).
  - 3. Type 3: Vinyl (Polyvinyl Chloride or PVC).
  - 4. Type 4: Low Density Polyethylene (LDPE).
  - 5. Type 5: Polypropylene (PP).
  - 6. Type 6: Polystyrene (PS).
  - 7. Type 7: Other. Use of this code indicates that the package in question is made with a resin other than the six listed above, or is made of more than one resin listed above, and used in a multi-layer combination.
- D. Deliveries: Schedule deliveries to avoid delays in installation of products, to minimize long-term storage, to prevent overcrowding of construction spaces and to limit potential damage to stored materials. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
  - 1. Contractor is responsible to ensure that delivery trucks are unloaded quickly to prevent encumbering loading facilities for extended periods of time.
  - 2. Schedule deliveries with Owner when unloading of materials which may interfere with normal business of Owner.
  - 3. Coordinate with Owner deliveries which require heavy equipment rigging or crane services.
- E. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- F. Provide equipment and personnel to handle and store products by methods to prevent soiling, disfigurement, or damage.

#### 1.7 PRODUCT STORAGE AND PROTECTION REQUIREMENTS

- A. Store and protect products in accordance with manufacturer's instructions and as specified in individual specification sections.
  - 1. Provide all necessary equipment and personnel to store products by methods to prevent soiling, disfigurement and damage.
  - 2. Avoid excessive material handling and potential product damage, locate storage areas convenient to work areas.
  - 3. Store and protect products with seals and labels intact and legible.
  - 4. Store and handle materials in a manner as to prevent loss from weather and other damage.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
  - 1. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

2. Store sensitive products in weather-tight, climate controlled enclosures.
  3. Prevent contact with material that may cause corrosion, discoloration, or staining.
- D. Store loose granular materials on solid flat surfaces in a well-drained area; prevent mixing with foreign matter.
- E. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- F. Store heavy materials in locations and in a manner that will not damage or disfigure existing, or new construction.

#### 1.8 MOLD PROTECTION OF PRODUCTS PRIOR TO INSTALLATION

- A. General:
1. Keep building materials dry to prevent the growth of mold and bacteria, including, but not limited to: gypsum wallboard, wood, porous insulation, paper, and fabric.
  2. Cover materials to prevent rain damage, and if resting on the ground, use spacers to allow air to circulate between the ground and the materials.
  3. Thoroughly dry all water damaged materials within 24 hours from time of moisture damage. Materials that have been damp or wet for more than 24 hours shall not be incorporated into the Work.
    - a. Review moisture damaged materials for signs of mold and mildew, including any with moisture stains, from the site and properly dispose of them.
    - b. Replace water damaged and moldy materials with new, undamaged materials.

#### **PART 2 - PRODUCTS** (Not Used)

#### **PART 3 - EXECUTION** (Not Used)

End of Section  
n

SECTION 01 70 00  
EXECUTION AND CLOSEOUT REQUIREMENTS

**PART 1 GENERAL**

**1.1      SECTION INCLUDES**

- A.    Examination, preparation, and general installation procedures.
- B.    Pre-installation meetings.
- C.    Cutting and patching, and alterations work.
- D.    Cleaning and protection.
- E.    Starting of systems and equipment.
- F.    Demonstration and instruction of Owner personnel.
- G.    Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

**1.2      PROJECT CONDITIONS**

- A.    Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B.    Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
  - 1.    Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
- C.    Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- D.    Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

**1.3      COORDINATION**

- A.    Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B.    Notify affected utility companies and comply with their requirements.
- C.    Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D.    Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel

with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

## **PART 2 PRODUCTS**

### **2.1 PATCHING MATERIALS**

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or mis fabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### **3.2 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.

- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### 3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of examination, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

### 3.4 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

### 3.5 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
  - 1. Verify that construction and utility arrangements are as indicated.
  - 2. Report discrepancies to Architect before disturbing existing installation.
  - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
  - 1. Remove items indicated on drawings.
  - 2. Relocate items indicated on drawings.
  - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new

- finish; remove existing finish if necessary, for successful application of new finish.
4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
  2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
  3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    - b. Provide temporary connections as required to maintain existing systems in service.
  4. Verify that abandoned services serve only abandoned facilities.
  5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
  2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
  3. Repair adjacent construction and finishes damaged during removal work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
  2. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.



2. If mechanical or electrical work is exposed accidentally during the work, recover and refinish to match.
- H. Clean existing systems and equipment.
- I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- J. Do not begin new construction in alterations areas before demolition is complete.
- K. Comply with all other applicable requirements of this section.

### 3.6 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
  1. Complete the work.
  2. Fit products together to integrate with other work.
  3. Provide openings for penetration of mechanical, electrical, and other services.
  4. Match work that has been cut to adjacent work.
  5. Repair areas adjacent to cuts to required condition.
  6. Repair new work damaged by subsequent work.
  7. Remove samples of installed work for testing when requested.
  8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- J. Patching:
  1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
  2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

### 3.7 PROGRESS CLEANING

- A. P.
- B. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- D. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- E. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

### 3.8 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

### 3.9 SYSTEM STARTUP

- A. Coordinate schedule for start-up of hangar doors.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from area drains, drainage systems, and Construction Area.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Provide copies to Architect and Owner.
- C. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- D. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

- E.     Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- F.     Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- G.     Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- H.     Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- I.     Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

END OF SECTION

Section 01 73 29  
CUTTING AND PATCHING

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Examination of existing conditions and acceptance of conditions.
- B. Administrative and procedural requirements for cutting and patching, including attendant excavation and backfill as required to complete the Work. General Contractor is responsible for all cutting and patching work, including but not limited to:
  - 1. Perform all cutting, altering, patching, and fitting of the Work (new and existing) as necessary for the Work and the existing improvements. Fully integrate with existing and new construction, all cutting, alterations and patching, to present the visual appearance of an entire, completed, and unified project.
    - a. Make all products and their components of the work fit together properly.
  - 2. Provide openings in elements of the Work, and the patching of same, for penetrations required by all trades, including but not limited to mechanical, plumbing, fire protection and electrical work.
    - a. Individual Subcontract trades are responsible for designated types of coring and drilling penetrations for piping, conduit, ducts and other penetrations as defined elsewhere in this Section.
  - 3. Uncover work to provide for installing, inspecting, or both, of ill-timed work;
  - 4. Remove and replace work not conforming to requirements of the Contract Documents or as otherwise determined to be defective.
  - 5. Patch and match all surfaces and products disturbed or damaged by the Work.
  - 6. Remove samples of installed work as specified for testing.

**1.2 RELATED REQUIREMENTS**

- A. Individual product specification Sections:
  - 1. Cutting and patching of not-exposed-to-view materials incidental to work of the Section.
  - 2. Core drilling (up to 8 inches in diameter) of interior building components, incidental to work of individual Sections.
  - 3. Cutting and Patching work of particular exposed-to-view finish work, performed by trades as specified herein.

**1.3 SUBMITTALS**

- A. Submit written proposals to perform cutting and patching. Describe cutting and patching procedures in advance of the time cutting and patching.
  - 1. Submit a written request when cutting work affects the following:
    - a. Structural integrity of any element in the project.
    - b. Integrity of weather-exposed or moisture-resistant elements.
    - c. Integrity of any fire suppression, fire alarm, or life safety system.

- d. Interruption or disturbance of utilities service. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
  - e. Efficiency, maintenance, or safety of operational elements and systems.
  - f. Aesthetic and visual qualities of exposed-to-view elements.
  - g. Efficiency, operational life, maintenance, or safety of operational elements.
  - h. Work of Owner or work performed under separate Contract.
  - i. Owners on-going operations or schedule.
2. Include in the request:
- a. Identification of project.
  - b. Location and description of affected work.
  - c. Necessity for cutting or alteration.
  - d. Alternatives to cutting and patching.
  - e. Scope of proposed cutting, patching, alteration or excavation.
  - f. List of tradespeople who will execute the work.
  - g. Description of products to be used.
  - h. Extent of refinishing and cleaning to be performed.
  - i. Effect on work by Owner or work performed under separate Contract, and written permission of affected party.
  - j. Date and time cutting and patching is scheduled to be executed.
  - k. Cost proposal, when applicable.
  - l. Written permission of separate contractor(s) whose work will be affected.
3. Review by the **Engineer** does not waive the **Engineer's** right to later require complete removal and replacement of Work found to be unsatisfactory.
4. Should conditions of Work or the schedule indicate a change of products from original installation, Contractor shall submit a request for substitution in accordance with Section 01 25 13 - PRODUCT SUBSTITUTION PROCEDURES.

#### 1.4 QUALITY ASSURANCE

- A. Only tradespersons skilled and experienced in cutting and patching shall perform such Work.
- B. In performing Work which requires cutting, fixing, or patching, Contractor and subcontractors shall utilize best efforts to protect and preserve the visual appearance and aesthetics of the Project to the reasonable satisfaction of both Owner and Architect.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. General performance requirements: Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- B. Structural elements: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load deflection ratio. Always obtain

written approval of the cutting and patching proposal before cutting and patching structural elements.

1. Do not drill through structural beams, slabs or columns. Core drilling through concrete block walls and stair platforms must be approved by the Architect.
2. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

C. Exposed elements:

1. Employ original installer of new construction to perform cutting and patching for weather exposed and moisture resistant elements, and sight exposed surfaces.
2. Employ an appropriate tradesperson to perform cutting and patching of existing weather-exposed and moisture-resistant construction, and exposed-to-view surfaces.

D. Penetrating elements: Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated materials in accordance to applicable codes and regulations, and compatible to surrounding construction.

E. Visual requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the **Engineer's** opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. General: Restore work with new products in accordance with the requirements of the Contract Documents.
2. Engage a firm recognized and experienced in the trade or specialty operation required to cut and patch the exposed-to-view work listed below.
3. Engage a firm recognized and experienced in firestopping for patching of existing firestopping, smoke seals and firesafing in compliance with applicable codes and as additionally required by authorities having jurisdiction. Comply with requirements of Section 07 84 00 - FIRESTOPPING.

F. Operational and safety limitations: Do not cut and patch operating elements or safety components in a manner that would reduce their capacity to perform as intended, or would increase maintenance, or decrease operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems.

## 1.6 WARRANTY

- A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void existing applicable warranties.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Patching Materials: Use patching materials identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent

possible. Use materials whose installed performance will equal or surpass that of the existing materials. Comply with specifications and standards for each specific product involved.

1. All materials used shall be approved by the **Engineer** for consistency with the existing surfaces.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Pre-bid examination: General Contractor and Subcontractors shall inform themselves of existing conditions before submitting bids, and are fully responsible for carrying out all work required to completely and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions which are inconsistent with those assumed, except for fully concealed conditions.
- B. Examination - General: Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, inspect conditions affecting performance of work. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
- C. Layout of cutting and patching in masonry construction. After General Contractor identifies areas requiring cutting and patching work. Masonry Filed-Sub-contractor shall indicate on walls the extent of masonry cutting work which will be performed by the General Contractor. Necessary patching of openings will be performed by the Masonry Filed-Sub-contractor.

#### 3.2 PREPARATION

- A. Protection:
  1. Provide temporary supports to ensure structural integrity of the Work.
  2. Protect existing construction during cutting and patching to prevent damage.
  3. Provide protection from adverse weather conditions.
  4. Provide protection from elements for areas which may be exposed by uncovering work.

#### 3.3 GENERAL CUTTING AND PATCHING

- A. Performance: Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive repairs, patching, and finishing.
- B. Execute cutting, fitting, and patching, including excavation and fill, to complete the work.
  1. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not permitted without prior approval, from Architect
  2. Fit products together, to integrate with other work.
  3. Uncover work to install ill-timed work.
  4. Remove and replace defective or non-conforming work.
  5. Remove samples of installed work for testing, when requested.



6. Provide openings in the work for penetration of mechanical and electrical work.
- C. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
  3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
  4. Comply with requirements of applicable Division 31 - EARTHWORK Sections where cutting and patching requires excavating and backfilling.
  5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

#### 3.4 FINISHING OF PATCHED AREAS:

- A. General: Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break; for assemblies, refinish entire unit.
1. Patching: Patch with durable seams that are as invisible as possible, showing no evidence of patching and refinishing. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction. Comply with specified tolerances.
    - a. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated materials in accordance to applicable codes and regulations, and compatible to surrounding construction.
    - b. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Provide vapor and air seal when penetrating existing vapor and air seals.
    - c. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
  2. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat. Extend re-painting to entire surface plane up to where plane changes direction.
  3. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

### 3.5 CORING AND DRILLING

- A. Coring and Drilling of holes incidental to work of individual sections shall be performed by the trade requiring the penetration, except as follows:
  - 1. Coring and Drilling of holes greater than 8 inches in diameter in concrete decks and slabs.
  - 2. Coring and drilling requiring patching of the following existing surfaces shall be performed by the General Contractor with patching performed by the appropriate trade or subcontractor.
  - 3. The General Contractor is responsible for performing core drilling in wall and roof surfaces leading to, or from, the outside of the Building.
  - 4. The General Contractor is responsible for coordination of all coring and drilling and resultant patches necessary for the completion of this Contract and for the quality and appearance of all patch Work in exposed-to-view finished materials.

### 3.6 CLEANING

- A. Cleaning patched areas: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty and similar items.

End of Section

SECTION 01 78 00  
CLOSEOUT SUBMITTALS

**PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

**1.2 RELATED REQUIREMENTS**

- A. Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS: Submittal's procedures, shop drawings, product data, and samples.
- B. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

**1.3 SUBMITTALS**

- A. Project Record Documents: Submit documents to **Engineer** with claim for final Application for Payment.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. **Engineer** will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with **Engineer** comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  1. Drawings.
  2. Addenda.
  3. Change Orders and other modifications to the Contract.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Record Drawings: Legibly mark each item to record actual construction including:
  1. Field changes of dimension and detail.
  2. Details not on original Contract drawings.
- F. Refer to **M-001 Section 001-1.42 "As Built Drawings"**
  1. Record Drawings shall be submitted to Owner in both AutoCAD2014 and paper formats.
  2. Record Drawings to include the Item 150 the Field Survey and Record Drawings.

### 3.2 OPERATION AND MAINTENANCE DATA

- A. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- B. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- C. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### 3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
  1. Product data, with catalog number, size, composition, and color and texture designations.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

#### 3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
  - 1. Description of unit or system, and component parts.
  - 2. Identify function, normal operating characteristics, and limiting conditions.
  - 3. Include performance curves, with engineering data and tests.
  - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Provide servicing and lubrication schedule, and list of lubricants required.
- D. Include manufacturer's printed operation and maintenance instructions.
- E. Include sequence of operation by controls manufacturer.
- F. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- G. Provide a checklist for monthly, quarterly, and annual maintenance of the Hangar doors.

#### 3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11-inch three D side ring binders with durable plastic covers; 2-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of **Engineer**, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20-pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

### 3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

Section 01 79 00  
DEMONSTRATION AND TRAINING

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Demonstrating equipment.
- B. Instruction and training of Owner's personnel.

**1.2 DEMONSTRATING EQUIPMENT**

- A. Demonstrate operation and maintenance of Products to Owner's personnel 2 weeks prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months from date of Substantial Completion.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals specified under Section 01 78 00 - CLOSEOUT SUBMITTALS when need for additional data becomes apparent during instruction.

**1.3 INSTRUCTION AND TRAINING OF OWNER'S PERSONNEL**

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
- B. For equipment requiring seasonal operation, perform instructions for other seasons within six months .
- C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- E. Provide sufficient formal instructional time for training Owner's personnel, so that the Owner's personnel will fully comprehend operation and maintenance of the facility's equipment and systems. Contractor's personnel designated for Owner training shall be competent and knowledgeable and have good communication skills.
  - 1. Training sessions shall be pre-arranged directly with the Owner.
    - a. Instructors shall arrive at pre-scheduled training sessions on-time and be fully prepared to teach using a preplanned training program.

- b. All instructors are subject to the Owner's approval. Replace unacceptable instructors and reschedule training as directed by the Owner at no increased cost to the Owner.
  - 2. Training shall include the following:
    - a. General overview of Record Documents:
      - 1) Record Drawings.
      - 2) Record Project Manual.
      - 3) Operation and Maintenance Manuals.
      - 4) Finishes.
      - 5) Warranty and maintenance agreements.
      - 6) Test reports and inspections.
    - b. HVAC systems and equipment.
    - c. Plumbing systems and equipment.
    - d. Electrical systems and equipment.
    - e. **Hangar Doors**
- F. Training Personnel:
- 1. Instructor Qualifications: A service representative, experienced in operation and maintenance procedures and training.
    - a. Designated personnel for Owner training shall be competent and knowledgeable and have good communication skills.
  - 2. Instructors shall arrive at scheduled training sessions on-time and be fully prepared to teach using a preplanned training program.
  - 3. All instructors are subject to the Owner's approval. Replace unacceptable instructors and reschedule training as directed by the Owner at no increase cost to the Owner.
- G. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
- 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria if Contractor is delegated design responsibility.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
    - h. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.



- d. Project record documents.
- e. Identification systems.
- f. Warranties and bonds.
- g. Maintenance service agreements and similar continuing commitments.
- 3. Emergencies: Include the following, as applicable:
  - a. Instructions on meaning of warnings, trouble indications, and error messages.
  - b. Instructions on stopping.
  - c. Shutdown instructions for each type of emergency.
  - d. Operating instructions for conditions outside of normal operating limits.
  - e. Sequences for electric or electronic systems.
  - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
  - a. Startup procedures.
  - b. Equipment or system break-in procedures.
  - c. Routine and normal operating instructions.
  - d. Regulation and control procedures.
  - e. Control sequences.
  - f. Safety procedures.
  - g. Instructions on stopping.
  - h. Normal shutdown instructions.
  - i. Operating procedures for emergencies.
  - j. Operating procedures for system, subsystem, or equipment failure.
  - k. Seasonal and weekend operating instructions.
  - l. Required sequences for electric or electronic systems.
  - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
  - a. Alignments.
  - b. Checking adjustments.
  - c. Noise and vibration adjustments.
  - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
  - a. Diagnostic instructions.
  - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
  - a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.
  - c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.

- g. Instruction on use of special tools.
- 8. Repairs: Include the following:
  - a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

**PART 2 - PRODUCTS** (Not Used)**PART 3 - EXECUTION** (Not Used)

End of Section

Section 03 0513  
CONCRETE SEALERS

**PART 1 - GENERAL**

## 1.1 SUMMARY

- A. Furnish and install concrete sealers/coatings on exposed-to-view concrete floors, where shown and as scheduled on the Drawings.

## 1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - CAST-IN-PLACE CONCRETE: Placing and finishing concrete slabs.

## 1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

## 1.1 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:
1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
    - a. Project Overview
    - b. Labor requirements
    - c. Operation Safety Items
    - d. Construction
    - e. Temporary Facilities and Controls
    - f. Project Closeout:
    - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

## 1.2 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.
    - a. Include certification of data indicating Volatile Organic Compound (VOC) content of all coatings.

2. Samples of each level of slip resistance, aggregate, and pattern available in the specified products from the proposed manufacturer.
3. Qualification Submittals.

### 1.3 QUALITY ASSURANCE

- A. Use an applicator approved by the manufacturer, experienced in the approved materials, and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. **Buy American Preference [ADD 03]**
  1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

### 1.4 ENVIRONMENTAL CONDITIONS

- A. Work shall be done only under optimum conditions as recommended by manufacturer. Surfaces over which sealer is to be applied shall be completely dry (minimum 30 days since concrete placement) and thoroughly clean. Maximum moisture content is 8 percent. Substrate and ambient temperature shall be between 60 and 90 degrees Fahrenheit (15 to 32 degrees Celsius).

### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
  1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
  2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
- B. Storage and Handling Requirements:
  1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
  2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

**PART 2 - PRODUCTS****2.1 MATERIALS**

- A. Transparent single component water and chloride-ion repellent penetrating sealer having a 40 percent solids, Alkyltrialkoxo Silane resin base, forming a permanent chemically bonded layer within the concrete.

~~4.~~ **[ADD 02]**

**1. Product Characteristics and Criteria:**

- a. **Solids and Active Ingredients: 40 percent by weight (Silane Content).**
- b. **Water Absorption, ASTM C642 (48 Hours): Maximum 0.35 percent.**
- a. **Scaling Resistance Rating, ASTM C672, non-air-entrained concrete, Minimum 50 cycles treated concrete: 0; no scaling**
- b. **Resistance to Chloride-Ion Penetration, AASHTO T259 and T260:**
  - 1) **Criteria of 1.5 at 1/2 inch (13 mm): Less than 0.52 lbs per cy (0.31 kg/m<sup>3</sup>).**
  - 2) **Criteria of 0.75 at 1 inch (25 mm): 0.00 lbs per cy (0.00 kg/m<sup>3</sup>).**
- c. **Water Weight Gain, NCHRP 244 Series II: Meets test criteria, with minimum 85 percent reduction.**
- a. **Absorbed Chloride, NCHRP 244 Series IV Southern Climate: Meets test criteria, with minimum 97.6 percent reduction.**
- b. **Water Repellent Performance: Complies with Alberta Transportation and Utilities Procedures Specification B388 for Type 1c.**
- c. **Penetration, average depth, depending upon substrate: 0.24 inch (6.1 mm).**
- d. **Density: Minimum 6.9 lbs per gallon.**
- e. **VOC Content, EPA Method 24: Less than 600 g/L.**

**PART 3 - EXECUTION****3.1 SURFACE PREPARATION**

- A. Upon acceptance of completed substrate surfaces, thoroughly remove all dust and debris by sweeping or vacuum cleaning.
- B. Remove laitance, curing sealers, and other foreign matter from concrete surfaces with necessary techniques such as shot blasting, Muriatic acid etching, surface freezing and power scarification.
- C. Surface preparation required if a curing compound has been applied to substrate surfaces.
1. Thoroughly etch concrete surfaces using well mixed solution consisting of two parts by volume water diluted with one part by volume 30 percent commercial grade hydrochloric acid at a rate of one quart per ten square feet. Apply evenly to thoroughly saturated areas and scrub into surfaces using stiff-bristled broom. Allow solution to activate undisturbed for not less than five minutes or for duration of boiling effect.

2. Thoroughly remove etching solution by washing down surfaces with clean water; flooded at least three separate times at a rate of two gallons per ten square feet; thoroughly remove all contaminants that may be engrained or latent in surfaces.
3. Perform a test application of a square foot in three locations, such as beneath casework. Allow to set for 72 hours, and test adhesion as recommended by the manufacturer.

### 3.2 APPLICATION

- A. Apply transparent water-repellent system to properly prepared surfaces indicated. Apply water repellent within time restrictions after surface preparation as recommended by manufacturer and as additionally specified herein.
  1. Apply water repellents as shipped by the manufacturer; do not dilute.
- B. Apply water-repellent by low pressure spray techniques recommended by manufacturer to achieve desired function and warrantable results. Apply water repellents evenly until surface is totally saturated. Coverage rates are dependent on surface material. Only one saturation coat is required
  1. Do not apply water repellents to surfaces below 40 degrees F (35 degrees C) or above 95 degrees F (4.4 degrees C) unless recommended by the manufacturer.
  2. Do not apply to wet substrate or substrate containing frozen water.
  3. Do not apply water repellents when rain is predicted within 48 hours or less than 5 days after surface has been wet.
  4. Do not apply water repellents in high or gusty winds.
- C. Apply water repellent material as demonstrated and approved at jobsite mock-up and not less than manufacturer's minimum recommended coverage rate.

End of Section

Section 05 4000  
COLD-FORMED METAL FRAMING

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Design, engineer, furnish and install metal framing and support system for the following applications:
  - 1. Load bearing formed steel stud interior framing at walls (Wall type A31) and ceilings at Toilet Rooms.
  - 2. Metal plate blocking in conjunction with framing of this Section 05 4000.
  - 3. Include all connections, bracing, bridging and accessories.
  - 4. Sill sealer beneath metal framing base track at concrete slabs.
- B. Furnish the following products to be installed under the designated Sections:
  - 1. Placement of anchors securing the work of this section: Section 03 3000 - CAST-IN-PLACE CONCRETE.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY: Wood blocking and curbing.
- B. Section 07 2100 - THERMAL INSULATION: Insulation within framing members.
- C. Section 07 9200 - JOINT SEALANTS.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. AISI S211 – North American Standard for Cold-Formed Steel Framing, Wall Stud Design.
  - 2. AISI S212 - North American Standard for Cold-Formed Steel Framing, Header Design.
  - 3. AISI S213 - North American Standard for Cold-Formed Steel Framing, Lateral Design.
  - 4. AISI S902-02, Stub-Column Test Method for Effective Area of Cold-Formed Steel Columns, American Iron and Steel Institute, Washington, DC.
  - 5. AISI S905-02, Test Methods for Mechanically Fastened Cold-Formed Steel Connections, American Iron and Steel Institute, Washington, DC.
  - 6. ANSI - Cold-Formed Steel Design Manual.
  - 7. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
  - 8. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

9. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
10. ASTM A645/A645M - Standard Specification for Pressure Vessel Plates, 5 % and 51 2 % Nickel Alloy Steels, Specially Heat Treated.
11. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
12. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
13. ASTM A792/A792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
14. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
15. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.
16. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members.
17. ASTM C1007 – Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
18. ASTM C1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
19. ASTM D520 – Standard Specification for Zinc Dust Pigment.
20. ASTM E488/E488M – Standard Test Methods for Strength of Anchors in Concrete Elements.
21. ASTM E1190 – Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members.
22. ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
23. ASTM G60 – Standard Practice for Conducting Cyclic Humidity Exposures.
24. ASTM G90 - Standard Practice for Performing Accelerated Outdoor Weathering of Materials Using Concentrated Natural Sunlight.
25. AWC: Specifications Guide for Cold Formed Steel Structural Members.
26. AWS A 2.0 - Standard Welding Symbols.
27. AWS D 1.3 - Light Steel Welding Code.
28. SSPC Steel Structures Painting Manual.
29. SSMA: Cold Formed Steel Details.

B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:

1. AISI S100 – North American Specification for the Design of Cold-Formed Steel Structural Members.
2. ANSI S200 – North American Standard for Cold-Formed Steel Framing.
3. ANSI S202 – Code of Practice for Cold-Formed Structural Framing.



4. ANSI S220 – North American Standards for Cold-Formed Steel Framing – Non-Structural Members.
5. ASCE 7 (Including Supplements) - Minimum Design Loads for Buildings and Other Structures.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

##### A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

##### B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

##### C. Sequencing:

1. Field Measurements:
  - a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
  - b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

#### 1.5 SUBMITTALS

##### A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and limitations on standard framing members and other products furnished hereunder.
2. Engineering Calculations: Provide calculations for loadings and stresses for all framing under the Professional Structural Engineer's seal. Show how design load requirements and other performance requirements have been satisfied.
3. Manufacturer's installation instructions: Indicate special procedures, and conditions requiring special attention.

4. Shop drawings:
  - a. Large scale design details showing component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and accessories or items required of related work.
    - 1) Indicate all products which interface with framing. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
    - 2) Indicate resilient hangers, and imposed loading. Coordinate resilient hanger with framing design and imposed loading conditions.
  - b. Show profile, size and location of custom punches for MEP distribution.
  - c. Detail all conditions which deviate from Contract Documents.
  - d. Describe method for securing studs to tracks and for bolted and welded framing connections.
  - e. Show loads applied to framing, indicate differential of movement.
  - f. Provide elevations showing framing layout. Coordinate framing locations with cladding systems.
5. Prior to prefabrication of framing, submit fabrication and erection drawings for approval. All calculations and details are to be submitted for all members and connections.
6. Qualification Submittals:
  - B. Submit prior to request for Certificate of Occupancy, to both Architect and local Building Official having jurisdiction, under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS, the following
    1. All certifications, reports and programs required by Chapter 17 of the MAINE UNIFORM BUILDING AND ENERGY CODE for work engineered by Contractor's Profession Engineer under the requirements of this Section.

## 1.6 QUALITY ASSURANCE

- A. General:
  1. Calculate structural properties of framing members in accordance with AWCI, MF/SLA and AWS D 1.3 requirements.
  2. Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. Buy American Preference [ADD 03]
  1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

**B.C. Qualifications:**

1. Manufacturers: Company specializing in manufacturing the products specified in this section with minimum 3 years documented experience.
2. Installer/Applicator: Company with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.
3. Welders Certificates: Utilize only qualified welders employed on the Work. Submit verification that Welder's are AWS D1.1 and D1.4 qualified within the previous 12 months.
4. Professional Engineer Qualifications: Design structural elements under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of Maine

**1.7 DELIVERY, STORAGE AND HANDLING****A. Delivery and Acceptance Requirements:**

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.

**B. Storage and Handling Requirements:**

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

**C. Packaging Waste Management: Comply with packaging requirements specified under Section 01 6000 - PRODUCT REQUIREMENTS.**

1. Shipping materials: Manufacturer shall utilize to the greatest extent possible packaging materials which are biodegradable and recyclable.
2. Jobsite packaging waste management: Recycle packaging materials coordinated with general construction waste management specified under Section 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

**PART 2 - PRODUCTS****2.1 [ADD 02]****2.2 PERFORMANCE/DESIGN CRITERIA**

- A. Structural performance: Design, engineer and provide a complete metal framing and support system having deflection limits as specified herein under the full inward and outward lateral load prescribed by applicable codes for this project location. Deflection and structural calculations shall not include any structural benefit from the veneer(s); metal framing alone shall carry the loads. Where a member supports more than one finish, the most restrictive deflection shall govern.

1. Design wall system to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
2. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings. Comply with the following cold-formed steel framing design standards:
  - a. Wall Studs: AISI S211.
  - b. Headers: AISI S212.
  - c. Lateral Design: AISI S213.
3. Deflection limits
  - a. Exterior Wall Framing: Horizontal deflection of  $1/360$  of the wall height except as specified otherwise herein below, or as indicated otherwise on Structural Drawings.
    - 1) Masonry veneer:  $L/600$  where L is the length of the steel member. Design wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
    - 2) Terra cotta rain screen systems:  $L/360$  where L is the length of the steel member, with maximum movement not greater than  $5/8$  inch.
    - 3) Exterior insulation and finish system (EIFS):  $L/360$  where L is the length of the steel member.
  - b. Interior load-bearing wall framing: Horizontal deflection of  $1/360$  of the wall height.
  - c. Floor joist framing: Vertical deflection of  $1/480$  of the span.

B. Design Loading: Refer to Structural Drawings.

1. **[ADD 02]**

C. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

D. Welding: Employ experienced welders who are certified in compliance with AWS Standard Qualification Procedures.

E. Engineering: Provide the services of a Professional Engineer, registered in the State of Maine to design and certify that the work of this section meets or exceeds the performance requirements specified in this section and as required by MAINE UNIFORM BUILDING AND ENERGY CODE.

## 2.3 MATERIALS

A. Recycled content of Steel: Use maximum available percentage of recycled steel. Steel framing products incorporated into the work shall contain not less than 30 percent of recycled steel.

B. Steel Sheet: ASTM A1003/A1003M and ASTM A653/A 653M, structural steel, of grade as follows and having G90 (Z275) galvanized coating:

1. Framing
  - a. Grade: As required by structural performance but in no case less than 18 gauge.

- C. Steel Sheet for Connectors: ASTM A1011/A1101M, hot rolled or ASTM A1008/A1008M, cold rolled; cleaned, pretreated, and primed with manufacturer's baked-on, lead- and chromate-free, rust-inhibitive primer complying with performance requirements in FS TT-P-664.
  - 1. Grade: As required by structural performance but in no case less than 18 gauge.
    - a. Coating: G90 (Z275) galvanized coating.

## 2.4 FRAMING MEMBERS

- A. Studs: Manufacturer's standard C-shaped steel studs complying with ASTM C955. Formed of ASTM A653/653M steel, G90 (Z275) galvanized, channel shaped with lipped flanges, punched web, size as shown on Drawings, thickness and grade as required by structural design calculations but in no case less than 18 gauge, 0.0428 inch (1.09 mm).
- B. Z-shape span connectors: Manufacturer's standard and custom formed Z-shape framing connectors, complying with ASTM C955. Formed of ASTM A653/653M steel, G90 (Z275) galvanized, having opposing lipped flanges. Sizes as shown on drawings, thickness and grade as required by structural design calculations but in no case less than 14 gauge, 0.0677 inch (1.72 mm).
- C. Tracks: Manufacturer's standard U-shaped steel track complying with ASTM C955. Formed of ASTM A653/653M steel, same designation, coating, and thickness as studs except as otherwise noted, channel shaped, solid web, depth compatible with studs, size, thickness and grade as required by structural design calculations but in no case less than 18 gauge, 0.0428 inch (1.09 mm).
- D. Drift and Vertical Deflection Clips: Manufacturer's standard bypass and head clips as required, capable of isolating wall stud from upward and downward vertical displacement of primary structure using mechanical fasteners.
  - 1. Provide clips with step bushings. Mechanical attachment to structure and screw attachment to stud web using step-bushings to permit frictionless vertical movement. 68 mils (1.72 mm) minimum thickness. Size of clips shall be as required by structural design calculations performed by clip manufacturer, and reviewed by specified Professional Licensed Engineer responsible for stamped shop drawings. Clips shall be fabricated/designed for the following conditions:
    - a. Exterior head of wall.
    - b. Exterior head of wall pre-assembled with track.
    - c. By-pass structural pour stop at floor slab.
    - d. By-pass floor slab or structure.
    - e. By-pass structure.

## 2.5 ANCHORS AND FASTENERS

- A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.
- B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.

- C. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- D. Welding Electrodes: Comply with AWS standards.

## 2.6 MISCELLANEOUS MATERIALS

- A. Sill sealer: Compressible polystyrene strip, minimum ¼ inch thick by width of framing. **[ADD-02]**
  - 1. **Properties:**
    - a. **Compression Set (%). Tested per ASTM D3575, Suffix B: 29.4 percent.**
    - b. **Tear Resistance, tested per ASTM D3575, Suffix T:**
      - 1) **MD: 8.3 pounds per square foot.**
      - 2) **CMD: 11.5 pounds per square foot.**
    - c. **Density, tested per ASTM D3575: 1.2 pounds per square foot.**
    - d. **Water absorption, tested per ASTM D3575, Suffix L: less than 0.1 / square foot / 24 hours.:**
    - e. **Water vapor transmission rate, tested per ASTM F1249 (Method 3005 FED STD 101): 0.089 GM/100 in²/24 hours.**
    - f. **Thermal Resistance (R-value at initial thickness), tested per ASTM C518: 0.68 hr-ft²-of/BTU.**
- B. Liquid zinc coating, for touch-up of welds, scratches, and abrasions in galvanized steel: Low VOC organic zinc-rich coating containing 92% metallic zinc, by weight in the dried film (ASTM D520, Type III) and conforming to SSPC Paint 20, Type II, Level 1. Liquid zinc coating shall be recognized under the Component Program of Underwriter's Laboratories, Inc. as an equivalent to hot-dip galvanizing; conforming to MIL-P-21035B and SSPC Paint 29, Type II, Level I, for repair of hot-dip galvanizing and meeting the requirements for Zinc-Rich Paints.
  - 1. VOC limit: not more than 250 g/L.

## 2.7 PRE-ERECTION FABRICATION

- A. Framing components may be pre-assembled into panels prior to erecting. Fabricate panels square with framing members fitted, reinforced, and braced to suit design requirements; attach components in a manner to prevent racking.
- B. Fit and assemble in largest practical sections for delivery to site, ready for installation.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Inspect previous work, related work, and conditions under which this work is to be performed and notify Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work.

- B. Beginning of installation means acceptance of existing substrates, previous work and conditions.

### 3.2 ERECTION - GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to ASTM C1007, unless more stringent requirements are indicated.
- C. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
  - 1. Cut framing members by sawing or shearing; do not torch cut.
  - 2. Fasten cold-formed metal framing members by welding or screw fastening, as indicated on approved Shop Drawings, or where not indicated, as standard with fabricator. Wire tying or clip fasteners of framing members is not permitted.
    - a. Where welding is indicated or required on approved Shop Drawings: Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to approved Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
- D. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.
- E. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- G. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- H. Accurately align and attach runners in strict compliance with manufacturer's recommendations and approved shop drawings. Allow for main structure deflection at top runner to avoid transferring load stud system.
  - 1. Frame wall openings with additional framing members at perimeter of openings as needed.
  - 2. Align holes in framing members to facilitate electrical conduit and piping work.
  - 3. Provide all needed connections and accessories provide a complete structural system.
  - 4. Provide all needed members for proper fastening interior gypsum wallboard.
- I. Bracing: Provide continuous 1-1/2 inch cold-rolled channel horizontal bracing within 10 to 12 inches of tops of stud. Connect bracing to each stud as indicated on

approved shop drawings. Provide additional bridging and bracing as recommended by manufacturer, as necessary, and as indicated on approved shop drawings. Provide kick-back bracing perpendicular to plane of framing system and securely anchored to building structure needed to create a complete structural system meeting specified performance requirements.

- J. Touch-up damaged metal coatings and cut ends, with specified liquid zinc coating.

### 3.3 ERECTION OF STUDDING

- A. Install components in accordance with manufacturer's instructions and in accordance with approved shop drawings, referenced standards and codes.
- B. Align floor and ceiling tracks; locate to wall and partition layout. Secure in place as indicated on approved engineered shop drawings, at maximum 24 inches on center.
  - 1. Install Sill sealer as recommended by manufacturer beneath floor track with corrugated side facing down towards concrete slab, and ends butted.
- C. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom tracks. Space studs as indicated on approved shop drawings; not more than 2 inches from abutting walls and at each side of openings.
- D. Construct corners using minimum three studs. Double stud wall openings, door and window jambs.
- E. Erect load bearing studs one piece full length. Splicing of studs is not permitted.
- F. Erect load bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.
- G. Install intermediate studs above and below openings to align with wall stud spacing.
- H. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing. Install double deep leg deflection track or specified clip system for vertical deflection of primary building structure.
- I. Attach cross studs, furring channels to studs for attachment of fixtures anchored to walls.
- J. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- K. Touch-up field welds and damaged galvanized and primed surfaces with primer.

### 3.4 ERECTION (WIND LOAD ONLY)

- A. Handling and lifting of prefabricated panels shall be done in a manner as to not cause distortion in any member.
- B. Tracks shall be securely anchored to the supporting structure as shown on the plans.
- C. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element or they shall be butt-welded spliced together.



- D. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
- E. Jack studs or cripples shall be installed below window sills, above window and door heads, at first standing stair rails, and elsewhere to furnish support and shall be securely attached to supporting members.
- F. Wall stud bridging shall be attached in a manner to prevent stud rotation. Bridging rows shall be spaced according to the following schedule. Wall up to 10 foot height; one row at mid-height. Wall exceeding 10 feet in height; bridging rows spaced not to exceed 5 feet on-center.

### 3.5 ERECTION (AXIAL LOAD-BEARING)

- A. Handling and lifting of prefabricated frame panels shall be done in a manner as to not cause distortion in any members.
- B. Tracks shall be securely anchored to the supporting structure as shown on the plans, and as designed and detailed on approved shop drawings.
- C. Complete uniform and level bearing support shall be provided for the bottom track.
- D. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element or they shall be butt welded or spliced together,
- E. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
- F. Framed wall openings shall include headers and supporting studs as shown on the plans, and as designed and detailed on approved shop drawings.
- G. Jack studs shall be installed below window sills, above window and door heads, at free standing stair rails and elsewhere to furnish support and shall be securely attached to supporting members.
- H. Temporary bracing shall be provided until erection is completed.
- I. Wall stud bridging shall be installed in a manner to provide resistance to both minor axis bending and rotation. Bridging rows shall be equally spaced not to exceed 4 feet on-center.
- J. Provide stud walls at locations indicated on plans as "shear walls" for frame stability and lateral load resistance. Such stud walls shall be braced as indicated on plans and specifications.
- K. Splices in axially loaded studs are not be permitted.
- L. Provide insulation equal to that specified elsewhere in all doubled jamb studs and double header member which will not be accessible to the insulation contractor.

### 3.6 TOLERANCES

- A. The following allowable installed tolerances are allowable variations from locations and dimensions indicated by the Contract Documents and shall not be added to allowable tolerances indicated for other work.
  - 1. Allowable variation from true plumb, Level, and Line: 1/8 inch in 20 feet.

2. Allowable variation from true wall thickness: 1/8 inch in 20 feet.
3. Allowable variation from true plane of adjacent surfaces: 1/8 inch in 10 feet.

End of Section

Section 06 1000  
ROUGH CARPENTRY

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. General: The work of this Section consists of rough carpentry as specified herein, where shown on the Drawings, and as additionally required for a complete and proper installation.
- B. Furnish and install the following:
  - 1. Fire retardant treated plywood backer panels between girts for mounting of electrical panelboards, telephone/data backboards, HV equipment, bracket mounted fire extinguishers, light fixtures, and other equipment.
  - 2. Fire retardant treated exterior grade plywood at indicated ceiling area above restroom.
  - 3. Various wood blockings, edgings, nailers, curbs, cants, grounds, furring, sheathing, framing members as required for receipt of various finishes, plumbing fixtures, toilet accessories, and surfacing materials.
  - 4. Rough installation hardware, including bolts, screws, spikes, nails, clips, and connection assemblies, as needed for installation of the rough carpentry work.
- C. Coordinate work of this Section with the work of the various trades responsible for applying finish materials and other items to rough carpentry work. Furnish and install furring, blocking, and shims, and other usual items of normal rough carpentry work as required by the various trades for the proper completion of the project.
  - 1. The applicable requirements specified in Part 1 - GENERAL and Part 3 - EXECUTION of the individual specification sections furnishing materials to be installed under this Section, shall be included in and made a part of this Section.
- D. No attempt is made in this Section to list all elements of rough carpentry required on this project or to describe how each element will be installed. It is the responsibility of the Contractor to determine for itself the scope and nature of the work required for a complete installation from the information provided herein and in the Drawings.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Furnishing hollow metal framing.
- B. Section 09 2900 - GYPSUM BOARD: Wall board construction work, having taped and compounded joint finish.
- C. Section 09 91 00 - PAINTING: Applied primer and finish coatings to exposed to view rough carpentry work.
- D. Division 26 - ELECTRICAL: Providing and mounting electrical panels and equipment.

### 1.3 REFERENCES

- A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. APA - applicable grades and specifications.
  2. APA PRB-108 Performance Standards and Policies for Structural-Use Panels.
  3. ASTM D 3201 - Test Method for Hygroscopic Properties of Fire-Retardant Wood.
  4. AWPA Standard UCFA – Fire Protection as Required by Codes Above Ground Interior Construction.
  5. AWPA Standard UCFB – Fire Protection as Required by Codes Above Ground Exterior Construction.
  6. AWPA Standards and references for preservative treated wood including Standards UC1, UC2, UC3A, UC3B, UC4A, UC4B, UC4C, and P5
  7. AWPA M4 – Care Of Preservative Treated Wood Products.
  8. MIL L-1914OE - Lumber and Plywood, Fire Retardant Treated.
  9. NER-643: ACQ Preserve® and ACQ Preserve Plus® Wood Preservative Treatment, ICBO Evaluation Service.
  10. SPIB Grading Rules, current edition.
  11. UL - Building Materials Directory
  12. US. Department of Commerce Voluntary Product Standard PS1 for Construction and Industrial Plywood.
  13. US. Department of Commerce Voluntary Product Standard PS2 for Wood-Based Structural-Use Panels.
  14. US. Department of Commerce Voluntary Product Standard PS-20 - American Softwood Lumber Standard.
  15. U.S. Department of Commerce Simplified Practice Recommendation R-16, for sizes and use classifications of lumber
  16. American Lumber Standards Committee, National Lumber Grades Authority for Canadian Lumber, and applicable grading rules and standards of the various lumber associations whose species are being used for grades specified.
- B. Definitions:
1. ACQ: Ammoniacal Copper Quaternary Compound preservative treatment.
  2. MCA: Micronized Copper Azole Compound preservative treatment.

### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
1. Coordinate the work of this Section with the respective trades responsible for locating anchorages installed into blocking which is provided under this Section.
  2. Coordinate work of this Section with the work of the various trades responsible for applying finish materials and other items to rough carpentry

work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for products specified herein.
  2. Certifications:
    - a. Written certification from the respective treatment plants indicating types of fire-retardant treatment used, treatments method, applications instructions, and conformance to the requirements specified herein.
      - 1) Provide certification that fire retardant treatment materials do not contain ammonium phosphate.
      - 2) Provide report from ICC Evaluation Service on fire retardant treated wood flame spreading, strength, corrosion and hygroscopic properties.
      - 3) Provide report from ICC Evaluation Service on pressure preservative treated wood strength, corrosion, anti-fungi, and anti-insect properties.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
1. All lumber shall:
    - a. Be new, dressed four sides (S4S), clear and free from warping and other defects.
    - b. Have a moisture content not exceeding 19 percent when delivered to the project.

- c. Be in accordance with the grading rules of the lumber manufacturer's association under whose jurisdiction the lumber is produced and bear the mark of grade and mill identification.

**B. Buy American Preference [ADD 03]**

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

**B.C. Certifications:**

1. Plywood: Conform to the requirements of Product Standard PS-1, and bear applicable APA grade trademarks.
  - a. Plywood for electrical boards treated for retardance, meet Class I or a flame spread rating of 25 or less and bear U.L. label "Classified FRS".

## **PART 2 - PRODUCTS**

### **2.1 BOARD AND SHEET MATERIALS**

- A. Lumber for blocking, nailers and curbs as indicated or required: Hem-Fir, Douglas Fir, Eastern Spruce, Eastern Hemlock, or Southern Pine, surfaced dried stud or utility grade. Wood members shall be of sizes indicated on the Drawings or of the same size as the members being braced.
  1. 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.
  2. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.
- B. Plywood and sheet products:
  1. For indicated ceiling area above restroom: APA graded B-C, Exposure 1, EXT, Group 1 species, 5 ply/5 layer plywood, touch-sanded, fire-retardant treated, 3/4 inch thick.
  2. For electric panel board mountings and similar uses: APA graded B-D INT, Group 2 species, touch-sanded, fire-retardant treated, 3/4 inch thick, except as otherwise indicated on the Drawings.

### **2.2 WOOD TREATMENTS**

- A. Treated wood products shall be produced by a single treatment plant, fully licensed by the chemical manufacturers, and conforming to the requirements specified herein.
  1. Toxicity and Environmental Quality:
    - a. Products containing chromium or arsenic will not be permitted.

- b. Fire-retardant-treated wood products shall be free of halogens, sulfates, ammonium phosphate and formaldehyde.
2. Dye wood or otherwise color code all treated wood at treatment plant to clearly distinguish the different treatments in the field.
3. Kiln dry all treated lumber and plywood to the following maximum moisture content after treatment.
  - a. Lumber: 19 percent.
  - b. Plywood 15 percent.
  - c. Discard pieces with defects which might impair quality of work.
4. Quality marks: Each piece of lumber and plywood shall be permanently affixed with a quality mark, containing the following information:
  - a. Identification of the inspection agency.
  - b. Standard to which material was treated.
  - c. Identification of the treating plant.
  - d. Fire retardant treated wood shall include: stamp signifying a FR-S rating
  - e. Preservative treated wood shall include: Retention and end use for which product is suitable.

B. Fire retardant treated wood. Designated as "FRTW"

1. Chemical Manufacturer: Subject to compliance with the requirements specified herein. **[ADD 02]**
2. Fire retardant treated wood shall comply with the following requirements:
  - a. All fire-retardant lumber and plywood must have an Underwriters Laboratories stamp signifying a FR-S rating certifying a 25 or less flame spread and smoke developed value, when tested in accordance to ASTM E84, or UBC Standard No. 42-1.
  - b. Corrosion rates: Less than one mil per year for carbon steel, galvanized steel, aluminum, copper and red brass in contact with the fire retardant treated wood when tested in accordance with Federal Specification MIL-L-19140E Paragraph 4.6.5.2.
  - c. The fire retardant treated wood must have an equilibrium moisture content of not more than 25 percent when tested in accordance with ASTM D3201 procedures at 95 percent relative humidity and 80 degrees Fahrenheit.
  - d. Fire retardant chemical: Registered for use as a wood preservative by the U.S. Environmental Protection Agency.
  - e. Testing: Fire performance and strength properties for both lumber and plywood, of the fire retardant treated wood shall be recognized by issuance of a ICC Evaluation Service Report. Fire retardant chemical must not damage the middle lammella of the wood structure when exposed to 170 degrees Fahrenheit and 90 percent relative humidity for 23 days.

C. Pressure preservative treated wood. Designated as "PT"

1. Pressure treatment of wood products shall conform to the requirements of AWPA Standards U1 and T1.
  - a. Fixation of Chemical: Treated wood shall not be shipped from treatment plant until fixation of the preservative has occurred in the wood.

2. Retention of preservatives: Minimum Retention values pounds per cubic foot (pcf) shall be as prescribed in AWPA Standard U1 for the following Use Categories, (material conforming to a higher AWPA Use Category may be used).
  - a. UC1: Interior construction - above ground, protected conditions, includes but is not limited to: interior stud framing and baseboards
  - b. UC2: Interior construction - above ground, damp conditions, includes but is not limited to: damp locations, wood in contact with masonry and concrete, interior sills, bottom plates, basement framing, bathrooms, and subflooring, nailers/blocking in contact with slabs on grade.
  - c. UC3A: Exterior construction - above ground 'protected', coated and with rapid water runoff, includes but is not limited to: wood blocking at roofing, protected wood fascia and trim.
3. Pressure preservative treatment products include the following **types**:  
**[ADD 02]**
  - a. Ammoniacal Copper Quaternary Compound (ACQ) Treatment: arsenic-free and chromium-free chemical "ACQ Preservative" in compliance with AWPA Standards. Apply the preservative in a closed cylinder by pressure process in accordance with AWPA Standard C15.
    - 1) **[ADD 02]**
  - b. Micronized Copper Wood Preservative (MCA, MCA-C) Treatment: arsenic-free and chromium-free chemical, waterborne micronized copper azole or preservative in compliance with AWPA Standards,
    - 1) **[ADD 02]**

### 2.3 ACCESSORIES

- A. Adhesives:
  1. General: Provide adhesives approved which are Low-VOC or non-VOC, non-flammable, water-proof after cured, odor free, .
  2. Adhesive for lamination and fabrication of wood and plywood items: Exterior adhesives containing no urea formaldehydes, having a VOC limit of 70 g/L.
- B. Nails (interior and exterior): Galvanized common nails, of size and type to suit application and as required by state and local building codes.
- C. Screws:
  1. Screws for interior applications: Flat head electroplated-galvanized wood screws of the appropriate sizes.
  2. Screws for exterior applications:
    - a. For general application : Flat head hard aluminum, or stainless steel, wood screws, of the appropriate sizes.
- D. Anchor bolts, expansion bolts and lag screws: Hot-dipped galvanized steel, of the following types:
  1. For lumber having actual thickness of 1-1/2 inches or greater to masonry and concrete: Anchor bolts or expansion bolts, as most applicable for the specific receiving surface material, 3/8-inch minimum diameter, spaced as shown on drawings, and staggered as far as practicable. Countersink all bolt heads, and provide head washers of matching material.



2. For lumber having actual thickness of greater than 7/8-inch but less than 1-1/2 inches to masonry and concrete: Anchor bolts or expansion bolts, as most applicable for the specific receiving surface material, at least 1/4-inch diameter of the most appropriate lengths for the specific application, spaced as shown, and staggered as far as practicable. Countersink all bolt heads, and provide head washers of matching material.
3. For lumber having actual thickness of 7/8-inch and less: Anchor bolts or expansion bolts, at least 1/4-inch in diameter; or screws, of the most appropriate sizes; in lengths most suitable for the specific application, countersunk, spaced, and staggered.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. All materials shall be inspected before use, with all checked, split and otherwise deficient stock rejected, or used only for miscellaneous blocking, furring or other incidental use. The Contractor shall be responsible for replacing all lumber which, due to warpage, twist, splitting, or checking, results in unsatisfactory work. Such replacement shall be required at any time, whether before or after application of finish material under other Sections.

#### **3.2 INSTALLATION - GENERAL**

- A. Closely coordinate the installation of the rough carpentry work with the work of other trades responsible for the installation of interfacing or overlaying materials, so as not to delay the work of the related trades.
- B. Erect all rough carpentry work plumb, level, and true with tight, close fitting joints, securely attached and braced to surrounding construction, all in a first class workmanlike manner. Counterbore for bolt heads, nuts, and washers where required to avoid interference with other materials. Bear complete responsibility for structural integrity, connections, and anchorage of all rough carpentry work.
  1. Bolt Fastening: Pre-drill holes 1/6 inch larger in diameter than bolt size, perpendicular to wood being bolted.
  2. Screw Fastening: Pre-drill holes having same diameter as root diameter (minor diameter).
  3. Nail Fastening: Nail tight without splitting wood, pre-bore as required. Set common nails flush with surface; Counter sink finish nails. Remove split wood members and replace.
- C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- D. Use as long lengths as practicable for wood nailers, blockings, and curbs, to minimize number of joints, and attach the members with the types, and spacing, of fasteners specified herein.
- E. Install blocking, grounds and furring, as required for proper attachment of the work of other trades, in accordance with the requirements provided by the respective related trades.
  1. Spacing for furring and strapping shall not exceed 16 inches on center.

- F. Field cuts of fire retardant treated lumber: Do not rip or mill fire retardant treated lumber. Only end cuts, drilling holes and joining cuts are permitted.
- G. Install concealed from view plywood with specified fasteners spaced not more than 10 inches on centers.
- H. Install fire-treated plywood backer boards with counter-sunk galvanized fasteners, of specified sizes, spaced not more than 12 inches on centers.

### 3.3 INSTALLATION – EQUIPMENT BACKBOARDS

- A. Provide panel mounting backboards for HVAC, Fire Prevention, Electrical and telephone/data equipment. Fabricate panels using fire-retardant treated 3/4 inch thick panels mounted to fire-retardant treated 2 by 4's, between metal girts. Provide a nominal space of 3-1/2 inches behind panels to permit wiring.

### 3.4 CLEANING

- A. Daily clean work areas by sweeping and disposing of scraps and sawdust.

End of Section

Section 07 21 00  
THERMAL INSULATION

**PART 1 – GENERAL****1.1 SUMMARY**

- A. The work of this Section consists of building insulation, where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following scope.
- B. Furnish and install the following:
  - 1. Thermal batt insulation between wall and ceiling framing.
  - 2. Under slab rigid insulation.
  - 3. Foil-faced rigid insulation.
  - 4. Accessories related to the installation of insulation.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY: Wood blocking, nailers.
- B. Section 07 2600 - VAPOR RETARDERS:
  - 1. Vapor barrier, seam tape, pipe boots, detail strip for installation under concrete slabs.
- C. Section 09 2900 - GYPSUM BOARD: Installation of wall board over insulation in Z-channel furring system.
- D. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Ductwork and piping insulation.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ASTM C203 - Breaking Load and Flexural Properties of Block Type Thermal Insulation.
  - 2. ASTM C518 - Thermal Transmission Properties by Means of the Heat Flow Meter.
  - 3. ASTM C553 - Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
  - 4. ASTM C578 - Preformed Cellular Polystyrene Thermal Insulation.
  - 5. ASTM C612 - Mineral Fiber Block and Board Thermal Insulation.
  - 6. ASTM C665 - Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

7. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
8. ASTM D1621 - Compressive Properties of Rigid Cellular Plastics.
9. ASTM E136 - Behavior of Materials in a Vertical Tube Furnace at 750°C.
10. ASTM E84 - Surface Burning Characteristics of Building Materials.
11. ASTM E96 - Water Vapor Transmission of Materials.
12. All applicable federal, state and municipal codes, laws and regulations for thermal insulation.

B. Definitions:

1. "R-Value": as referred to herein refers to the thermal resistance of the insulation alone and does not allow consideration of air spaces or other factors.
2. "HFC": refers to regulated (prohibited) Hydrofluorocarbon organic compounds which are designated as having high Global Warming Potential (GWP).

#### 1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

#### 1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 30 00 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.

## 1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. **Buy American Preference [ADD 03]**
  - 1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
  - 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
  - 2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Storage and Handling Requirements:
  - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
    - a. Rigid board insulation materials are combustible and may constitute a fire hazard, do not expose insulation materials to open flames or other ignition sources, comply fully with manufacturer's recommendations and the requirements of local authorities having jurisdiction, for delivery, handling, storage and installation.
  - 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
- C. Damaged material: Remove any damaged or contaminated materials from job site immediately, including materials in packages containing water marks, or show evidence of mold.

## PART 2 - PRODUCTS

### 2.1 [ADD 02]

### 2.2 EXTRUDED POLYSTYRENE INSULATION (XPS)

- A. Rigid Extruded Polystyrene Insulation (XPS) Closed Cell Foam Board:
  - 1. Minimum R-value: 5 °F ft<sup>2</sup> h/Btu per inch thickness.
  - 2. Regulatory Requirement: Pursuant to State of Maine Regulations, rigid insulation boards used for this project are prohibited from having HFC blowing agents used in manufacture of rigid extruded insulation.

3. Under-slab and foundation insulation: Closed cell extruded polystyrene foam board (XPS), square edge, conforming to ASTM C578, Type IV, with a compressive strength of 25 pounds per square inch when tested in accordance with ASTM D1621.
  - a. Panel size: 48 by 96 inches beneath slab.
  - b. Thickness: 3 inches.

## 2.3 MINERAL WOOL INSULATION

- A. Wall insulation for between framing: Semi-rigid mineral wool insulation for exterior wall cavities: mineral wool fiber insulation board, conforming to ASTM C612, Type IVB having a nominal density of 4.4 pounds per cubic foot.
  1. Non-Combustible as tested per ASTM E-136.
  2. Flame Spread Classification: Class A (less than 25, per testing by NFPA 255, ASTM E-84 or UL 723), with flame spread rating of 0 and smoke developed rating of 0.
  3. Thicknesses as indicated on Drawings:
    - a. Designated 07 21A: 6 inches, having thermal resistance, R-value of 21.
    - b. Designated 07 21B: Nominal 10 inches, having thermal resistance, R-value of 30.
  4. Size: 16 inches x 48 inches (406 mm x 1219 mm).
  5. **[ADD 02]**

## 2.4 POLYISOCYANURATE FOAM INSULATION

- A. Foil-faced rigid insulation: Nonstructural, rigid board insulation consisting of a polyisocyanurate foam core laminated between 1.0 mil smooth, reflective aluminum facers on both sides, with square and shiplap edge, conforming to ASTM C1289, Type I, Class 1, having the following characteristics:
  1. Physical properties:
    - a. R-Values per board thickness and edge treatment:
      - 1) Board thickness of 3.0": 19 R-Value, with square and shiplap edge.
    - b. Compressive Strength per ASTM D1621: 25 psi min.
    - c. Flexural Strength per ASTM C203: 40 psi min.
    - d. Water Absorption per ASTM C209, (% by volume, max.): 0.1.
    - e. Water Vapor Permeance, ASTM E96/E96M, (perm, max.): <0.03.
    - f. Maximum Use Temperature: 250 °F.
  2. Sizes: 4 by 8 feet, 4 by 9 feet and 4 by 10 feet.
  3. Thickness: 3 inches..
  4. **[ADD 02]**
- B. Foil-facing repair tape: Insulation recommended flashing for repairs of damaged facer: **Self-adhering waterproofing flashing membrane compatible with building sealants.**
  1. **Physical properties and characteristics:**
    - a. **Adhesive type: Acrylic.**
    - b. **Backing: Manufacturer's proprietary backing.**

- c. **Water Vapor Transmission (tested per ASTM E96): Maximum 0.19 Perms.**
  - d. **Wall Assembly Fire Test: Compliant with NFPA 285.**
  - e. **Nail Sealability:**
    - 1) **Initial seal (tested per ASTM E331): Pass.**
    - 2) **Seal after thermal Cycling (tested per ASTM E331): Pass.**
    - 3) **Seal under 5 inches water head after 3 days (tested per ASTM D1970): Pass (dry).**
  - f. **Temperature service Range (Tested per AAMA 711): - 40 F. degrees to 240 degrees F.**
  - g. **Elongation at Break (tested per ASTM D882 or PSTC-131): Minimum 4 percent or greater.**
  - h. **Flame Spread Index (tested per ASTM E84): 25 or better (Class A).**
- 4.2. [ADD 02]**

## 2.5 ACCESSORIES

- A. Staples, tape, adhesives and fasteners required for the proper and complete installation for work of this Section shall be as recommended by each respective manufacturers of each insulation type.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
  - 1. Beginning of installation means acceptance of existing substrate and project conditions.

### 3.2 INSTALLATION

- A. Mineral wool insulation between framing members:
  - 1. Install in accordance with manufacturer's instructions. Do not compress or "stuff" insulation into voids, compressed insulation has less thermal resistant value.
  - 2. Trim insulation neatly to fit spaces. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation, do not cut around electrical boxes. Leave no gaps or voids.
  - 3. Where faced insulation is specified, apply membrane facing on warm side of building spaces. Lap ends and staple side flanges of membrane between framing members.
  - 4. Where insulation is located between joists/rafters and is not to be covered, install wire insulation supports to keep insulation in place.
- B. Insulation beneath slabs-on-grade: 3 inch thick rigid foam insulation.
  - 1. Place insulation beneath slabs-on-grade, extend insulation to provide 100 percent coverage beneath slab at Toilet Rooms

2. Butt edges and ends tight to adjacent boards. Bevel insulation to allow snug fit at cants. Cut and fill insulation tightly to protrusions or interruptions to the insulation plane.
3. Place soil as a perimeter restraint to minimize movement of insulation.

### 3.3 CLEANING

- A. Daily clean work areas by sweeping and disposing of debris, and scraps.
- B. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

End of Section



Section 07 2600  
VAPOR RETARDERS

**PART 1 – GENERAL****1.1 SUMMARY**

- A. The work of this Section consists of vapor retarders (vapor barriers) where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following.
- B. Furnish and install the following:
  - 1. Sheet membrane vapor barriers (vapor retarders) under concrete slabs-on-grade including seam tape, and pipe boots.

**1.2 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ASTM D570 - Water Absorption of Plastics.
  - 2. ASTM D1004 - Initial Tear Resistance of Plastic Film and Sheeting.
  - 3. ASTM D1622 - Apparent Density of Rigid Cellular Plastics.
  - 4. ASTM D1938 - Tear Propagation Resistance of Plastic Film and Thin Sheeting by a Single-Tear Method.
  - 5. ASTM D2842 - Water Absorption of Rigid Cellular Plastics.
  - 6. ASTM D2582 - Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting.
  - 7. ASTM D2856 - Open Cell Content of rigid Cellular Plastics by Air Pycnometer.
  - 8. ASTM E136 - Behavior of Materials in a Vertical Tube Furnace at 750°C.
  - 9. ASTM E154 - Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
  - 10. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
  - 11. ASTM E1745 - Plastic Vapor Retarders Used in Contact with Soil or Granular fill under Concrete Slabs
  - 12. ASTM E84 - Surface Burning Characteristics of Building Materials.
  - 13. ASTM E96 - Water Vapor Transmission of Materials.
- B. General References The following reference materials are hereby made a part of this Section by reference thereto:
  - 1. ACI 302.1R Vapor Barrier Component (plastic membrane) is not less than 10 mils thick.
  - 2. NFPA 701 - Fire Tests for Flame Resistant Textiles and Films

3. All applicable federal, state and municipal codes, laws and regulations for thermal insulation and vapor barriers.

### 1.3 ADMINISTRATIVE REQUIREMENTS

#### A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

#### B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

#### C. Sequencing: Coordinate work of this section with related work.

1. Coordinate third party inspection to occur following installation of below-grade vapor retarders and reinforcement steel, but prior to concrete placement.

### 1.4 SUBMITTALS

#### A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Manufacturer's Instructions: Manufacturer's installation instructions for placement, seaming and pipe boot installation.
3. Samples:
  - a. 12 by 12 inch sample of vapor barrier.
  - b. 12 inch length termination bar.
  - c. Vapor retarder accessories including samples of double-sided tape, mastic, flashing boots and similar materials.

### 1.5 QUALITY ASSURANCE

- #### A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

**B. Buy American Preference [ADD 03]**

1. All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".

**B.C.** Sole Source: Obtain products required for the Work of this Section for each type of vapor retarder shall be from a single manufacturer, and the related accessories as recommended by the prime manufacturer of the vapor retarder.

**1.6 DELIVERY, STORAGE AND HANDLING****A. Delivery and Acceptance Requirements:**

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

**B. Storage and Handling Requirements:**

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Store materials under cover and in manner to keep them dry, protected from weather, direct sunlight and damage from construction traffic and other causes.

**PART 2 - PRODUCTS****2.1 UNDER SLAB VAPOR BARRIERS****A. —[ADD02]****B.A. Characteristics: [ADD 02]**

1. Minimum thickness: 15 mils.
2. Permeance complying with ACI 302.2R.
3. Permeance after conditioning when tested in accordance with ASTM E1745 (where applicable): Less than 0.01 perms (gr/ft<sup>2</sup>/hr/in-Hg).
4. Water vapor barrier tested by ASTM E1745: Meets or exceeds Class A.
5. **Puncture resistance (tested per ASTM D1434): 2,266 grams.**
- 4-6. **Tensile Strength (tested per ASTM D882): 70.6 lbf/in**

**2.2 ACCESSORIES**

- A.** General: tape, adhesives and fasteners required for the proper and complete installation for work of this Section shall be as recommended by each respective manufacturers of each type of vapor barrier.

- B. Seam Tape: High Density Polyethylene Tape or HDPE Tape as recommended by vapor barrier manufacturer, with pressure sensitive adhesive. Minimum width 4 inches.
- C. Pipe Boots: Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Ensure that subsoil is approved by Architect.
- B. Level and tamp or roll aggregate, sand or tamped earth base.

#### **3.2 INSTALLATION - BELOW-SLAB VAPOR BARRIERS/RETARDERS**

- A. General: Install Vapor Barrier in accordance with manufacturer's instructions and ASTM E 1643. Place vapor barrier beneath all floor slabs
- B. Unroll Vapor Barrier with the longest dimension parallel with the direction of the pour.
- C. Lap Vapor Barrier over footings and seal to foundation walls.
- D. Overlap joints a minimum of six inches with top lap in direction of spreading concrete. Turn up layer at slab edges abutting walls. Seal with manufacturer's recommended tape or secure edge with non-corrosive termination bar.
- E. Seal all penetrations (including pipes, reinforcing steel, and permanent utilities) with manufacturer's pipe boot or vapor barrier manufacturer's recommended detail.
- F. Do not puncture vapor barrier. No punctures or unsealed penetrations are permitted.
- G. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with tape.

#### **3.3 PROTECTION**

- A. Protect vapor barrier from damage during application and remainder of construction period, per manufacturer's written instructions and technical bulletins.

#### **3.4 FIELD QUALITY CONTROL**

- A. Independent Third Party Inspection: Owner will retain an independent third-party inspector to review and report on below-slab vapor retarder. Inspection to be sequenced following vapor barrier installation and reinforcing steel installation, but prior to concrete placement.
  - 1. Notify Architect and Owner, of independent inspection not less than 3 work days prior to inspection.
  - 2. Submit written reports to Architect, Owner, and Contractor within 5 calendar days following inspection,

End of Section

Section 07 6200  
SHEET METAL FLASHING AND TRIM

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Furnish and install the following:
  - 1. Aluminum flashing.
  - 2. Miscellaneous stainless steel flashings as indicated on Drawings for drainage of moisture.
  - 3. Formed brake-metal work.
  - 4. Cap flashings, in conjunction with roofing system sheet membrane base flashings.
  - 5. Sealant in conjunction with sheet metal work specified herein.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY: Wood blocking, nailers.
- B. Section 07 9200 - JOINT SEALANTS: Sealant and backing material not specified herein.
- C. Flashing sleeves and collars for mechanical and electrical items protruding through roofing: By respective trade sections furnishing same.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ASTM A167 - Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
  - 2. ASTM B209 - Specification for Aluminum Alloy, Sheet and Plate.
  - 3. ASTM B221 - Specification for Aluminum Extrusions.
  - 4. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
  - 5. ASTM D2178 - Asphalt Impregnated Glass Mat for Roofing and Waterproofing.
  - 6. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
  - 7. FS QQ-S-766D - Steel Plates, Sheets and Strip, Corrosion Resisting.
- B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
  - 1. SMACNA - Architectural Sheet Metal Manual 7<sup>th</sup> Edition (January 2012), referred to herein as "Sheet Metal Manual".

## 2. NRCA - Roofing and Waterproofing Manual.

## 1.4 ADMINISTRATIVE REQUIREMENTS

## A. Coordination:

1. Coordinate the installation of flashings and sheet metal work with the various trades responsible for installing interfacing materials, and install the work at appropriate times so as not to delay the progress of related work

## B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

## 1.5 SUBMITTALS

## A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Literature: Manufacturer's data sheets for each metal type and accessories furnished hereunder, include material specifications, performance data, physical properties and finishes.
2. Certification: Provide certifications that materials and systems comply with the specified requirements for the use indicated.
3. Shop drawings:
  - a. Fully dimensioned large scale design details showing material profiles, splices, flashing terminations and other jointing details, fastening methods and installation details. Indicate material type, sizes, and weights or gauges. Indicate extent of adjacent work specified under other Sections of the Specifications.
  - b. Fully detail methods of relieving stresses due to thermal movement, including sealing of expansion seams.
  - c. All details bearing dimensions of actual measurements taken at the project.
4. Selection Samples:
  - a. Metal sample chips, indicating Manufacturer's full range of finish colors for factory finishes available for selection by Architect.
  - b. Manufacturer's sample boards for sealant colors.

## 5. Verification Samples:

- a. 12 inch long samples of formed fascia, gutters and downspouts.

## B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Manufacturer's warranties: Include coverage of materials and installation and resultant damage from failure of installation to resist penetration of moisture.

## 1.6 QUALITY ASSURANCE

- A. Company specializing in fabrication and installation of sheet metal flashing work with minimum 5 years documented experience.
- B. Flashing and sheet metal applicator, with a minimum of 5 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.

## C. Buy American Preference [ADD 02]

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Store preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

## 1.8 WARRANTY

- A. Provide the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.

## 1.9 EXTRA MATERIALS

- A. Provide sufficient quantity of each color finish coat material, for field touch-up work after erection, and pack the additional coating materials with the components to be furnished hereunder.
- B. Clearly label and package extra materials securely to prevent damage.

**PART 2 - PRODUCTS****2.1 PERFORMANCE REQUIREMENTS**

- A. Provide permanently watertight flashing and sheet metal installations which will not deteriorate in excess of manufacturer's published limitations.
- B. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
  - 1. Wind Design Pressure: **Refer to Structural Drawings. [ADD 02]**
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F material surfaces.
- D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.
- E. Interface with Other Systems:
  - 1. Do not proceed with installation of flashing and sheet metal until completion of curb and substrate construction, cants, blocking, reglets and other construction required to receive flashing.
  - 2. Coordinate flashing with other Work for correct sequencing of items comprising entire membrane or system of roofing or waterproofing and rain drainage.

**2.2 MATERIALS**

- A. Aluminum: ASTM B209 sheet aluminum, having a minimum thickness as specified herein below, for the applications indicated:
  - 1. General exposed-to-weather flashings and trim: 0.040 inch thick.

**2.3 ACCESSORIES**

- A. Membrane for ice-dam and wind-blown rain protection ("Protection Membrane"): Sheet barrier of high density cross laminated polyethylene with butyl-based rubber adhesive, with strippable silicone-coated release sheet.
  - 1. **[ADD 02]**
  - 2. **Performance Properties: [ADD 02]**
    - a. **Thickness, membrane (per ASTM D3767 method A): 40 mil (1.02 mm)**
    - b. **Tensile strength, membrane, tested per ASTM D412 (Die C modified): MD 25 lbf/in., CD 25 lbf/in.**



- c. **Elongation, membrane, tested per ASTM D412 (Die C modified): 250%**
- d. **Low temperature flexibility, tested per ASTM D1970: Unaffected @ -20°F (-29°C).**
- e. **Adhesion to plywood, tested per ASTM D903: 3.0 lbs/in. width (525 N/m).**
- f. **Permeance (max) , tested per ASTM E96: 0.05 Perms (2.9 ng/m2s P**
- g. **Material weight installed (max) , tested per ASTM D461: 0.22 lb/ft2 (1.3 kg/m2)**

- B. Flashing cement: Trowel grade, composed of selected asphalt, solvents, and non-asbestos fillers, conforming to ASTM D4586, Type 1 (Non-asbestos), Class 1, and FS SS-C-15-3Type 1:
  - 1. **[ADD 02]**
- C. Nails shall not be smaller than N<sup>o</sup>.2 of 12 stub gauge (1.109 inches), with large flat heads, and of sufficient length to penetrate the wood nailers a minimum of 7/8-inch. Nails shall be stainless steel.
- D. Screws: Stainless steel wood screws, of sizes most appropriate for the specific application, and equipped with soft neoprene washers.
- E. Sealant in conjunction with metal work of this Section: Joint Sealer Type SX (Silicone, Exterior construction): Medium modulus, neutral curing, low to no bleed silicone passing ASTM C1248, having a useful life expectancy of at least 20 years, conforming to ASTM C920, Type S, Grade NS, Class 50, with a minimum movement capability of +50 percent and -50 percent. **[ADD 02]**
- F. Rivets: Solid 3/16 inch diameter flat head rivets of proper length.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- H. Solder for Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- I. Bituminous Coating used to isolate between dissimilar materials. Do not allow galvanic interaction.

## 2.4 FABRICATION - GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA "Sheet Metal Manual. Shop fabricate flashings to greatest extent as practical. Form flashings as required, or to profiles indicated on the Drawings, to protect materials from physical damage and shed water.
- B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance. To the greatest extent applicable, fabricate sheet metal components in shop, and thoroughly clean all joints on both sides of the sheet metal work.
- C. Fabricate cleats and starter strips of same material as sheet.

- D. Seams: Provide laps, joints, and seams that are watertight and weatherproof.
  - 1. Expansion provisions: Form expansion joints (detailed with release tape, uncured EPDM membrane, and metal cover plate) at 20 feet on center and within 24 inches. of corners and terminations.
  - 2. Nonmoving seams: fabricate with flat-lock seams.
    - a. Coated / finished metals: Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use
    - b. Uncoated / unfinished aluminum: Form seams and seal with epoxy seam sealer. Rivet joints where recommended by referenced SMACNA Architectural Sheet Metal Manual.
    - c. Natural "Red" Copper and Lead Coated Copper: Tin edges to be seamed, form seams, and solder.
    - d. Stainless steel (Uncoated / unfinished) and Tin/Zinc coated copper: Form seams, and solder.
- E. Form pieces in longest practical lengths, with flat lock seams. Hem exposed edges on underside 1/4 inch, miter and seam corners.
- F. Fabricate corners from one piece with minimum 18 inch long legs, solder for rigidity, seal with sealant.

## 2.5 FINISHES

- A. Aluminum components not indicated for enamel or color finish: Mill finish.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place and nailing strips located.
- B. Beginning of work shall constitute acceptance of the conditions of the surfaces to which this work is to be applied.

### 3.2 PREPARATION

- A. Field measure site conditions prior to fabrication.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
- D. Insert flashings into reglets to form tight fit. Secure in place with plastic wedges at maximum of 8 inches on center. Seal flashings into reglets with sealant.
- E. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations where approved by Architect.
- F. Cleat and seam all joints. Apply plastic cement compound between metal flashings and felt flashings, asphalt shingle roofing or asphalt roll roofing.

- G. Seal all metal joints watertight.
- H. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with dampproofing mastic where flashing and trim contact wood, ferrous metal, or cementitious construction. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- I. During the installation of work of this Section, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

### 3.3 FLASHING INSTALLATION - GENERAL

- A. Except as otherwise shown on the reviewed shop drawings or specified herein, the workmanship of sheet metal work, method for forming joints anchoring, cleating, provisions for thermal movement, shall conform to the standard details and recommendations of the sheet metal producer and those of producer organizations and research institutions and associations concerning the sheet metal used, in addition to the standards and details set forth in the referenced materials specified this Section.
- B. Face nailing will not be permitted, concealed cleating or other concealed method must be used to attach sheet metal work to structure.
- C. Ensure that fastenings do not exceed 8 inches on centers. Use flat head fasteners throughout, and seal all fastener heads after installation thereof.
- D. Fill all slip joints and overlapping surfaces in the assembly with specified sealant material, removing all excess sealant material from the prefinished surfaces immediately, to prevent staining the finish.

### 3.4 INSTALLATION HEADER FLASHING

- A. Install specified aluminum flashing at window heads, piping, vents and all other projections from vertical surfaces where rain water may accumulate. Flashing shall be of continuous length for full width of window head, joints in flashing is not acceptable. Flashing shall extend behind air infiltration barrier a minimum of 3 inches up the wall.

### 3.5 CLEANING

- A. Daily clean work areas by sweeping and disposing of debris.
- B. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

End of Section

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Section 07 8400  
FIRESTOPPING

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Furnish and install fireproof firestopping, firesafing materials, smoke seals and related accessories required for this Project for all penetrations through fire resistance rated construction, including, but not limited to, penetrations for plumbing, fire suppression, heating, ventilating and air conditioning, electrical systems, and specialized equipment.
  - 1. Fire resistance rated construction requiring firestopping includes, but is not limited to: rated partitions, smoke barriers, smoke partitions, partitions in rated corridors, passageways and stairs, shaft partitions, shaft wall (vertical and horizontal), area separation fire walls, party wall systems, and temporary fire resistant rated partitions and barriers.
  - 2. Provide removable temporary firestopping (pillows) as required to maintain fire integrity prior to Owner's final acceptance, to permit installation of electrical, telephone, data and sound system wiring. Replace temporary firestopping with permanent, after wiring systems are completed.
- B. Furnish and install firestopping/smoke seals at construction joints occurring at tops of fire resistance rated partitions, smoke partitions, and temporary partitions between top of partition and underside of deck above.
- C. Furnish and install all firestopping, firesafing, and smoke seals at perimeter of floor/roof construction and exterior wall systems, as indicated and where required by applicable codes.
- D. Furnish and install all firestopping, firesafing, and smoke seals at expansion joints in chase walls where expansion joints are not exposed to view.
- E. Furnish and install all firestopping, firesafing, and smoke seals where required by applicable codes and as additionally required by authorities having jurisdiction at no additional cost to the Owner.

**1.2 RELATED REQUIREMENTS**

- A. Section 09 2900 - GYPSUM BOARD: Gypsum wallboard fireproofing.
- B. Division 21 - FIRE SUPPRESSION: Fire protection system penetrations through fire resistance rated construction.
- C. Division 22 - PLUMBING: Plumbing system penetrations through fire resistance rated construction.
- D. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Heating, ventilating and air conditioning system penetrations through fire resistance rated construction.
- E. Division 26 - ELECTRICAL: Electrical penetrations through fire resistance rated construction.

### 1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
1. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
  2. ASTM E119 - Method for Fire Tests of Building Construction and Materials.
  3. ASTM E814 - Test Method of Fire Tests of Through-Penetration Firestops.
  4. ASTM E2174 - Standard Practice for On-site Inspection of Installed Fire Stops
  5. ASTM E2393 - Standard Practice for On-site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers
  6. NFPA 70 - National Electrical Code.
  7. UL - Fire Resistance Directory.
  8. UL 1479 - Fire Tests of Through Penetration Firestops.

### 1.4 PRE-CONSTRUCTION CONFERENCE

- A. General Contractor and **ALL** Filed Sub-Bid Contractors, subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
1. Project Overview
  2. Labor requirements
  3. Operation Safety Items
  4. Construction
  5. Temporary Facilities and Controls
  6. Project Closeout:
  7. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

### 1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, and physical properties.
    - a. Indicate requirements for manufacturer's descriptive data for products and related materials with FM, UL or Warnock-Hersey illustrations showing systems and approval of materials in systems.
  2. Certificates:

- a. Manufacturer's written certification stating that firestopping materials, meet or exceed the requirements specified under this Section and that all fire-resistive requirements for the indicated combustibility, Flame (F-rating) and Temperature (T-rating) Ratings have been met.
- 3. Manufacturer's installation instructions.
- 4. Test reports: Submit fire test reports from recognized, independent testing agent(s) indicating the following:
  - a. Fire test report of firestop material applied to substrate and penetration materials similar to project conditions. Tests to indicate both Flame (F-rating) and Temperature (T-rating) Ratings.
  - b. Test reports of products to be used shall indicate conformance to ASTM E-814.
- 5. On-site sample installation to be included in Work: Minimum thirty days prior to application in any area, provide samples of firestop and smoke seal materials and installation in accordance with the following requirements.
  - a. Apply one sample of appropriate firestop and smoke seal material for each different penetration and fire rating required for the work.
  - b. Sample areas will comply with thickness, fire resistance ratings, and finished appearance of the project and applicable fire code.
  - c. Acceptance samples will constitute standard of acceptance for method of application, thickness, and finished appearance for firestop and smoke seal application. The sample(s) shall remain visible during completion of the work and shall remain as part of the completed work.
- 6. Shop drawings indicating requirements for penetrations in wall/deck intersections, change of planes, control joints, expansion joints and blank openings.

#### 1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. **Buy American Preference [ADD 03]**
  - 1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**
- ~~B.C.~~ Sole Source: Obtain firestop and smoke seal products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of fireproofing, except as otherwise approved by Architect
- ~~C.D.~~ Special Inspections: Allow for 3 percent of each type of firestopping system to be removed and inspected for conformance with approved submittals.

1. Firestopping shall be inspected prior to installation of suspended ceilings or concealed by other materials.

#### 1.7 MOCK-UPS

- A. Provide mock-up under provisions of Section 01 4000 - QUALITY REQUIREMENTS, or purpose of verifying quality of typical firestopping conditions.
- B. Firestop at locations where accepted by Architect, or as directed. Schedule mock-up installation with Owner's Project Representative for observation.
- C. Accepted mockups may remain as part of the work.
  1. Keep accepted mock-up installation open for observation as criteria for sprayed-on fireproofing work.
  2. Protect mock-ups from damage until Project Substantial Completion.

#### 1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store firestopping materials in original, sealed, packages showing manufacturer's identification and date of packaging.
- B. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.

### PART 2 - PRODUCTS

#### 2.1 [ADD 02]

#### 2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide materials and work to conform to Building Code Requirements in fire resistant wall assemblies.
- B. Regulatory Requirements:
  1. Conform to applicable code for fire resistance ratings and surface burning characteristics.
  2. Obtain certificate of compliance from authority having jurisdiction indicating approval of combustibility.
- C. Manufacturer's certified product test requirements:
  1. All firestop/smokeseal material shall be tested by a recognized, independent testing agency and shall conform to both Flame (F-rating) and Temperature (T-rating) requirements of ASTM E-814.
  2. Conform to UL Fire Hazard Classification Requirements.
  3. Tested and classified non-combustible per ASTM E-84.
- D. Firestops in place shall be of sufficient thickness, width, and density to provide a fire resistance rating at least equal to the wall, or partition construction into which it is installed.
- E. Non-combustible dams shall be constructed:
  1. As necessary to achieve fire rating as tested and rated.



2. In conformance with installation requirements for type of wall, and partition construction.
  3. As recommended by firestop/smokeseal manufacturer.
- F. Combustible damming materials, if used, must be removed after proper curing.

### 2.3 MATERIALS

- A. Firestop mortar: asbestos free, cementitious mortar, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM/UL1479.
1. **[ADD 02]**
- B. Firestop sealant: Single component, non-combustible firestop sealant, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479.
1. **[ADD 02]**
  2. Sealants will not dissolve in water.
- C. Intumescent firestop sealant and caulks: Acrylic based, water resistant sealant, which will not re-emulsify after drying.
1. **[ADD 02]**
- D. Firestop putty: sticks or pads.
1. **[ADD 02]**
- E. Firestop collars: Pre-manufactured fire protective pipe sleeve, UL classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479.
1. Provide separated (two piece) firestop collar for application when plastic pipe system is already in place. Provide non-separated firestop collar for application prior to installation of plastic pipe system.
  2. **[ADD 02]**
- F. Firestop pillows: UL Classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479.
1. **[ADD 02]**
- G. Wrap strips:
1. **[ADD 02]**
- H. Mineral wool fiber / ceramic wool non-combustible insulation (fire safing): Conforming to ASTM C665, Type 1, ASTM C612, and ASTM C553 with a minimum density of 4 pounds per cubic foot.
1. Flame Spread Classification: Material shall be classified non-combustible per ASTM E-814.
  2. Recycled content of slag:: Use maximum available percentage of material (slag). Mineral wool insulation products incorporated into the work shall contain not less than 75 percent of recycled material (slag) by weight.
  3. **[ADD 02]**

4. Accessories: Provide galvanized steel safing clips as required for installation of insulation.
- I. Elastomeric Firestopping: Non halogenated latex based elastomeric coating applied by airless spray.
  1. **[ADD 02]**

## 2.4 ACCESSORIES

- A. Forming and damming materials: Mineral fiberboard or other type as recommended by firestopping manufacturer.
- B. Primer, sealant and solvents: As recommended by manufacturer.
- C. Woven wire mesh: Galvanized 20 gage woven wire mesh "chicken wire" or "poultry fencing", 1 inch spacing.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Inspect areas and conditions where firestops are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
  1. Beginning of installation means acceptance of existing substrate and project conditions.

### 3.2 PREPARATION

- A. Surface to receive firestops shall be free of dirt, dust, grease, oil, form release agents, or other matter that would impair the bond of the firestop material to the substrate or penetrating item(s).
- B. Voids and cracks in substrate shall be filled and unnecessary projection removed prior to installation of firestops.
- C. All penetrating items shall be permanently installed prior to firestop installation.
- D. Substrate shall be frost, free and, when applicable, dry.

### 3.3 INSTALLATION

- A. General
  1. Installation of firestops shall be performed by applicators/installers qualified and trained by the manufacturer. Installation shall be performed in strict accordance with manufacturer's detailed installation procedures.
  2. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations. Meet building code requirements.
  3. Coordinate with plumbing, mechanical, electrical, and other trades to assure that all pipe, conduit, cable, and other items which penetrate fire rated construction have been permanently installed prior to installation of firestops. Schedule and sequence the work to assure that partitions and other

construction which would conceal penetrations are not erected prior to the installation of firestops.

- a. Ensure that all firestopping is inspected prior to installation of suspended ceilings or concealed by other finished materials.

B. Dam construction

1. Install dams when required to properly contain firestopping materials within openings and as required to achieve required fire resistance rating. Combustible damming material must be removed after appropriate curing. Incombustible damming material may be left as a permanent component of the firestop system.
2. Placement of dams shall not interfere with function or adversely affect the appearance of adjacent construction.

C. Installation of single component silicone firestop

1. Apply with manual or powered caulking gun.
2. Apply minimum 1/2 inch thickness for 2 hour rating. Apply 1/2 inch to both sides of wall penetrations.
3. Use incombustible insulation as required to achieve fire resistance rating.
4. Surface of gun grade silicone firestop may be tooled using clean, potable water.
5. Clean excess material off of adjacent surfaces and tools within 10 minutes using either water or Xylol where the use of such would not be hazardous.

D. Installation of cementitious firestop mortar.

1. Add dry powder to water and mix with mechanical mixer or hand mixing tools as recommended by firestop mortar manufacturer. Allow a average mixing time is 3 minutes and provide a average wet density of 70 pounds per cubic foot, plus or minus 5 PCF.
2. Do not apply if ambient or substrate temperature is less than 35 degrees Fahrenheit during 24 hours after application.
3. Wet all surfaces prior to application of firestop mortar.
4. Mortar may be hand applied or pumped into the opening.
5. Exposed surfaces shall be finished using conventional plastering tools prior to curing.
6. When installation around layered cables, it is recommended to increase the fluidity of the firestop mortar to provide a better fill around the cables. Vibrate or move the cables slightly to prevent voids from forming between the cables.
7. Allow 48 hours for initial cure prior to form removal. For full cure allow 27 days.
8. Wet material may be cleaned with water. Dry material may require scraping or chipping.

E. Installation of firestop collars (plastic pipe only)

1. Firestop collars may be surface mounted to a slab or wall or imbedded in Firestop Mortar to a maximum depth of 2 inches.
2. For wall penetrations with ABS pipe firestop collars must be installed on both sides of the penetration to provide a 2 hour F and T Rating. All other

applications required installation on one side only to provide a 2 hour F and T Rating.

- F. Firesafing insulation: Install firestopping safing insulation on safing clips spaced as needed between each stud, leaving no voids. Secure safing clips to slab using fasteners recommended by insulation manufacturer. Install sealant over mineral wool in accordance with test requirements.

### 3.4 LABELING

- A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems.
1. Include the following information on labels

**WARNING: THROUGH-PENETRATION FIRESTOP SYSTEM-DO NOT DISTURB.  
NOTIFY FACILITY MANAGER OF ANY DAMAGE.**

- Contractor's name, address, and phone number.
- Through-penetration firestop systems designation of applicable testing and inspecting agency.
- Date of installation.
- Through-penetration firestop systems manufacturer's name.
- Installer's name.

### 3.5 SCHEDULE

- A. General: Typical penetrations are indicated below with list of standard firestopping/smokeseal approaches. Actual firestopping materials and combination of materials will vary with size of penetration and with individual firestopping manufacturer's approved UL Design System Requirements. Use only UL Design System materials for each penetration that best matches the wall construction.
1. Where penetrations occur for which no listed UL or WH Design System test exists, obtain from the firestop system manufacturer an engineered system acceptable to the authorities having jurisdiction for firestopping such penetrations. Engineered system from manufacturer shall include a detail drawing showing the engineered system and shall contain no disclaimers.
- B. Single metal pipe (non-insulated) and conduit penetrations through walls:
1. (masonry and concrete walls only) Firestop mortar and putty.
  2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
  3. Intumescent firestop sealant with wrap strips.
- C. Multiple metal pipe and conduit penetrations through walls:
1. Firestop mortar and putty.
  2. (through masonry walls only) Firestop pillows with woven wire mesh.
  3. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- D. Insulated metal pipe penetrations (single and multiple) through walls:

1. Firestop mortar with wrap strips.
  2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
  3. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing) and Wrap strips.
  4. (multiple penetrations through masonry walls only) Firestop pillows with woven wire mesh.
- E. Duct penetrations through walls:
1. Rectangular and square ducts: Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing), and steel flanges provided under Division 23.
  2. Round ducts: Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- F. Combustible plastic pipe and conduit penetrations through walls:
1. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
  2. Intumescent firestop sealant with firestop collars.
- G. Cable penetrations through walls:
1. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
  2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
  3. (single penetrations only) Firestop putty.
  4. (electrical boxes) Firestop pads.
  5. Firestop putty over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- H. Blank openings:
1. Firestop mortar.
  2. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- I. Fire rated joints:
1. Silicone Firestop sealant over backer rod or bond breaker.
- J. Construction joints at head of wall/floor assemblies:
1. Silicone Firestop sealant/mastic over mineral fiber / ceramic wool non-combustible insulation (fire safing).
  2. Elastomeric spray over mineral fiber / ceramic wool non-combustible insulation (fire safing).

- K. Smoke barrier sealant for dampers, fire door frames:
  - 1. Silicone Firestop sealant.
- L. Temporary sealing of openings and penetrations:
  - 1. Firestop putty, sticks or pads.
  - 2. Firestop pillows.

End of Section

Section 07 9200  
JOINT SEALANTS

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. General: The work of this Section consists of sealants and backing materials, where shown on the Drawings, as specified herein, and as required for a complete and proper installation.
  - 1. This Section specifies general requirements, definition of joint sealer types, and application requirements for sealant work specified within other individual specification sections.
- B. Prepare sealant substrate surfaces.
- C. Furnish and install sealant and backing materials.

**1.2 RELATED REQUIREMENTS**

- A. Section 07 8400 - FIRESTOPPING: Firestopping sealants and related backing materials.
- B. Section 09 2900 - GYPSUM BOARD: Application of concealed acoustical sealant used in conjunction with gypsum board work at abutting surfaces (perimeter of partitions and walls).
- C. Section 09 9100 - PAINTING: Caulks used in preparation of applied finish coatings.
- D. Section 13 3419 - METAL BUILDING SYSTEMS
  - 1. Sealant used in conjunction with sheet metal roofing system.
  - 2. Sealant integral with flashing.

**1.3 REFERENCES**

- A. The standards referenced herein are included to establish recognized quality only. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
- B. Reference Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
  - 1. ASTM C717 - Standard Terminology of Building Seals and Sealants.
  - 2. ASTM C790 – Guide for Use of Latex Sealants
  - 3. ASTM C804 - Use of Solvent-Release Type Sealants.
  - 4. ASTM C834 - Latex Sealing Compounds.
  - 5. ASTM C919 - Use of Sealants in Acoustical Applications.
  - 6. ASTM C920 - Elastomeric Joint Sealants.
  - 7. ASTM C962 - Use of Elastomeric Joint Sealants.
  - 8. ASTM C1193 - Guide for Use of Joint Sealants.

9. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
  10. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
  11. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
- C. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
1. SWRI – Sealant and Caulking Guide Specification.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:
1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
    - a. Project Overview
    - b. Labor requirements
    - c. Operation Safety Items
    - d. Construction
    - e. Temporary Facilities and Controls
    - f. Project Closeout:
    - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

#### 1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, chemical and physical properties and installation instructions for each item furnished hereunder.
  2. Selection Samples: Sample card indicating Manufacturer's full range of colors available for selection by Architect.
  3. Verification Samples: 12 inch long samples of sealant for verification of color, installed where directed by Architect.
  4. Certificates: Manufacturer's certification that the Products supplied meet or exceed specified requirements.
  5. Test and Evaluation Reports:
    - a. Compatibility and adhesion test reports: Test reports from sealant manufacturer indicating that sealant proposed for use have been tested for compatibility and adhesion with actual samples of substrates to be used on this project. Include sealant manufacturer's interpretation of test results, and recommendations for primers and substrate preparation specific to this Project.



- B. Closeout Submittals: Submit the following under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
  - 1. Bonds and Warranty Documentation: Manufacturer's standard Warranties and Guarantees.

#### 1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. **Buy American Preference [ADD 03]**
  - 1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**
- ~~B.C.~~ Sole Source: Provide sealants from a single manufacturer for all work of this Section to the greatest extent possible. Each individual type of sealant installed in the Work shall be from a single manufacturer.
- ~~C.D.~~ Qualifications:
  - 1. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Each container and package must bear an unbroken seal, test number and label of the manufacturer upon delivery to the site. Failure to comply with these requirements shall be sufficient cause for rejection of the material in question, by the Architect and his requiring its removal from the site. New material conforming to said requirements, shall be promptly furnished at no additional cost to the Contract.
- B. Store sealants within sealant manufacturer's recommended optimum temperature range for at least 16 hours before use. Store backer rod and bond breaker tape in clean dry areas at 70 deg. F so that will not become damp, wet, or frost covered

#### 1.8 SITE CONDITIONS

- A. Do not install single component solvent curing sealant in enclosed building spaces.
- B. Environmental Requirements: Maintain temperature and humidity recommended by the sealant manufacturer during and 24 hours after installation. Do not proceed with installation of joint sealers under the following conditions:
  - 1. When ambient and substrate temperature conditions are below 40 degrees F.
  - 2. When joint substrates are wet due to rain, frost, condensation, or other causes.

- C. Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from substrates.

## 1.9 WARRANTY

- A. General: Submit manufacturer's warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- B. Manufacturer's warranties shall guarantee sealants installed are free of manufacturing defects and conforms to the published physical properties and referenced standards effective at time of installation.
  - 1. Sealant performance: Manufacturer's warranties shall include coverage for the following listed failures, when sealants are applied in accordance with manufacturer's written instructions. Warranty to include coverage for:
    - a. Sealant will not become brittle, tear or crack due to normal exposure or normal expansion or contraction.
  - 2. Warranty period:
    - a. Silicone sealants on vertical surfaces: 20 years.
- C. Special Manufacturer's Warranty - Five years from date of Substantial Completion manufacturer agrees to furnish material only to repair or replace those joint sealants that do not comply with the performance or other specified requirements in the Section. Warranty: Include coverage of installed sealants that fail to achieve air tight and watertight seal, exhibit loss of cohesion or adhesion, or do not cure. Include coverage of sealants that revert to an uncured state. Warranty shall be transferable with no dollar limit and shall be non-pro-rated. Warranty shall not require Owner's signature to be effective.
- D. Special Installer's Warranty: Provide 3 year warranty or bond which shall include coverage of installed sealant and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.
  - 1. Installer's warrant shall include coverage for sealant that fails cohesively or adhesively. Installer agrees to provide material and labor to repair or replace joint sealants that do not comply with the performance or other specified requirements in the Section.

## PART 2 - PRODUCTS

### 2.1 [ADD 03]

### 2.2 SEALANT MATERIALS

- A. Sealant Materials, General Requirements:
  - 1. Only use sealant and primers that comply with the following limits for VOC content:
    - a. Architectural Sealants: 250 g/L.
    - b. Roofing Sealants: 420 g/L.
    - c. Roadway Sealants: 250 g/L.
    - d. Sealant primer: 250 g/L.

2. Sealants containing aromatic solvents, fibrous talc, formaldehyde, halogenated solvents, mercury, lead, cadmium, chromium and their compounds, are not permitted.
- B. Joint Sealer Type AA (Acrylic acoustical): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.
  1. **[ADD 02]**
- C. Joint Sealer Type AP (Acrylic Painters caulk): One component acrylic latex caulking compound, conforming to ASTM C 834 Type P, Grade NF, paintable within 24 hours after application, with a minimum movement capability of  $\pm 12.5$  percent. **[ADD 02]**
  1. **[ADD 02]**
- D. Joint Sealer Type BL (Butyl): Gun-grade modified butyl and polyisobutylene sealant, conforming to ASTM C-834, with a movement capability of  $\pm 10$  percent or better and a Shore A hardness of 24 to 28. **[ADD 02]**
  1. **[ADD 02]**
- E. Joint Sealer Type BPM (Modified polyurethane, Multi-component): Pouring grade, self-leveling bitumen modified two component urethane sealant, conforming to ASTM C920, Type M, Grade P or NS, Class 25 and FS SS-S-00227E, Type 1, Class A, with a minimum movement capability of  $+25/-25$  percent. **[ADD 02]**
  1. **[ADD 02]**
- F. Joint Sealer Type SC (Silicone, general construction): One-part medium modulus, natural cure, synthetic sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, NS, Class 50, use NT, G, A, M, O with a minimum movement capability of  $\pm 50$  percent. **[ADD 02]**
  1. **[ADD 02]**
- G. Joint Sealer Type SX (Silicone, Exterior construction): Medium modulus, neutral curing, low to no bleed silicone passing ASTM C1248, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, Grade NS, Class 50, with a minimum movement capability of  $+50$  percent and  $-50$  percent. **[ADD 02]**
  1. **[ADD 02]**

## 2.3 ACCESSORIES

- A. Compressible joint bead back-up: Compressible closed cell polyethylene, extruded polyolefin or polyurethane foam rod complying with ASTM C 1330, Type C (losed cell material with a surface skin), 25 to 33 percent greater in diameter than width of joint. Shape and size of compressible back-up shall be as recommended by manufacturer for the specific condition used. **[ADD 02]**
  1. **[ADD 02]**
- B. Primers: Furnish and install joint primers of the types, and to the extent, recommended by the respective sealant manufacturers for the specific joint materials and joint function.
- C. Bond-breaker tape, and temporary masking tape: Of types as recommended by the manufacturer of the specific sealant and caulking material used at each application,

and completely free from contaminants which would adversely affect the sealant and caulking materials.

1. Liquid bond breaker and duct tape are not permitted.

### **PART 3 - EXECUTION**

#### **3.1 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 joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. General:
  1. Weather conditions must be dry and of the temperature, as recommended by sealant manufacturer, during application operations.
  2. Surface receiving work of this section must be absolutely dry and dust free. All joints receiving sealant/caulking materials and primers shall be subject to the approval of the sealant manufacturer for proper use of specified materials.
- B. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.
  1. Clean ferrous metals of all rust and coatings by wire brush, grinding or sandblasting. Remove oil, grease and protective coatings with cleaners recommended by sealant manufacturer.
- C. Prime joint substrates, as recommended in writing by joint-sealant manufacturer, as based on preconstruction joint-sealant-substrate tests or as based upon 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.
- D. Verify that joint backing and release tapes are compatible with sealant.
- E. Perform preparation in accordance with ASTM C 804 and C 790 for solvent and latex base solvents, respectively.

#### **3.3 INSTALLATION**

- A. General: Conform to SWRI requirements, and sealant manufacturer's written requirements for installation.
- B. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.
  1. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.
  2. Do not stretch back-up material into joints.

- C. Install bond breaker in joints where shown in the Drawings and wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such bond might impair the Work.
- D. Apply masking tape or other precautions to prevent migration or spillage of materials onto adjoining surfaces.
- E. Apply urethane sealants, silicone sealants, and latex caulking materials into joints in accordance with manufacturer's instructions, using mechanical or power caulking gun equipped with nozzle of appropriate size, with sufficient pressure to completely fill the joints.
  - 1. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
  - 2. Maintain the outer edge of the sealant and caulking materials, where side faces of joints are in the same plane, back 1/8-inch from the faces.
  - 3. Apply sealant in continuous beads without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.
  - 4. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
  - 5. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.
- F. Apply pouring self-leveling urethane sealant (Sealant designation **HL**) into horizontal joints in accordance with manufacturer's instructions, to a level approximately 1/16 inch below adjacent surfaces.
  - 1. Apply sealant without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.
  - 2. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
  - 3. Remove the temporary masking tape immediately after tooling, and before the sealant has taken initial set.

### 3.4 CLEANING

- A. Clean all surfaces of adjacent surfaces which have been marked or soiled by the work of this Section, removing all excess sealant and caulking materials with solvents which will not damage the surfaces in any way.

### 3.5 PROTECTION

- A. During the operation of sealant work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

### 3.6 SCHEDULE

- A. General: Seal joints indicated and all interior and exterior joints, seams, and intersections between dissimilar materials.
- B. Sealant Colors:

1. Colors for Sealant (typical): As selected by the Architect from manufacturer's standard colors.
2. Color for Sealant Types "AA" and "AP": White.
3. Color for Sealant Type "BL": Black.
4. In concealed installation, and in partially or fully exposed installation where so approved by the Architect, standard gray or black sealant may be used.

C. Specialty Joint Conditions:

1. Sealant for setting exterior door thresholds Phase A (T Hanger Replacement): Type "BL".

D. Exterior joints (Listed by primary building material abutting sealant joints):

1. Concrete:

| Joint Condition                                                                                                                                                           | Sealant Type |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| a. Concrete to concrete, vertical control joints:                                                                                                                         | SX or SC     |
| a. Concrete to all items which penetrate exterior concrete walls, including, but not necessarily limited to, door frames, louver frames, pipes, vents, and similar items: | SX or SC     |
| b. Concrete to concrete control, expansion and isolation joints in horizontal vehicular traffic surfaces:                                                                 | BPM          |

2. Exterior Metal:

| Joint Condition    | Sealant Type |
|--------------------|--------------|
| a. Metal to metal: | SX           |

E. Interior joints (Listed by primary building material abutting sealant joints):

1. Interior Concrete:

|                                                                |     |
|----------------------------------------------------------------|-----|
| a. Concrete to concrete horizontal vehicular traffic surfaces: | BPM |
|----------------------------------------------------------------|-----|

2. Interior metal:

| Joint Condition     | Sealant Type |
|---------------------|--------------|
| a. Metal to metal : | SX           |

3. Gypsum Board:

| Joint Condition                                                                                                                                                        | Sealant Type |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| a. Gypsum board to metal or wood trim:                                                                                                                                 | AP           |
| b. Gypsum board to abutting surfaces at exposed tops and bottoms partitions and walls:                                                                                 | AA           |
| c. Gypsum board to masonry:                                                                                                                                            | SC           |
| d. At gaps and spaces between gypsum board to interior door and window frames, penetrating conduits and piping, building specialty items, ductwork, and similar items: | AP           |
| e. Gypsum board to plumbing fixtures:                                                                                                                                  | SM           |

End of Section

Section 08 11 13  
HOLLOW METAL DOORS AND FRAMES

**PART 1 – GENERAL****1.1 SUMMARY**

- A. General: The work of this Section consists of hollow metal doors and frames, where shown on the Drawings, as specified herein, and as required for a complete and proper installation.
- B. Provide the following products:
  - 1. Flush UL-Labeled and non-labeled steel doors and frames, complete with internal reinforcing, hardware cut-outs; installed under requirements of Section 08 05 13- COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION
    - a. Provide thermally broken, insulated steel doors and frames at Toilet Rooms.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 7100 - DOOR HARDWARE: Furnishing finish hardware, and installation templates for hardware cut-outs and reinforcing.
- B. Section 09 9100 - PAINTING: Applied finish coatings.
- C. Division 26 – ELECTRICAL: Wiring connections for electrified door hardware.
- D. Building-in of frame anchors to wall and partition construction: By trade responsible for wall and partition erection.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
  - 2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcing.
  - 3. ANSI/SDI A250.8 – *R2008* (formerly SDI 100) - Recommended Specifications for Standard Steel Doors and Frames.
  - 4. ANSI/SDI A250.11 – Recommended Erection Instructions for Steel Frames.
  - 5. ASCE-7 – Minimum Design Loads and Associated Criteria for Building and Other Structures.
  - 6. ASTM A109 / A109M - Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled.

7. ASTM A568 / A568M - Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
8. ASTM A653 / A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
9. ASTM A924 / A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
10. ASTM A1008 / A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
11. ASTM A1011 / A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
12. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
13. ASTM E283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
14. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
15. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
16. SDI 111 Series (111A-111F): Recommended Details, Steel Doors and Frames.
17. SDI 117-93: Manufacturing Tolerances for Standard Steel Doors and Frames.
18. NFPA publication 80 - Fire Doors and Windows.
19. NFPA publication 105 – Standard for the Installation of Smoke Door Assemblies.
20. UL publication 10B - Fire Tests of Door Assemblies.
21. UL publication 10C – Positive Pressure Fire Tests of Door Assemblies.
22. UL 1784 – Air Leakage Tests of Door Assemblies.
23. All applicable federal, state and municipal codes, laws and regulations for exits.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

##### A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.
2. Coordinate the work of this Section with the respective trades responsible for furnishing hardware and installing doors and frames.
3. Ensure that the work performed hereunder is coordinated with issued templates authorized by the hardware supplier.



4. Do not fabricate doors or frames before receiving a copy of the approved hardware schedule, submitted by the hardware supplier, reviewed by the Contractor and accepted by the Architect. Verify that issued templates are coordinated with the approved schedule; immediately notify the Architect, in writing, of any conflicts.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

## 1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, for doors, frames and shop applied finishes.
  2. Shop Drawings:
    - a. Door and Frame Schedule: A complete schedule coordinated with, and using same identifier designations as, the door and frame schedule contained in the Contract Drawings.
    - b. Large scale details of each type door and frame construction, indicating all gages, reinforcing, and anchorage.
  3. Certificates: Manufacturer's written certification stating that doors, frames, and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section; that specified galvanized and shop priming has been performed; and that all U.L. fire-resistive requirements for the indicated Labels have been met.
- B. Closeout Submittals: Submit the following under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
1. Bonds and Warranty Documentation: Manufacturer's standard warranty.

## 1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards, specified materials, and methods of construction.

**B. Buy American Preference [ADD 03]**

1. All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".

**B.C.** Sole Source: Obtain doors and frames specified in this Section from a single manufacturer.

**1.7 DELIVERY, STORAGE AND HANDLING****A. Delivery and Acceptance Requirements:**

1. Prior to shipping, identify each frame and door with a removable metal or plastic label which corresponds with door schedule identifying opening number and location.
2. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
3. Deliver doors and frames boxed or crated to provide protection during transit and job storage.
4. Inspect doors and frames upon delivery for damage. Minor damage may be repaired provided the refinished items are equal in respects to new work and acceptable to the Architect; otherwise remove and replace damaged items.

**B. Storage and Handling Requirements:**

1. Store and handle materials following manufacturer's recommended procedures.
2. Store doors and frames at the building site upright and under cover. Place the units on wood dunnage and cover in a manner that will prevent rust and damage.

**PART 2 - PRODUCTS****2.1 [ADD 03]****2.2 DESCRIPTION****A. Regulatory Requirements:**

1. Fire resistance rated door construction shall conform to UL publications 10B and 10C.
  - a. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Fire resistance rated borrowed light assemblies: NFPA 80.

3. Corridor door assemblies shall be tested and listed per UL 1784.
4. Smoke Control Door Assemblies: Comply with NFPA 105.
  - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors
5. Install fire rated door assemblies in compliance with NFPA 80.

## 2.3 PERFORMANCE CRITERIA

### A. Exterior Openings:

1. Thermal Performance (Toilet Room Doors only):
  - a. Comply ASTM C1363 for minimum thermal ratings. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.
  - b. Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM C1363 and meet or exceed the following requirements:
    - 1) Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.29, R-Value 3.4, including insulated door, thermal-break frame and threshold.
      - a) Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.36 and R-Value 2.7, including insulated door, kerf type frame, and threshold.
2. Air Infiltration (ALL Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283 to meet or exceed the following requirements:
  - a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).

## 2.4 DOORS

- A. General: Refer to the Drawings for design of doors, sizes, and details.
- B. Construction: Full flush commercial type, 1-3/4 inches thick, unless noted otherwise, meeting or exceeding the materials, gages, construction, and testing requirements of the referenced ANSI and SDI publications.
  1. Insulated Toilet Room Doors, Door Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 "Laminated Core".
    - a. Provide 22 gauge steel stiffeners at 6 inches on-center internally welded at 5 inches on-center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
  2. Non-insulated Door Core Construction: Manufacturer's standard vertical steel-stiffener core. Fabricate doors with specified R-value when tested according to ASTM C1363.
- C. Interior and Exterior Doors 1-3/4 inch thick (44.4 mm): ANSI 250.8, Level 2, Model 1 (Full Flush), ANSI A250.4 Physical Performance Level B, (Heavy Duty) having 18-gage, minimum 0.042 inch (1.0 mm) steel faces.

1. Visible edge seams: Epoxy fill edge seams and finish for seamless appearance (Model 2).
- D. Hardware reinforcing: Welded in place steel reinforcement, hot rolled pickled and oiled steel per ASTM A1011. Provide G-60, hot-dipped galvanized reinforcing for all exterior openings, and locations where galvanized doors and frames are scheduled. Reinforcing shall be not less than the following minimum steel thicknesses:
  1. Hinges: 7 gage, minimum 0.167 inch (4.2 mm) thick.
  2. Closers: Box/channel-shape reinforcing, 14 gage, minimum 0.067 inch (1.6 mm) thick.
  3. Locks: Box/channel-shape reinforcing,
    - a. Cylindrical locks: 16 gage, minimum 0.053 inch (1.3 mm) thick.
    - b. Mortise locks: 14 gage, minimum 0.067 inch (1.6 mm) thick.
  4. Kick plates: 18 gage, minimum 0.042 inch (1.0 mm) thick.
  5. All other hardware: 14 gage, minimum 0.067 inch (1.6 mm) thick.
  6. Locations for reinforcing shall be determined from information and templates provided under Section 08 71 00 - DOOR HARDWARE.
- E. Fabrication
  1. Fabricate exposed faces of door panels from cold-rolled steel only.
  2. Fabricate concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at manufacturer's option).
  3. Fabricate doors with hardware reinforcement welded in place.
  4. Attach fire rated label to each door unit.
  5. Close top and bottom edge of exterior doors with flush end closure. Seal joints watertight.

## 2.5 HOLLOW METAL FRAMES

- A. General: Refer to the Drawings for various types of frames, sizes, and profiles, UL fire-resistive Label frames, and other characteristics of frames and related items.
  1. Frame type (all frames ): Shop welded frames with mitered joints arc-welded, reinforced and ground smooth.
- B. Materials for frames, reinforcement, anchors, anchor clips and related items: commercial grade cold-rolled steel conforming to ASTM A109 or commercial grade hot-rolled and pickled steel conforming to ASTM A1011.
  1. Frame gage: 16-gage, 0.053 inch thick (1.3 mm), with an A60 zinc coating (galvannealed), supplied by the hot-dip process conforming to ASTM A653, Grade 37, with coating applied in accordance with A 924.
  2. Hinge reinforcement: 7 gage, minimum 0.167 inch (4.2 mm) thick.
  3. Lock and strike reinforcement: 16 gage, minimum 0.053 inch (1.3 mm) thick.
  4. Door closer reinforcement: 14 gage, minimum 0.067 inch (1.6 mm) thick.
  5. Floor clips: 16 gage, minimum 0.053 inch (1.3 mm) thick.
  6. Splice plates or channels: same gage as door frame.
- C. Frame construction:

1. Fire-rated frame assemblies: Modify specified construction to meet all construction requirements required for fire-resistive rating.
  - a. Affix appropriate UL, FM or Warnock Hersey labels to each rated frame assembly, indicating applicable rating.
2. Shop-fabricate frames as whole single units per door opening, except when frame size is too large to ship as a single unit. Oversized frames may be shipped in large sections as practicable for field assembly with concealed splice plates or channels.
  - a. Frame corner construction: Refer to paragraph A of this Article.
3. Reinforcements, stiffeners, and base angle clips: Welded to interior surfaces of frames to provide a stable base and so as to not interfere with installation of hardware.
4. Appearance of finished frames: Strong, rigid, completely free from warp and buckle, with miters well-formed and in true alignment, and with surfaces smooth and free from defects of any kind.
5. Silencer holes: Prepare frames for silencers at non-gasketed doors, coordinate with Section 08 71 00 – DOOR HARDWARE and Hardware Schedule. Provide three single silencers for single doors, and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.

D. Anchorage:

1. Anchor clips for frames in metal stud partitions: Steel clips, 18-gage (minimum 0.042 inch [1.0 mm] thick), 1-1/2 inch upturned and downturned legs, or equivalent type standard with the manufacturer, contained within the frames, for screw attachment to metal studs under Section 09 22 16 - NON-STRUCTURAL METAL FRAMING.
2. Anchor clips for frames in cold-formed metal framed exterior walls: Steel clips, 16-gage (minimum 0.053 inch [1.3 mm] thick), 1-1/2 inch upturned and downturned legs, or equivalent type standard with the manufacturer, contained within the frames, for screw attachment to metal studs under Section 05 40 00 - COLD-FORMED METAL FRAMING.
3. Provide the following number of anchors, clips, or bolts, per jamb:
  - a. For frames 7'-6" in height or less: 3 anchors per jamb.
  - b. For frames 7'-6" in height or less and having doors exceeding 3'-0" feet width, and for cross corridor frames: 4 anchors per jamb.
  - c. For frames greater than 7'-6", up to 10'-0" in height: 4 anchors per jamb.
  - d. For frames greater than 7'-6", up to 10'-0" in height, and having doors exceeding 3'-0" feet width, and for cross corridor frames: 5 anchors per jamb.
  - e. For frames over 10'-0' in height: 5 anchors per jamb.

## 2.6 FABRICATION

- A. General: Do not fabricate materials until all specified submittals have been submitted to, and approved by, the Architect.
- B. Fabrication Tolerances, Maximum variation for doors and frames: Maximum diagonal distortion 1/16 inch measured with straight edge, corner to corner.

## 2.7 FINISHES

- A. Preparation: Pressure-sand all surfaces of all doors, frames, accessory items, anchors, and related items, to remove blemishes and foreign matter and provide paint grip. Spot-fill imperfections with metallic filler, and sand smooth. Thoroughly clean the surfaces by applying hot or cold phosphate treatment standard with the manufacturer.
- B. Following cleaning apply one dip or spray coat of rust-inhibitive metallic oxide, zinc chromate, or synthetic resin primer to all surfaces, including those which will be concealed after erection. Bake, or oven dry, the primer at time and temperature recommended by the manufacturer for developing maximum hardness and resistance to abrasion.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
  - 1. Verify that opening sizes and tolerances are acceptable and in compliance with these specifications and applicable codes.
  - 2. Beginning of installation means acceptance of existing substrate and project conditions.

### 3.2 ERECTION AND INSTALLATION

- A. General: Install frames and doors in accordance with the manufacturer's recommendations, ANSI A250.8, SDI-105, and the Door Hardware Institute recommendations. Install with a maximum diagonal distortion of 1/16 inch measured with a straight edge, corner to corner.
- B. Place in-position all steel frames, in accordance with the approved shop drawings and frame schedule.
  - 1. During the installation of metal door frames, after the manufacturer's steel shipping bars have been removed, install wood spreaders at door opening, carefully dimensioned to permit square and plumb installation of door frames and doors.
    - a. Provide rigid temporary bracing for frames as required to ensure maintenance of positioning, and remove only after frames have been permanently anchored.
    - b. For doors located in masonry work, maintain frame position with temporary bracing until frames are built-into-place, and grout has sufficiently cured to maintain frame position.
    - c. Spreaders shall remain in place until doors are installed.
  - 2. Coordinate installation of frames with the various trades installing abutting wall construction for anchor placement.
    - a. Secure frames with the following number of anchors per jamb.
      - 1) For frames 7'-6" in height or less: 3 anchors per jamb.
      - 2) For frames 7'-6" in height or less and having doors exceeding 3'-0" feet width, and for cross corridor frames: 4 anchors per jamb.

- 3) For frames greater than 7'-6", up to 10'-0" in height: 4 anchors per jamb.
  - 4) For frames greater than 7'-6", up to 10'-0" in height, and having doors exceeding 3'-0" feet width, and for cross corridor frames: 5 anchors per jamb.
  - 5) For frames over 10'-0' in height: 5 anchors per jamb.
3. Secure frames, occurring in existing masonry, with expansion bolts and sleeves.
4. Where exposed fastener heads occur in frames, fill with automotive body filler and sand smooth.
- C. Install doors and door hardware in accordance with manufacturer's instructions and requirements of referenced organizations, and the requirements of Section 08 71 00 - DOOR HARDWARE.
  1. Tools for maintenance: All special tools packaged with hardware items shall be saved, tagged/identified as to product use, and turned over to the Owner upon completion of the Work.

### 3.3 CLEANING

- A. General: Clean work under provisions of Section 01 70 00 – EXECUTION AND CLOSEOUT REQUIREMENTS.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

### 3.4 ADJUSTING

- A. Prior to Final Inspection make final check and adjustment of all hardware, clean operating items as necessary to restore proper function and finish of hardware.

End of Section

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Section 08 3613  
SECTIONAL DOORS

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Furnish and install the following:
  - 1. Manually-operated steel sectional door assembly, complete with tracks, clip angles, guides, operating hardware and mechanisms, weather seals, and all related items.

**1.2 RELATED REQUIREMENTS**

- A. Section 08 7100 - DOOR HARDWARE: Furnishing cylinders for sectional doors.
- B. Section 13 3419 - METAL BUILDING SYSTEMS:
  - 1. Steel framing.
  - 2. Steel channel frame for door opening.
- C. Division 26 - ELECTRICAL:
  - 1. Conduit from electric circuit to door operator and from door operator to control station.
  - 2. Electrical power wiring and conduit from the building power supply to the motors, and from the motors to the operating control stations.

**1.3 REFERENCES**

- A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES.
  - 1. ANSI A 216.1 - Sectional Overhead Type Door (NAGDM 102).
  - 2. ANSI/AHA A 135.4 - Basic Hardboard.
  - 3. ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Structural (Physical) Quality.
  - 4. ASTM A526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.
  - 5. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 6. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 7. ASTM E283/E283M – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - 8. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
  - 9. NEMA 250 - Enclosures for Electrical Equipment.
  - 10. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers and Assemblies.

11. NEMA MG1 - Motors and Generators.
12. NFPA 70 - National Electrical Code.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

##### A. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

#### 1.5 SUBMITTALS

##### A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Literature: Manufacturer's product data sheets, specifications, and performance data.
2. Manufacturer's installation instructions. Indicate installation sequence and procedures, adjustment and alignment procedures and lubrication instructions.
3. Maintenance Data: Lubrication requirements and frequency, periodic adjustments required.
4. Warranty: Provide sample copies of manufacturers' actual warranties for all materials to be furnished under this Section, clearly defining all terms, conditions, and time periods for the coverage thereof.
5. Shop drawings: Fully-dimensioned, large scale details of door construction, tracks, guides, counterbalancing and operating mechanisms, electrical characteristics, and related items; with complete installation details reflecting actual site conditions for each location.
  - a. Indicate electrical requirements, connection details.
6. Selection samples:
  - a. Sample card indicating Manufacturer's full range of finishes available for selection by Architect.
7. Verification samples: 12 inch length samples of door framing illustrating material and finish, color matched to existing sectional doors.

**1.6 QUALITY ASSURANCE [ADD 02]**

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.**
- B. Buy American Preference**
  - 1. All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

**4.61.7 QUALIFICATIONS**

- A. Installer, with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.**

**4.71.8 WARRANTY**

- A. General: Submit warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.**
  - 1. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.**
- B. Manufacturer's Warranty: Manufacturer's 1 year warranty, which shall include materials and workmanship of sectional overhead doors, tracks, springs and electric motor, satisfactory operation, and contain any limitations of items specified herein.**
- C. Special Warranties:**
  - 1. Provide 3 year counterbalance spring and mechanism warranty.**
  - 2. Provide 5 year finish warranty for custom powder coat finish.**

**4.81.9 MAINTENANCE**

- A. Provide Installers maintenance contract under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS, for a period of one year form Date of Project Substantial Completion. Maintenance contract includes:**
  - 1. Callback service for the doors and grilles, during standard weekday working hours.**

2. Two post-installation examinations of doors during regular working hours by trained employees of the door manufacturer. (one six months into warranty period, and one in last 30 days of warranty period).
    - a. Perform All necessary adjusting, greasing, and oiling.
  3. Cleaning supplies and parts necessary to keep the equipment in proper operation, except any parts needed due to misuse, accident, or neglect caused by others.
- B. Repair work shall be carried out only by the installer's personnel, using only standard parts furnished by the door manufacturer. Maintenance shall be carried out directly by the installer and shall not be assigned or transferred to any agent.

## PART 2 - PRODUCTS

### 2.1 SYSTEM PERFORMANCE

- A. Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with Massachusetts State Building code as measure in accordance with ASTM E 330.
- B. Maximum air leakage per foot of door perimeter (sill, jamb and header) shall not exceed 0.81 CFM (6.36 cm<sup>2</sup>/min) at 25 MPH (402 KM/hr). No air leakage shall be detected between section joints when tested in accordance with ASTM E-283.

### 2.2 COMPONENTS

- A. Door Assembly: Non-insulated steel door assembly with rabbeted meeting rails to provide full-width interlocking structural rigidity.
  1. Panel Thickness: 2 inches (51 mm).
  2. Exterior Surface: Flush.
  3. Section Material: 16 gauge, galvanized steel.
  4. Center and End Stiles: 16 gauge steel.
- B. Lifting Cables: Provided with aircraft-type, galvanized steel lifting cables with minimum safety factor of 5 to 1.
- C. Spring Counterbalance: Torsion spring on cross head shaft, with braided steel lift cables. Sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of diecast aluminum with high strength galvanized aircraft cable. Sized with a minimum 7 to 1 safety factor.
  1. Springs rated for 100,000 cycles.
- D. Manual Operation, Push-up Operation: Lift handles and pull rope for raising and lowering doors, operating with a maximum 25-lbf lift or pull.
- E. Weatherstripping:
  1. Flexible bulb-type strip at bottom section.
  2. Flexible Jamb seals.
  3. Flexible Header seal.
- F. Track:

1. Material: Hot-dipped galvanized steel (ASTM A-653), fully adjustable for adequate sealing of door to jamb or weatherseal.
  2. Configuration Type: Low Headroom type with Incline.
  3. Size: 2 inches (51mm), or as otherwise recommended by manufacturer.
  4. Mounting: Jamb mounted.
  5. Finish: Galvanized and color-matched to door aluminum framing.
- G. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of stainless steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- H. Locks: Furnish door system with interior lock with five-pin tumbler cylinder, night latch and steel bar engaging track.

## 2.3 FINISHES

- A. Exterior steel surfaces: Custom color powder coat finish to match existing in situ sectional doors.
1. Clean surfaces by shot blasting.
  2. Apply zinc-phosphate treatment in a continuous five-state process. Following zinc-phosphate treatment, apply electro-statically applied powder coat finish in color selected by Architect.
  3. Powder coating epoxy coating, smooth Semi-Gloss finish, **with the following performance criteria: [ADD 02]**
    - a. Film Thickness: 2.5-3.5 mils, dry film thickness.
    - b. Gloss: 55-65° (per gardener 60°, ASTM D523).
    - c. Cross hatch adhesion test (per ASTM D3359): rated 5B.
    - d. Mandrel bending test (per ASTM D522) 4mm (5/32 inch).
    - e. Impact test (per ASTM D2794), Up to 120 in-lb.
    - f. Pencil Hardness (ASTM B3363) 2H (minimum).
    - g. Humidity resistance, maximum blistering (1500 hours, ASTM D2247): 1 mm (0.04 inch).
    - h. Acid salt spray resistance, maximum undercutting (1500 hours, ASTM G85): 1 mm (0.04 inch).
- B. Interior steel surfaces: Manufacturer's standard white, two coat baked-on polyester enamel.

## 2.4 FABRICATION

- A. Do not fabricate doors until all specified submittals have been submitted to, and approved by, the Architect.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Inspect and verify wall openings are in proper condition to receive the work of this Section. Verify that field measurements are as indicated on reviewed and approved shop drawings.

### 3.2 PREPARATION

- A. Prepare opening[s] to permit correct installation of door unit to perimeter air and vapor barrier seal.
- B. Verify that electric power is available and of the correct characteristics.

### 3.3 INSTALLATION

- A. Perform installation of door units, except as otherwise specified, in accordance with the approved shop drawings and the recommendations of the manufacturer.
- B. Anchor assembly to wall construction and building framing without distortion or stress.
- C. Brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Set entire assembly including doors, guides, and hardware, plumb and true to line, to assure smooth operation.
- E. Coordinate installation of electrical service for sectional overhead door with Division 26 - ELECTRICAL. Complete power and control wiring from disconnect to unit components.
- F. Coordinate installation of sealants and backing materials at frame perimeter of sectional overhead door as specified in Section 07 92 00 - JOINT SEALANTS.

### 3.4 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work. Maximum variation from plumb or level: 1/16 inch. Maximum variation in longitudinal or diagonal warp: 1/8 inch per 10 foot straight edge.

### 3.5 ADJUSTING

- A. Adjust doors, hardware and operating assembly as required to ensure a smooth operation without binding.

### 3.6 CLEANING

- A. Remove all labels, protective films and coverings from assembly components.
- B. Clean doors, frames and glass.
- C. Remove tools, equipment and all rubbish and debris from the work area, caused by the work of this Section; leave area in broom-clean condition.

### 3.7 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

End of Section

Section 09 2900

GYPSUM BOARD

**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. The work of this Section consists of gypsum board (drywall) and trim finishes for partitions, ceilings, and soffits, where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following scope.
- B. Furnish and install:
  - 1. Taped, compounded and sanded moisture resistant gypsum board finishes.
  - 2. All trim and accessory components related to gypsum board work.
  - 3. Acoustical joint sealant and backing at perimeter of gypsum board partitions.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY: Supplemental wood blocking supporting gypsum board.
- B. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Furnishing steel door frames.
- C. Section 09 9100 - PAINTING: Applied finish coatings.
- D. Section 10 4000 - SAFETY SPECIALTIES.
- E. Division 21 - FIRE SUPPRESSION: Sprinkler heads in ceiling system.
- F. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Supply and return air registers.
- G. Division 26 - ELECTRICAL: Independent hangers for suspended lighting fixtures.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - 2. ASTM C645 – Standard Specification for Nonstructural Steel Framing Members.
  - 3. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

4. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
5. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
6. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
7. ASTM C1177/C1177M – Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
8. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel.
9. ASTM C1396/C1396M - Standard Specification for Gypsum Board.
10. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
11. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels.
12. ASTM C1766 - Standard Specification for Factory-Laminated Gypsum Panel Products.
13. ASTM D1784 - Standard Classification System and Basis for Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
14. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
15. ASTM D3678 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Interior-Profile Extrusions.
16. ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
17. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
18. ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
19. GA 220 - Recommended Specifications for Gypsum Board Winter Related Job Problems.
20. GA 600 – Fire Resistance and Sound Control Design Manual.
21. The Gypsum Construction Handbook, (USG), Seventh Edition.
22. UL - Fire Resistance Directory.
23. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
24. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.



B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:

1. GA 201 - Gypsum Board for Walls and Ceilings.
2. GA 214 - Recommended Specifications for Levels of Gypsum Board Finish, Glass Mat and Fiber-Reinforced Gypsum Panels.
3. GA 216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
2. Work of this Section shall be closely coordinated with the work of Section 09 22 16 - NON-STRUCTURAL METAL FRAMING, to assure the steady progress of the Contract.

B. Sequencing: Do not install gypsum board until all pipes, ducts, conduits, and other such items which are to be enclosed thereby, have been permanently installed, inspected and approved.

#### [ADD 02]

C. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

#### 1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Shop Drawings:
  - a. Details of any special conditions associated with fireproofing.
  - b. Mark-up a set of blackline interior elevations indicate corrections to grid layout and provide dimensioning showing locations of all proposed control joints and expansion joints.
    - 1) Provide interior elevation drawings for interior elevations which are not included as part of the Contract Drawing set.

#### 1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

**B. Buy American Preference [ADD 02]**

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

- B.C.** Sole Source: Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum board.

#### 1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Storage and Handling Requirements:

1. Store materials inside, under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.
  - a. Neatly stack board materials flat to prevent sagging.
2. Handle board materials so to prevent damage to edges, ends and surfaces.
3. Protect trim, accessories and corner beads from being bent or damaged.

1.8 SITE CONDITIONS

- A. Environmental Conditions: In accordance with GA 216, maintain minimum ambient temperature of 50 degrees Fahrenheit 48 hours before, during taping and compounding, and until completely dry thereafter.

**PART 2 - PRODUCTS**

2.1 **[ADD 02]**

2.2 DESCRIPTION

A. Regulatory Requirements

1. Fire resistance ratings: Where gypsum board systems with fire-resistance ratings are indicated, provide materials and assemblies of the rating required, tested per ASTM E119, which are identical to those indicated by reference to Gypsum Association file numbers in "Fire Resistance Design Manual" or to design designation in the Underwriters Laboratories "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction and to the Owners' insurance underwriters.
2. Seismic Compliance: Nonstructural components that are permanently attached to structures and their support attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance to local jurisdiction.

2.3 BOARD MATERIALS

- A. "Paper-less" moisture and mold resistant board: 5/8 inch thick Glass mat, water-resistant, fire-resistant, mold-resistant interior wall panel: Coated inorganic glass mat-faced, with Type "X" water-resistant, treated core gypsum wallboard. Physical properties conforming to the applicable sections of ASTM C1177 and ASTM D3273.

1. **[ADD 02]**

2.4 TRIM AND EDGE COMPONENTS

- A. Polyvinyl chloride (PVC) trim accessories, conforming to ASTM D1784 and C 1047.

1. J Bead: Edge trim with exposed 1/2 inch face cap, furnish trim model number corresponding to the board thickness where installed.
  - a. **[ADD 02]**
2. L Bead: casing edge trim, furnish trim model number corresponding to the board thickness where installed
  - a. **[ADD 02]**
3. L-Bead with removable leg: Casing edge trim for joints at ceilings doors and windows, with removable leg strip, furnish trim model number corresponding to the board thickness where installed
  - a. **[ADD 02]**
4. Corner beads, 90 degree with 1-1/4 inch flanges:
  - a. **[ADD 02]**

5. Control joints: "V" type joint with nominal 3/16 inch reveal and removable temporary tape:

- a. **[ADD 02]**

B. Paper faced trim accessories for use with Abuse Resistant Gypsum Board:

1. Corner beads (at outside corners): Paper-faced galvanized steel sheet for finishing with joint compound conforming with ASTM C1047, equal USG product "Sheetrock" Brand Paper-Faced Metal Corner Bead.
  - a. Provide curved-edge cornerbead with notched or flexible flanges at curved openings.
2. Casing beads: Paper-faced galvanized steel sheet for finishing with joint compound conforming with ASTM C1047, equal to USG product "Sheetrock" Brand Paper-Faced Metal Beads and Trims.
  - a. LC-Bead (J-Bead): Use at exposed panel edges.
  - b. L-Bead: Use where indicated
  - c. U-Bead: Use where indicated.
3. Control joints: Solid zinc "V-shaped control joint, having 3/32 inch thick perforated grounds, equal to USG Control Joint No. 093.

2.5 ACCESSORIES

A. Tapes and compound: **As recommended by gypsum wallboard manufacturer of the folowing types: [ADD 02]**

1. Joint tape (at paper-faced gypsum): Nominal 2 inch wide, high strength, cross-fibered paper drywall tape.
2. Joint tape (at fiberglass faced gypsum): Nominal 2 inch wide, self adhering (adhesive backed), fiberglass mesh tape.
3. Joint Compound for setting fiberglass joint tape:
  - a. **[ADD 02]**
4. Joint Compound for setting paper joint tape: 'Speed-setting type compound', field mixed.
  - a. **[ADD 02]**
5. Joint Compound for finishing: field mixed joint compound or factory pre-mixed compound.
  - a. **[ADD 02]** Field-mixed compounds: acceptable products, or approved equal:
  - b. **[ADD 02]** Factory pre-mixed compounds: acceptable products, or approved equal:

B. Fasteners (interior board systems):

1. Type S, bugle head screws complying with ASTM C1002, for applying gypsum board to metal framing, ceiling grid system, and furring channels.

- a. Not less than 1 inch long for single layer gypsum board.
- b. Not less than 1-5/8 inch [41mm] long for double-layer gypsum board.
- c. Not less than 1-5/8 inch [41mm] long for double-layer gypsum board,
- C. Ceiling buttons, perforated type, 1 inch diameter, for use at multiple layered gypsum board ceiling systems.
- D. Laminating adhesive: Ready mix joint compounds as specified herein above.
- E. Joint Sealers (Acoustical Sealant): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.

1. **[ADD 02]**

2. **Product Characteristics:**

- a. **Moduulus at 100% (tested per ASTM D415): 60 to 65 psi.**
- b. **Ultimate Tensile Sgrength (tested per ASTM D415): 80 to 90 psi.**
- c. **Ultimate Elongation (tested per ASTM D415): 200 percent.**
- d. **Movement Capability(tested per ASTM D415): ± 7.5 percent.**
- e. **VOC Content (tested per ASTM D3960): less than 50 g/L.**
- f. **VOC Emissions (all exposure scenarios): Pass per CDPH v1.2.**

2.6 SOURCE QUALITY CONTROL

- A. Obtain gypsum board and finishing products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

**PART 3 - EXECUTION**

3.1 EXAMINATION

- A. Verify that all items which are to be enclosed by Work of this Section, have been permanently installed, inspected and approved.
- B. Inspect framing and other substrates; verify that they are in proper condition to receive the work of this Section.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 PREPARATION

- A. During the operation of gypsum board work, protect all wood, metal, glass, flooring, and other finished materials against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.3 INSTALLATION - GENERAL

- A. General: Perform erection procedures for the various gypsum board system conditions, except as otherwise specified, as set forth in GA 201, GA 216, GA 220,

GA 600, and the written instructions of gypsum board manufacturer, together with the additional requirements specified herein and as indicated on the Drawings.

- B. Where fire-resistive rated assemblies are indicated, erect gypsum board systems in strict accordance with the manufacturers' UL listed test constructions for the required fire rating on each specific assembly.
  - 1. At intersections of dissimilar wall types, gypsum wallboard assembly of the higher fire resistant rating is to run through the intersection maintaining required fire separation.
  - 2. Fire rated construction shall be continuous from floor deck to underside of floor deck above or to underside of roof deck as applicable, and as detailed.
  - 3. Shaft wall construction shall be continuous from bottom of shaft wall to top of shaft wall without interruption, except where otherwise detailed on Drawings.
- C. Install specified control joints where indicated on Drawings and where run of partitions, or furred surfaces exceeds 30 feet. Show locations of all control joints on shop drawings.
  - 1. Locate control joints at corners of head frames of doors.
  - 2. Run vertical control joints continuously to top of partition, shaft wall or furred area, as applicable.

#### 3.4 INSTALLATION OF GYPSUM BOARD

- A. Screw fasten only, gypsum board to framing and furring, with ends and edges occurring over firm bearing. At all door jambs screw fasten gypsum panels 8 inches on center to both box studs
  - 1. Erect single layer fire-resistance rated gypsum board vertically.
  - 2. Erect standard and moisture resistant layer board in most economical direction.
  - 3. Erect ceiling and soffit gypsum boards to meet UL requirements, where applicable, stagger end joints over supports. Secure gypsum board with fasteners inserted through ceiling buttons; anchor fasteners directly to framing or suspended support system.
- B. Wherever items penetrate the gypsum board surfaces, use extra care in cutting the gypsum board to ensure a uniformly-dimensioned joint between the penetrating item and the gypsum board, and fill joints with specified sealant material. Verify the expected deflection factor of the penetrating members, and cut the gypsum accordingly, to prevent damage thereto from the deflecting members.
- C. Installing Trim Accessories:
  - 1. General: For trim with back flanges intended for fasteners, attach to framing with same screw fasteners used for gypsum board. Otherwise, attach trim according to manufacturer's written instructions.
    - a. Nailing, stapling, or crimping methods to install trim components is prohibited.
  - 2. Install corner beads at all exterior corners of gypsum boards.

3. Install casings (PVC trim) wherever gypsum board meets a dissimilar material, and in other locations indicated on the Drawings, except at floors where bottom of the board will be concealed by base, integral with flooring, resilient base, wood base or carpeted base.

### 3.5 APPLICATION OF ACOUSTICAL SEALANT

- A. General: Install sealant and backing in accordance with the recommendations of ASTM C919 and sealant manufacturer's recommendations.
  1. Perform preparation in accordance with C790. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.
  2. If so recommended and furnished by the specific sealant manufacturer, apply primer to all joint surfaces, taking care not to stain adjacent surfaces.
- B. Seal all partition perimeters prior to taping or compounding. Where perimeters are edged with metal trim, apply sealant and backing material between trim and dissimilar material.
- C. Seal all penetrations in partition types designated for "acoustical" insulation. Penetrations to receive sealant include electrical boxes, plumbing, heating and air conditioning ducts, telephone, intercom hookups and similar items.
  1. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.
    - a. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.
    - b. Do not stretch back-up material into joints.
    - c. Install bond breaker wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such bond might impair the Work.
  2. Apply sealant in continuous beads without open joints, voids or air pockets
    - a. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
  3. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.

### 3.6 APPLICATION OF JOINT TREATMENT

- A. Install joint tape at all joints where gypsum boards abut and where boards form internal corners, whether or not such joints will be concealed from view.
- B. Apply compound to all joints, edges, corners, fastener head depressions and abrasions in the surfaces, whether or not such conditions will be concealed from

view. Sand completely smooth all compound surfaces, which will be exposed to view, and leave ready to receive applied coatings or finish.

- C. Provide the minimum levels of gypsum board finishes as defined by the Gypsum Association recommended specifications GA-214 and GA-216, per the following:
  - 1. At areas hidden from view, except as otherwise specified: Level 1.
  - 2. At areas hidden from view, requiring a fire rating: Level 1.
  - 3. At surfaces scheduled to receive painted finishes: Level 4, except at abuse resistant board, provide Level 5 finish:

### 3.7 TOLERANCES

- A. Maximum variation for gypsum board partitions and ceilings from true flatness: 1/8 inch per 10 feet, noncumulative.

### 3.8 CLEANING

- A. Daily clean work areas by sweeping and disposing of debris, scraps, and deposits of compound and gypsum fill.
- B. After completion of the work of this Section, remove equipment, and clean all wall, partition, and floor areas free from deposits of gypsum fill, and other materials installed under this Section.
- C. Waste Management:
  - 1. Recycle or dispose of off-site waste materials and trash at intervals approved by the Owner and in compliance with waste management procedures specified in Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

End of Section



## Section 09 6513

## RESILIENT BASE AND ACCESSORIES

**PART 1 – GENERAL****1.1 SUMMARY**

- A. Prepare substrate to receive resilient base.
- B. Furnish and install the following:
  - 1. Cove resilient base.

**1.2 RELATED REQUIREMENTS**

- A. Section 09 2900 - GYPSUM BOARD: Gypsum board substrate to receive resilient base.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 2. ASTM F1861 - Standard Specification for Resilient Wall Base
  - 3. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
- B. Sequencing:
  - 1. Sequence work to ensure resilient base is not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, wet work is dry and cured, and work overhead is completed.
  - 2. Sequence resilient base installation after flooring is installed and when base cabinets or other built-in casework is present on the substrate.
  - 3. Ensure that installation of flooring and accessories occurs after other finishing operations, including painting.
  - 4. Field Measurements
    - a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.

- b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.
- C. Pre-construction Conference:
  - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
    - a. Project Overview
    - b. Labor requirements
    - c. Operation Safety Items
    - d. Construction
    - e. Temporary Facilities and Controls
    - f. Project Closeout:
    - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

## 1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
  - 1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions.
    - a. Include certification of data indicating Volatile Organic Compound (VOC) content of all adhesives. Submit MSDS highlighting VOC limits.
  - 2. Selection Samples: Manufacturers' sample chain of colors available for selection by Architect.
  - 3. Verification Samples: Each type resilient base and color selected, 24 inches long.
  - 4. Qualification Submittals.
- B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
  - 1. Bonds and Warranty Documentation:
    - a. Manufacturer's Warranties and Guarantees as specified elsewhere herein this Section.
- C. Maintenance Material Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Clearly label and package extra materials securely to prevent damage.
  - 1. Extra Stock Materials: Upon completion of the Work of this Section, deliver to the Owner extra materials for future repairs and maintenance, an amount equal 24 linear feet for each color and type of resilient base installed.

## 1.6 QUALITY ASSURANCE

- A. General: Avoid color and pattern differential; provide base from one production run in any single room or contiguous areas.
- B. **Buy American Preference [ADD 03]**
  - 1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
  - 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
  - 2. Do not deliver resilient base materials to the project until all concrete, masonry, plaster and other wet work has been completed and dry.
  - 3. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
- B. Storage and Handling Requirements:
  - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
  - 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
- C. Packaging Waste Management: Comply with packaging requirements specified under Section 01 6000 - PRODUCT REQUIREMENTS.
  - 1. Shipping materials: Manufacturer shall utilize to the greatest extent possible packaging materials which are biodegradable and recyclable.
  - 2. Jobsite packaging waste management: Recycle packaging materials coordinated with general construction waste management specified under Section 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

## 1.8 SITE CONDITIONS

- A. Maintain uniform temperature of minimum of 65 degrees Fahrenheit and humidity of 20 to 40 percent 48 hours prior to, during, and 48 hours after installation. Store resilient flooring materials and accessories in the spaces where they will be installed for at least 48 hours before beginning installation. Thereafter, maintain a minimum temperature of 55 degrees Fahrenheit in the areas where the work is completed.

## 1.9 WARRANTY

- A. General: Submit the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- B. Manufacturer Warranty:
  - 1. Resilient Base: Provide manufacturer's standard one year limited product warranty for resilient base materials.
  - 2. Adhesives: Provide manufacturer's one year limited product warranty for adhesion reliability.

## PART 2 - PRODUCTS

### 2.1 [ADD 02]

### 2.2 DESCRIPTION

- A. Performance Requirements:
  - 1. Flexibility, ASTM F137: Passes 1/4 inch mandrel
  - 2. Resistance to light, ASTM F1515: Passes
  - 3. Resistance to chemicals, ASTM F925: Passes
  - 4. ASTM E648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm<sup>2</sup> or greater, Class 1.
  - 5. ASTM E84, Flame Spread and Smoke Development: Class B, ≤ 450

### 2.3 RESILIENT BASE

- A. Rubber Base: 4 inches high, ribbed back, 1/8 inch thick, rounded top complying with ASTM F1861, Type TS, (Vulcanized Thermoset Rubber), Group 1. Colors shall be as selected. Rubber base shall be furnished in continuous lengths, approximately 100 feet long.
  - 1. Provide coved base at resilient flooring.
  - 2. Coved base at sealed concrete floors, and back-of-house spaces not having a finished floor.
  - 3. Provide straight (non-coved) base at carpeted and walk-off entrance mat areas.
- B. Base accessories: Premolded end stops of same material, size and color as base. Job-form all external and internal corners from base material, pre-molded corner pieces will not be acceptable

### 2.4 ACCESSORIES

- A. Adhesives
  - 1. General: Water resistant, low VOC, acceptable to the resilient flooring manufacturer, for substrate conditions.
    - a. Cove Base Adhesives: Maximum VOC 50 [g/L less water]
  - 2. [ADD 02]
- B. Joint Sealer for between the top of wall base and irregular wall surfaces: Plastic filler as recommended by manufacturer.

- C. Cleaning material: Domestic neutral floor detergent having a pH 7 or pH 8, as recommended by the flooring manufacturer.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

#### **3.2 INSTALLATION**

- A. Install all products in strict accordance with each manufacturer's written installation procedures and other provisions specified herein.
- B. Spread only enough adhesive to permit installation of materials before initial set.
- C. Install Resilient base: Install base on solid backing, bond to vertical substrate with continuous contact at horizontal and vertical surfaces. Apply wall base to walls, columns, casework and other permanent fixtures in areas where base is required.
  - 1. Install in lengths as long as practical.
  - 2. Scribe to fit to door frames and other interruptions.
  - 3. Form all external and internal corners in accordance with manufacturer's written instructions. Cope inside corners and fit neatly.
  - 4. Fill voids with plastic filler along the top edge of the resilient wall base on masonry surfaces or other similar irregular substrates.

#### **3.3 CLEANING**

- A. Comply with requirements of Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL for handling and disposition of all construction and demolition waste.
- B. Post-installation Cleaning: As installation progresses, continually remove excess adhesive from floor, base and wall surfaces without damage.

End of Section

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## Section 09 9100

## PAINTING

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes: This Section consists of painting work where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Painting work includes but is not limited to the surface preparation and application of coated finishes, and subsequent touch-up, of interior and exterior items and surfaces as indicated on the Contract Drawings and as scheduled herein.
  - 1. No attempt is made in this Section to list all surfaces, fixtures and equipment requiring painting on this project. It is the responsibility of the Subcontractor to determine for itself the scope and nature of the Work required for a complete installation from the information provided herein and in the Drawings.
- B. Surfaces and Materials: In general, without limiting the generality thereof, the following surfaces, fixtures and equipment require a painted finish:
  - 1. Gypsum board partition and wall surfaces, ceilings and soffits.
  - 2. Metal doors and frames.
  - 3. Exposed to view structural steel.
  - 4. Overhead surfaces above wood ceiling system using Dry-Fall Paint, including but not limited to ducts, sprinkler piping, conduit, underside of decking, and gypsum surfaces.
- C. DO NOT PAINT the following surfaces and materials.
  - 1. Concealed from view surfaces, except as indicated otherwise in the Contract Documents or as specified herein.
  - 2. Chrome or nickel plating, stainless steel, bronze, brass.
  - 3. Aluminum other than mill finished or factory primed.
  - 4. Factory finished mechanical and electrical equipment, pumps, machinery and similar items which occur in mechanical, storage or equipment rooms or areas.
  - 5. Factory finished materials, specialties, and accessories unless otherwise specified.
  - 6. Prefinished millwork items.
  - 7. Fire resistant testing and certification labels, code required labels, safety warning labels, performance rating plates, nomenclature plates, identification plates, and similar other labels.

**1.2 RELATED REQUIREMENTS**

- A. Section 03 3000 - CAST-IN-PLACE CONCRETE:
- B. Section 07 9200 - JOINT SEALANTS: Requirements for sealant and backing materials.
- C. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Shop priming of metal frames and steel doors.

- D. Division 22 - PLUMBING: Prefinished items such as plumbing fixtures, sprinkler heads, convectors, anemostates and similar surfaces and materials.
- E. Division 26 - ELECTRICAL: Prefinished items such as light fixtures, switch gear, electrical distribution cabinets and similar surfaces and materials.
- F. Respective sections: Factory-finishing of mechanical, plumbing, fire protection and electrical equipment.

### 1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
  - 2. ASTM D2016 - Test Method for Moisture Content of Wood.
  - 3. SSPC-Vis1 - Pictorial Surface Preparation Standards for Painting Steel Structures.
  - 4. SSPC-SP2 - Steel Structures Painting Manual, Volume 2, Systems and Specifications.
  - 5. All applicable federal, state and municipal codes, laws and regulations for flammability and smoke generation of interior finishes.
- B. Definitions:
  - 1. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials specified herein, whether used as prime, intermediate or finish coats.
  - 2. Sheen: Specular gloss readings in accordance with ASTM D52.
    - a. Flat: less than 5 (measured at 85 degrees).
    - b. Eggshell: 5 – 20 (measured at 60 degrees).
    - c. Satin: 15-35 (measured at 60 degrees).
    - d. Low Luster: 25 – 35 (measured at 60 degrees).
    - e. Semi-Gloss: 30 -65 (measured at 60 degrees).
    - f. Gloss: 65 or more (measured at 60 degrees).

### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. General: The applicator of work specified herein is responsible to ensure that all paints, enamels, and coatings, proposed to be applied hereunder, are compatible with coatings used for shop-primed items and items which have been prime-coated under the work of other trades.
  - 2. Immediately notify the Architect in writing of conditions which may require a change in the specifications of this Section before proceeding with the work. Failure to do so, in a timely fashion, so as not to interfere with the schedule of



work of this Contract, shall be construed as acceptance of the coatings specified. Perform all corrective measures, at no cost to the Owner, for any defects in the work, resulting from the use of such materials.

B. Scheduling:

1. Sequence painting work to ensure primers and painting is not applied until building is enclosed, sufficient heat is provided, all dust-generating activities have terminated, wet work is dry and cured, and work overhead is completed.
  - a. Painting work should be scheduled so as to minimize touch-ups. Interior painting is to be without flashmarks. Should flashmarks occur due to touch-ups, the Contractor shall be required to redo the entire surrounding wall surface.
  - b. Concrete, masonry, plaster, tile and marble setting and polishing and other wet work shall be completed and dry before commencement of painting work.
  - c. Finish flooring and ceiling work may be scheduled by Contractor to be completed after painting. In such cases, paint subcontractor is required to perform touch-ups as necessary following floor and ceiling installations, without additional cost to Owner.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.
    - a. Include certification of data indicating Volatile Organic Compound (VOC) content of all paint materials.
  2. Samples:
    - a. Manufacturer's color selector for custom mixed colors for Architect's color scheduling.
    - b. Opaque coatings: Two 9 x 12 inch finished samples on hardboard of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.
- B. Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS:
1. Color chips: After final approval of all colors and tints by the Architect, submit to the Owner, color chips of all coatings used, with manufacturer's name and mix designation of the coating for the purpose of future re-ordering of coatings. Color chips shall be at least six (6) square inches in size, for each color and tint.

1.6 QUALITY ASSURANCE

- A. Applicator: Company specializing in commercial painting and finishing with 3 years minimum documented experience.
- B. Buy American Preference [ADD 03]**

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 “Made in America Laws” means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as “Made in America”.**

**B.C.** Single source responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

**C.D.** Environmental Requirements for Volatile Chemicals:

1. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:
  - a. Flat Paints and Coatings: VOC not more than 50 g/L.
  - b. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
  - c. Anti-Corrosive Coatings: VOC not more than 250 g/L.
  - d. Clear wood finishes:
    - 1) Varnishes: VOC not more than 350 g/L.
    - 2) Lacquer: VOC not more than 550 g/L.
  - e. Floor coatings: VOC not more than 100 g/L.
  - f. Sealers:
    - 1) Waterproofing sealers: VOC not more than 250 g/L.
    - 2) Sanding sealers: VOC not more than 275 g/L.
    - 3) All other sealers: VOC not more than 200 g/L.
  - g. Stains: VOC not more than 250 g/L.
2. Do not use water based paints formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure), formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides. Water based paints shall be low VOC and shall have a flash point of 61 degrees C or greater.
3. Where it is necessary to use solvent-based paints, with less than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
4. The following shall be low VOC and not be formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure).
  - a. High performance water based acrylic coatings.
  - b. Pigmented acrylic sealers.
  - c. Catalyzed epoxy coatings.
  - d. High performance silicone grafted epoxy coatings.
5. Restricted Components: Paints and coatings used on this Project shall not contain any of the following compounds. (Excluded from this restriction are

residual quantities of naturally occurring elements and chlorinated organics which are found in chlorinated water supplies; contaminate levels shall be below that of the National Primary Drinking Water Standard):

- a. 1,2-dichlorobenzene
- b. Alkylphenol ethoxylates (APEs)
- c. Formaldehyde-donors
- d. Heavy metals, including lead, mercury, cadmium, hexavalent chromium and antimony in the elemental form or compounds
- e. Phthalates
- f. Triphenyl tins (TPT) and tributyl tins (TBT).

#### 1.7 FIELD SAMPLES

- A. Provide field samples under provisions of Section 01 4000 - QUALITY REQUIREMENTS for purpose of verifying selected colors.
- B. Paint on-site sample areas, minimum 40 square feet, illustrating selected color, and tint.
- C. Locate samples where directed. The Contractor shall provide in the base Contract, a total amount of samples equal to one sample per room.
- D. Accepted samples may not remain as part of the work.

#### 1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site in sealed and labeled containers; container labeling shall include manufacturer's name, type of paint, color mix designation, expected coverage, surface preparation instructions, instructions for mixing and reducing, drying time, and clean-up recommendations.
- B. Store materials, conforming with applicable codes and fire regulations, in designated spaces. Keep storage area secure when direct access is not required or when not performing work under this Section. Take precautionary measures to prevent fire hazards and spontaneous combustion, maintain a dry-chemical type fire extinguisher in all areas where materials of this Section are being stored or used.
- C. Store paint materials in a well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit.
- D. Do not use the sanitary system for mixing or disposal of refuse material. Carry water to mixing rooms and dump waste material in a suitable refuse receptacle. Remove oily rags and waste each day.

#### 1.9 PROJECT CONDITIONS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Apply paints and finishes above minimum temperature conditions in strict accordance with manufacturer's instructions.

1. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent unless required otherwise by manufacturer's instructions.
- C. Provide sufficient lighting to maintain 80 foot-candles measured mid-height at substrate surface.

## **PART 2 - PRODUCTS**

### **2.1 [ADD 02]**

### **2.2 MATERIALS**

- A. Coatings: Ready mixed, except for field catalyzed coatings with good flow and brushing properties; capable of drying or curing free of streaks or sags. Color pigments shall be processed to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating. Provide best quality grade, where manufacturer makes more than one grade of any material specified.

### **2.3 ACCESSORIES**

- A. Accessory materials: other materials not specifically indicated, but are required to achieve the finishes specified of commercial quality.
- B. Cleaning Materials: Tri-Sodium Phosphate (TSP) substitute. **[ADD 02]**

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Notify Contractor of any condition that may potentially affect proper application of coatings.
- B. Beginning Work of this Section means acceptance of substrate surfaces and site conditions.

### **3.2 PREPARATION**

- A. Furnish and lay suitable drop cloths in all areas where coating work is being done to protect floors and all other surfaces from damage during the work. Protect adjoining surfaces with painters mask tape.
- B. Prior to preparing surfaces or finishing, remove all finish hardware for painting doors and frames, except hinges and locks on exterior door; remove electrical plates, light fixture trim and fittings. Re-install hardware and other removed items after painted surfaces are thoroughly dry.
- C. Mix coatings thoroughly, unless otherwise directed by the manufacturer of the specific coating used, to ensure uniformity of color and mass. Strain previously opened coatings to remove skins, lumps, and other foreign matter prior to painting.
- D. Thin or reduce materials only as recommended by the specific material manufacturer, and only with the approval of the Architect.
- E. Impervious surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to thoroughly dry.

- F. Uncoated steel and iron surfaces:
  - 1. Remove grease, scale, dirt, rust, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or sandblasting where heavy coatings of scale are evident.
  - 2. Wash steel with solvent, apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned.
  - 3. Spot prime after repairs with metal primer product of the finish coating manufacturer.
- G. Shop primed steel surfaces:
  - 1. Remove rust, blistered and defective shop prime paint, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or commercial paint remover. Feather edges to make touch-up patches inconspicuous.
  - 2. Remove all grease or dirt with mineral spirits.
  - 3. Spot prime bare metal with metal primer product of the finish coating manufacturer. Seal top and bottom edges of metals doors with primer.

### 3.3 APPLICATION

- A. Apply all materials in strict accordance with the approved manufacturer's printed instruction, and in accordance with the best trade practices. Each coat shall be reviewed and approved by the Architect before succeeding coats are applied.
- B. Do not apply successive coating until the preceding coat is thoroughly dry, and in no case in less than 24 hours after the preceding coat.
- C. Number of coats is indicated under Painting Schedules. Number of coats is indicated as a minimum number to be applied over scheduled substrates. An additional coat or coats may be required for proper color coverage of substrate as determined by the Architect, at no additional cost to the Owner. Examples of these conditions include, but are not limited to:
  - 1. Dark colored substrates may require an additional primer or intermediate coat to stabilize color, if final applied top-coat color is light.
  - 2. Pre-finished or pre-primed products may require an additional field applied coat to stabilize the shop/factory applied base color prior to application of top-coat finishes.
  - 3. Dark color top coat finishes may require additional finish coat over white or light colored substrates to obtain correct color density.
- D. Apply each coat to a uniform finish; Apply primer and first coat of slightly lighter in color tint than the scheduled color of the final coat.
- E. Sand lightly between coats to achieve required finish and remove sanding dust prior to applying succeeding coat.
- F. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- G. Prime back surfaces of all interior and exterior woodwork scheduled for painted finish with primer.

- H. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

#### 3.4 CLEANING

- A. Upon completion of the work in each area, remove all coating splatters from glass, prefinished surfaces, bright metals, and from other surfaces that have not been painted or finished hereunder. Do not use abrasive paper or abrasive cleaner on any prefinished surface or bright metal. Remove all materials and debris; leave work area in a clean condition.

#### 3.5 PROTECTION AND TOUCH-UP

- A. During painting work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Properly clean, repair or replace any work so damaged and soiled.
- B. Protect all painted and finished surfaces against damage until the date of final acceptance of the work. The Architect will conduct a final review of all work performed hereunder. Re-coat or touch-up, all scratches and other blemishes on surfaces, and as directed by the Architect, any areas found which do not comply with the requirements of this Section, and bear all costs therefore.
- C. Any re-coating or touch-up work, required after the work of this Section has been reviewed and accepted by the Architect, will be paid for by the Contractor.

#### 3.6 PAINTING SCHEDULE

- A. Colors: The Architect will furnish a schedule of colors for each area and surface. Tinting and matching shall be to the satisfaction of the Architect. No limit is placed on the number of colors that may be required, or the number of colors in any one room, area, or surface. Premium paints of deep-hued, bright, pigment intensive, accent and primary colors may be scheduled for up to 25 percent of all interior and exterior surfaces without additional cost to the Owner.
  - 1. Colors of priming coats (and body coats where specified) shall be lighter in tint than those of finish coat.
- B. Paint schedule for exterior surfaces and materials: Refer to Document 09 91 13.
- C. Paint schedule for interior surfaces and materials: Refer to Document 09 91 23.
- D. Paint schedule for labeling and identifying fire resistive and rated designations : Refer to Document 09 91 23.
- E. Painting schedule for mechanical and electrical equipment: Refer to Document 09 91 23.

End of Section

Document 09 9113

## EXTERIOR PAINTING SCHEDULE

**PART 1 - GENERAL**

- A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled "APPLICATION" in specification Section 09 9100 - PAINTING, regarding coverage.

**1.2 PAINTING SCHEDULE FOR EXTERIOR SURFACES AND MATERIALS**

- A. Exterior METAL, FERROUS, new, shop primed and existing:
1. One coat rust inhibitive primer. (touch up bare metal at existing and shop primed surfaces).
    - a. **Complies with [ADD 02]:**
      - 1) **FS TT-P-664.**
      - 2) **MIL-P-11414, MIL-P-15930 and MIL-P-52977**
      - 3) **SSPC Paint #25.**
  2. Two coats **DTM (Direct to Metal)** acrylic gloss enamel:
    - a. **Complies with Master Painters Institute MPI #114 [ADD 02]:**
- B. Exterior METAL, GALVANIZED:
1. Wash primer apply if- ~~as~~ recommended by individual paint manufacturer.
  2. One coat primer, **DTM (Direct to Metal) acrylic gloss enamel [ADD 02]-**
    - a. **Complies with Master Painters Institute MPI #114 [ADD 02]:**
  3. Two coats of gloss finish direct-to-metal acrylic enamel paint.
    - a. **Complies with Master Painters Institute MPI #114 [ADD 02]:**

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Document 09 9123

## INTERIOR PAINTING SCHEDULE

**PART 1 - GENERAL****1.1 GENERAL PROVISIONS**

- A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled "APPLICATION" in specification Section 09 9100 - PAINTING, regarding coverage.

**1.2 [ADD 02]****1.3 PAINTING SCHEDULE FOR INTERIOR SURFACES AND MATERIALS**

- A. Interior GYPSUM BOARD (drywall) partitions, and ceilings, for VOC compliant epoxy finish:
1. One coat of sealer,
    - a. **Complies with Master Painter Institute, MPI #50, 50 X-Green, 149 and 149 X-Green. [ADD 02]**
  2. Two coats of semi-gloss Water Based Acrylic-Epoxy Coatings (3 mils DFT each coat).
    - a. **Complies with Master Painter Institute, MPI #215. [ADD 02]**
- B. Interior METAL, FERROUS, to receive semi-gloss finish: (includes galvanized metal doors and frames):
1. One coat of rust prohibitive primer for unfinished metal surfaces, and touch up bare metal at shop primed, existing and previously coated surfaces:
    - a. **Complies with Master Painter Institute, MPI #215. [ADD 02]**
  2. Two coats acrylic semi-gloss enamel:
    - a. **Complies with Master Painter Institute, MPI #215. [ADD 02]**
- C. Interior exposed METAL, PIPING: Same as specified for ferrous metal.

**1.4 PAINTING SCHEDULE FOR FIRE RESISTIVE AND RATED DESIGNATIONS**

- A. Provide identification for all fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions and any other wall or partition which is required to have protected openings or penetrations.
1. Application:
    - a. Apply to outside of fire rated shafts, and to both sides of partitions to be located within 15 feet of the end of each wall and at intervals not to exceed 30'-0" horizontally for entire length of partition or wall, or once on any partition 30'-0 feet or less in length.
    - b. Locate identification in all accessible concealed floor, floor-ceiling and attic spaces. Locate identification within 12 to 18 inches above finished ceilings.
    - c. Apply stenciled lettering by spray or brush, or provide permanent signage. Identification shall be waterproof, fade-proof and non-combustible. Signage shall be mechanically fastened or permanently adhered to partition.

- d. Stencil character height: 3 inch (76mm) minimum, sans-serif block lettering font, having minimum 3/8 inch width (9.5mm) strokes, with wording in all capital lettering.
- e. Color: Easily identifiable color, contrasting with background, acceptable to authorities having jurisdiction.
- 2. Apply stenciled lettering to the following types of partitions using wording specified:
  - a. Applied identification for 2 hour fire rated partitions shall read: "2 HOUR FIRE WALL - PROTECT ALL OPENINGS".
  - b. Applied identification for 1 hour fire rated partitions shall read: "1 HOUR FIRE WALL - PROTECT ALL OPENINGS".
  - c. Applied identification for Smoke barriers shall read: "1 HOUR SMOKE BARRIER - PROTECT ALL OPENINGS".
  - d. Applied identification for Smoke partitions shall read: "SMOKE BARRIER PARTITION - PROTECT ALL OPENINGS".

#### 1.5 PAINTING SCHEDULE FOR MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black enamel.
- B. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- C. Remove unfinished louvers, grilles, covers and access panels on and paint as scheduled above.
- D. Plywood backboards for electrical panels and other equipment. Paint both front and back surfaces and all edges of plywood backboards before backboards are installed.
  - 1. One coat latex primer-sealer (undercoater):
    - a. **Complies with Master Painter Institute, MPI #50, 50 X-Green, 149 and 149 X-Green. [ADD 02]**
  - 2. Two coats latex semi-gloss paint:
    - a. **Complies with Master Painter Institute, Master Painters Institute MPI # 43, 43 X-Green™, 146, 146 X-Green™ and Master Painters Institute High Performance # 140, 140 X-Green™ [ADD 02]**
- E. Prime and paint insulated and exposed cold pipes, conduit, electrical boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are located in storage, mechanical or equipment spaces or those items which are factory prefinished.
- F. Exposed to view un-insulated hot pipes within finished painted areas: Two coats heat-resistant enamel conforming to Federal Specification TT-E-496, Type I, applied when surfaces are less than 140 degrees Fahrenheit.

End of Document

Section 10 1400  
SIGNAGE

**PART 1 - GENERAL**

1.1 SUMMARY

- A. Furnish and install the following informational and directional signage:
  - 1. Interior acrylic plate signage.
    - a. Room identification signage.
  - 2. Individual three-dimensional metal letter signage.

1.2 RELATED REQUIREMENTS

- A. Division 26 – Electrical: Illuminated exit signs.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. All applicable federal, state and municipal codes, laws and regulations regarding accessibility requirements.
- B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
  - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
  - 2. ADAAG: Americans with Disabilities Act Accessibility Guidelines.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
- B. Sequencing:
  - 1. Field Measurements
    - a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
    - b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.
- C. Pre-construction Conference:
  - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at

mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:

- a. Project Overview
- b. Labor requirements
- c. Operation Safety Items
- d. Construction
- e. Temporary Facilities and Controls
- f. Project Closeout:
- g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

## 1.5 SUBMITTALS

- A. Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
  1. Literature: Manufacturer's product data sheets, specifications, physical properties for each item furnished hereunder.
  2. Schedule: prepare and submit shop drawings and verification schedule.
    - a. Proofs: All text must be reviewed and approved by Architect prior to production of signage. Signage fabricator is responsible for providing corrected copies of text, and to recommend proper letter and word spacing. Text will be reset until approved by the Architect, and the approved proofs shall serve as the standard for all further typesetting and approvals.
      - 1) Each proof shall clearly identify the individual number assigned to each plate, panel, mural, or sign.
  3. Shop drawings:
    - a. Plan drawing showing location of each sign. Coordinate plan with schedule.
    - b. Elevation drawings showing full size elevations of each sign. Indicate for each sign: sign styles, lettering and locations, and overall dimensions.
    - c. Large scale design details of signs, showing attachment clips and brackets; and complete installation details.
  4. Selection samples:
    - a. Sample plastic chips indicating Manufacturer's full range of colors available for initial selection by Architect.
  5. Verification samples:
    - a. For individual letter signage: Full size sample method of attachment.
    - b. Full size sign in specified finish and typeface. Approved sample may be used in finished Project.

## 1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

**B. Buy American Preference [ADD 03]**

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 “Made in America Laws” means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as “Made in America”.**

**B.C.** Sole Source: Obtain products required for the Work of this Section from a single signage fabricator, or from manufacturers recommended by the prime signage fabricator of plastic plate signage.

**C.D.** Qualifications:

1. Signage Fabricator: Minimum of 5 years documented experience demonstrating previously successful work of the type specified herein.

**1.7 DELIVERY, STORAGE AND HANDLING****A. Delivery and Acceptance Requirements:**

1. Do not deliver items to the site, until all specified submittals and proofs have been submitted to, and approved by, the Architect.
2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
  - a. Delivered packaged sign, clearly labeled in name groups organized for installation.

**B. Storage and Handling Requirements:**

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

**C. Packaging Waste Management: Comply with packaging requirements specified under Section 01 6000 - PRODUCT REQUIREMENTS.**

1. Shipping materials: Manufacturer shall utilize to the greatest extent possible packaging materials which are biodegradable and recyclable.
2. Jobsite packaging waste management: Recycle packaging materials coordinated with general construction waste management specified under Section 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

**D. Damaged material: Remove all damaged signage materials from job site and replace with new.**

## 1.8 ENVIRONMENTAL CONDITIONS

- A. Do not install adhesive applied signs when ambient temperature is below 70 degrees Fahrenheit. Maintain this minimum during and after installation of signs.

## PART 2 - PRODUCTS

### 2.1 [ADD 02]

### 2.2 SIGNAGE - GENERAL

- A. General: Provide sign copy to comply with the requirements indicated in the Drawings, for sizes, styles, spacing, content, positions, materials, finishes and colors of letters.
  - 1. All Signs shall conform to United States "*Americans with Disabilities Act*".
  - 2. Final placing and sizing of lettering shall be done as part of the shop drawing approval process, at which time the manufacturer shall make recommendations for Architect's review. Lettering shall have stroke width to height ratio and width to height ratio in accordance with the Americans with Disabilities Act.
  - 3. Tactile Signage:
    - a. Raised Lettering: raised minimum 0.793 mm (1/32 in). and be in compliance with Americans with Disabilities Act.
    - b. Braille: Accurate Grade 2 translations and conforming to the provisions of ADAAG and ICC/ANSI A117.1 with regard to size, position, spacing, and profile characteristics.
- B. Installation of all signs shall be done by vandal-proof method, fully described on the approved shop drawings.
- C. Regulatory Requirements
  - 1. Provide all signage as required by accessibility regulations and requirements of authorities having jurisdiction.
    - a. Comply with all applicable federal, state and municipal codes, laws and regulations regarding signage for exits and handicapped barriers.

### 2.3 MATERIALS

- A. Stainless Steel:
  - 1. Stainless steel castings: ASTM A743, Grade CF 8 or CF 20.
  - 2. Stainless steel pipe: ASTM A312/A312M, Grade TP316L.
  - 3. Stainless steel tubing: ASTM A554, Grade MT316L.
  - 4. Stainless steel plate and sheet: ASTM A666, Type 316L.

### 2.4 INTERIOR PLAQUE SIGNAGE

- A. Photopolymer plaque signage (general requirements): Identification signs with raised tactile graphics, text, and Grade 2 Braille. Signs shall consist of 1/32 inch thick synthetic light sensitive photo emulsion permanently bonded to a rigid phenolic substrate, aluminum or acrylic plaque.

1. Raised lettering: Bond photopolymer permanently to sign plaque, with appropriate laminating film, as recommend by the photopolymer manufacturer.
  2. Lettering height: As indicated on Drawings.
  3. Lettering font: As shown on Drawings.
  4. Screen-printing: All screen-printing graphics, including raised areas of tactile plaques except Braille, shall be screen printed in a contrasting color so as to meet the color contrast requirements of Americans with Disabilities Act.
    - a. All non-tactile text shall be screen printed with catalyzed epoxy ink. Applied vinyl lettering and graphics is not acceptable.
    - b. Apply screen printing inks evenly without pinholes, scratches or orange-peeling.
  5. Graphics: All text, symbols and graphics shall be reproduced utilizing computer-generated digital art. All screen-printed graphics shall utilize photographically prepared screens and shall be printed in accordance with industry standards. Hand-cut screens are not acceptable.
    - a. All edges and corners and letter forms shall be true and clean. Letterforms, color areas, or lines with rounded positive or negative corners, built-up edges, bleeding, spattering, shall not be accepted.
    - b. Prepare artwork from typesetters' reproduction of the test specified, minimum 1200 dpi resolution, camera ready artwork. All camera-ready artwork and typesetting shall be no less than 75 percent of actual finished size.
  6. Mounting: Surface applied by means of silastic adhesive mounting.
  7. Sign colors: As selected by Architect from manufacturer's standard and standard special colors.
    - a. All signs shall be two color signs.
  8. Allow one room identification sign for every room entry door on the plans.
- B. Window plaque signage: Two ply sign, 4 inches high by 8 inches wide comprised of 1/4 inch thick white self-extinguishing acrylic baseplate, with 2 milled out slots to accept removable 3/4 inch high name cards, with 1/16 inch thick clear acrylic window.

## 2.5 FABRICATED METAL LETTERS

- A. Cast stainless steel letters: Projecting from wall with stand-offs, 8 inches high, individual cast stainless steel letters, 2-1/2 inches depth, having "Arial" Typeface: with an average stroke width of 1-1/4 inches. Letters shall have a satin face and edges.
1. Cast stainless steel shall be solid, free of all porosity, with sharp corners, flat and accurate profiles. All exposed welds shall be filed smooth with all tool marks removed. Remove burrs and rough spots and polish faces uniform to a number 4, non-directional, satin polish finish.

## 2.6 ACCESSORIES

- A. Fasteners and Installation Hardware:
1. General: Except as otherwise indicated, use concealed fasteners fabricated from metals not corrosive to sign material and mounting surface.

2. Adhesives, where used for wall mounted signs, shall be per the sign material.
3. Adhesive tape (Interior conditioned spaces only): Double sided tape, permanent adhesive.
4. Anchors and inserts for individual lettering signage:
  - a. Mounting studs: Threaded type 316 stainless steel studs.
  - b. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel type 316 bolts, nuts and, where indicated, flat washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 2.

## 2.7 FABRICATION - GENERAL

- A. Design components to allow for expansion and contraction for a minimum material temperature range of 56 °C (100 °F), without causing buckling, excessive opening of joints or over stressing of adhesives, welds and fasteners.
- B. Form work to required shapes and sizes, with true curve lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners whenever and wherever possible.
- C. Shop fabricate so far as practicable. Joints fastened flush to conceal reinforcement, or welded where thickness or section permits.
- D. Contact surfaces of connected members be true. Assembled so joints will be tight and practically unnoticeable, without use of filling compound.
- E. Signs shall have fine, even texture and be flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces be smooth flat and without oil-canning, free of rack and twist. Maximum variation from plane of surface plus or minus 0.3 mm (0.015 inches). Restore texture to filed or cut areas.
- F. Level or straighten wrought work. Members shall have sharp lines and angles and smooth surfaces.
- G. Extruded members to be free from extrusion marks. Square turns and corners sharp, curves true.
- H. Drill holes for bolts and screws. Conceal fastenings where possible. Exposed ends and edges mill smooth, with corners slightly rounded. Form joints exposed to weather to exclude water.
- I. Finish hollow signs with matching material on all faces, tops, bottoms and ends. Edge joints tightly mitered to give appearance of solid material.
- J. All painted surfaces properly primed. Finish coating of paint to have complete coverage with no light or thin applications allowing substrate or primer to show. Finished surface smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections.
- K. Movable parts, including hardware, are to be cleaned and adjusted to operate as designed without binding or deformation of members. Doors and covers centered in opening or frame. All contact surfaces fit tight and even without forcing or warping components.



- L. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.
- M. No signs are to be manufactured until final sign message schedule and location review has been completed by the Architect and Owner.

## 2.8 FABRICATION STAINLESS STEEL LETTERING

- A. Weld and form edges, ends, and joints, by electric process, with all welded joints ground and polished smooth. Perform all welding so that no mark of any kind shall be noticed on the finished surfaces. Welds and adjoining components shall be homogenous, non-porous, free from pits, cracks, imperfections or discoloration.
  - 1. Hammer and peen flush with adjoining surface wherever materials have been depressed or sunken by a welding operation, and, if necessary, re-weld and grind to eliminate low spots.
  - 2. Excessive distortions caused by welding will not be acceptable and shall be cause for rejection and removal from Project Site.
- B. Exercise care in grinding operations to avoid excessive heating of metal and discoloration. Use iron-free abrasives, wheels and belts on stainless steel; do not use the same abrasives, wheels or belts for both steel and stainless steel. Provide a uniform and smooth final polishing with a uni-direction grain for total length of materials. Cross grains and random polishing will not be acceptable and shall be cause for rejection.
- C. Provide a finish consistent throughout the work of this Section.
  - 1. Brake ends free of open texture or orange-peel appearance. Where brake work mars the finish of the materials, remove marks by grinding, polishing and finishing.
  - 2. Shear edges free of burrs, projection or fins to eliminate all danger of laceration.
  - 3. Neatly finish mitre joints and bullnosed corners with under edge of the material neatly ground to a uniform condition and in no case will overlapping materials be acceptable.

## 2.9 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated.
- B. Stainless Steel: Finish exposed stainless steel surfaces to the following, as defined by Specialty Steel Industry of North America (SSINA):
  - 1. General exposed to view finish: Number 4, brushed finish.
- C. Paints: Paint for signs is acrylic polyurethane enamel, eggshell finish. Paint for background of tactile photo-polymer signs is eggshell finish automotive grade lacquer. All surfaces shall be cleaned, primed and pre-treated according to the manufacturer's specifications and noted in Shop Drawings as part of the finished surface work.
- D. Inks:

1. Inks for tactile graphics on photo-polymer signs are eggshell finish Low Odor Vinyl Ink.
2. All inks and paints are evenly applied without pin-holes, scratches or application marks. Prime coats or other surface pre-treatments, where recommended by the manufacturers are included in the work and noted in the shop drawings as part of the finished surface work.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION - GENERAL**

- A. Locate sign units and accessories where indicated, locations in accordance with the approved shop drawings. Use mounting methods of the type described and in compliance with manufacturer's instructions.
- B. Install signs plumb, level and true to height indicated, with sign surfaces free from distortion or other defects in appearance.
  1. Installation of signs shall conform to requirements of Americans with Disabilities Act (ADA) and/or state or local accessibility standards.
- C. Shop fabricate signs where practical and deliver to site completely assembled. All joints of such fabricated work are completely smooth without apparent marks showing throughout the finish. All work "broken down" is erected so that all parts fit accurately with hairline joints, with all joints flush. Joints in lighted signs shall be light-proof.
- D. For drilled anchors in concrete, verify location of embedded reinforcing steel, posttensioning, or pre-stressing cables prior to installation.
- E. Wall Mounted Panel Signs: Attach to wall surfaces with Hilti "Hit" anchors or ITW Ramset/Red Head Hammer Set anchors into concrete or masonry surfaces as shown on Drawings. DO NOT OVERDRIVE anchors, as overdriven anchors will damage sign faces and spall concrete.
- F. Bracket Mounted Units: Provide manufacturer's standard brackets, fittings, and hardware as appropriate for mounting signs which project at right angles from walls or ceilings. Attach brackets securely to walls or ceilings with concealed fasteners and anchors per manufacturer's directions.
- G. Interior Wall and door mounted signs: Attach to surfaces as follows:
  1. Vinyl Tape Mounting: Use very high bond, double sided foam tape, of thickness indicated, to mount signs to smooth nonporous surface. Use construction adhesive in conjunction with foam tape.
  2. Silicone Adhesive Mounting: Use appropriate liquid silicone adhesive to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape to hold the sign in place until the adhesive has fully cured.

#### **3.2 INSTALLATION DIMENSIONAL LETTERS, NUMBERS AND GRAPHICS**

- A. Dimensional Letters and Numbers: Mount letters and numbers using threaded studs, foam tape and construction adhesive as indicated in the detail drawings. Provide heavy paper template to establish letter spacing and to locate holes for fasteners.

### 3.3 CLEANING

- A. Clean and polish installed signs.
- B. Upon completion of the work of this Section in any given area, remove tools and all rubbish and debris from the work area; leave area in broom-clean condition.
- C. Remove all names, stamps and decals of sign manufacturers, and installers. No visible advertising of any kind is permitted.

### 3.4 SCHEDULES

- A. General: Provide interior code-related signage as required by accessibility regulations and additional requirements of authorities having jurisdiction. Signage includes, but is not limited to, the following sign types. Additionally refer to Drawing A-603B – SIGNAGE SCHEDULE AND DETAILS.
  - 1. Service Rooms identification signage.
  - 2. Toilet room and shower room signage.
  - 3. Visible hazard identification signs per NFPA 704.
- B. At each door to the following room types, provide: nominal 6 by 8 inch size sign, having 1-1/2 inch high letters identifying room label, a maximum of 2 lines of copy, and Grade 2 Braille strip.
  - 1. Equipment, electrical and mechanical rooms.
- C. At toilet room doors: provide: nominal 6 by 8 inch size sign, having 3 inch high international symbol for men/women (as appropriate) beneath provide 5/8 inch high text “MEN” or “WOMEN” (as appropriate), raised 1/32 inch and a Grade 2 Braille strip.
  - 1. At each wheelchair accessible toilet room, provide international handicap symbol.

End of Section

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## Section 10 2119

## PHENOLIC TOILET COMPARTMENTS

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Furnish and install:
  - 1. Solid phenolic (black core) extra tall toilet partitions, floor/wall mounted with floor to ceiling pilasters.
  - 2. Urinal screens, matching toilet partition design and finish.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY: In wall blocking for partition panel support.
- B. Section 09 2900 – GYPSUM BOARD.
- C. Section 10 2813 - TOILET ACCESSORIES: Furnishing templates, providing and installing toilet accessories surface mounted to toilet compartments, and integral with compartments.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
  - 2. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
  - 3. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 5. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-construction Conference:
  - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
    - a. Project Overview
    - b. Labor requirements
    - c. Operation Safety Items

- d. Construction
- e. Temporary Facilities and Controls
- f. Project Closeout:
- g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

## 1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
  - 1. Literature: Manufacturer's product data sheets, specifications, and manufacturer's warranty for each item furnished hereunder. Include information panel construction, hardware, and accessories.
  - 2. Shop drawings:
    - a. 1/2 inch scale dimensioned plans and elevations of each toilet room condition showing toilet compartment and urinal screen layout.
    - b. Large scale design details of showing attachment clips and brackets; and complete installation details.
  - 3. Samples:
    - a. Selection samples: Manufacturer's full range of color chips, for selection by the Architect; up to two-color combinations for doors and partitions may be selected in each area.
    - b. Verification samples: 6 inch square samples of each color and finish on same substrate to be used in Work, for color verification after selections have been made.

## 1.6 FIELD MEASUREMENTS

- A. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
- B. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

## 1.7 REGULATORY REQUIREMENTS

- A. Fire Resistance: Comply with the following requirements:
  - 1. Flame Spread and smoke developed rating, tested per ASTM E84: Class A flame spread/smoke developed rating.
  - 2. Material Fire Ratings:
    - a. National Fire Protection Association (NFPA) 286: Pass.
    - b. International Code Council (ICC): Class B.

## 1.8 QUALITY ASSURANCE [ADD 02]

- A. **General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.**
- B. **Buy American Preference**
  - 1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders**

relating to federal financial assistance awards or federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as “Made in America”.

#### ~~1.81.9~~ SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with the respective trades responsible for installing inserts and anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.

#### ~~1.91.10~~ WARRANTY

- A. Furnish the following manufacturer’s warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS, and in compliance with Section 01 7836 – WARRANTIES:
  - 1. Manufacturer's warranties are in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.
  - 2. Manufacturer's written warranty, for a minimum period of 25 years from date of Substantial Completion. Warranty shall cover panel, pilaster and door material and manufacturing workmanship against defects, including delamination of surfacing, corrosion and breakage.

### PART 2 - PRODUCTS

#### 2.1 [ADD 02]

#### 2.2 FABRICATION

- A. Pilasters (stiles) and doors: 3/4 inch [19 mm] thick, solid phenolic (black) core with integrally bonded decorative “matte finish” melamine surface on both sides, in color(s) selected by Architect from available range. Laminated surfaces are not acceptable.
  - 1. Door widths
    - a. 36 inches at toilet room stalls.
    - b. 30 inches at Janitor’s space.
  - 2. Pilasters (stiles) shall run full height, floor to ceiling with secure attachment at both ends.
  - 3. Door heights: 84 inches, mounted not greater than 4 inches above floor.
- B. Panels: 1/2 inch [13 mm] thick, of same material and finish as pilasters and doors.
  - 1. Panel height: 84 inches, mounted not greater than 4 inches above floor.
- C. Pilaster floor and ceiling shoes: 3 inches high formed stainless steel with satin finish.
- D. Hardware and fittings: Type 302/304 stainless steel, except as specified otherwise.
  - 1. Door hinges: Fabricated from 11-gauge stainless steel with adjustable cams for self-closing operation. Attach to doors and pilasters with manufacturer’s standard stainless steel fasteners.
  - 2. Indicator Latches: Manufacturer’s standard brushed nickel zamac indicator latch assembly with antimicrobial coating showing red in the window when in locked position and green when unlocked.

3. Door Pulls: Manufacturer's standard brushed nickel zamac pulls with antimicrobial coating at outswinging doors that comply with accessibility requirements.
4. Wall Connections: Continuous stainless steel channels at panel to wall, panel to pilaster, and pilaster to wall connections, Grade 304 stainless steel, #4 brushed finish.

### 2.3 ACCESSORIES

- A. Coat Hooks: Stamped stainless steel door hook, Grade 304 stainless steel, #4 brushed finish, combined coat hook and bumper.
- B. Anchorages and Fasteners: Through-bolted stainless steel with theft-resistant heads. Chrome plated steel or brass are not acceptable.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- B. Verify correct spacing of plumbing fixtures.
- C. Ensure wall blocking is coordinated with location of anchors before commencing with installation.
- D. Beginning of installation means acceptance of existing conditions.

### 3.2 INSTALLATION - GENERAL

- A. Comply with manufacturer's recommended procedures and installation sequence, and as specified herein.
- B. Install pilasters, partitions, and doors rigid, straight, plumb and level.
- C. Set pilaster units with anchorages having minimum 2 inches penetration into structural floor, unless otherwise recommended by partition manufacturer.
- D. Attach panel brackets securely to walls using anchor devices.
- E. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.
- F. Hang door and adjust so tops of doors are level with tops of pilasters when doors are in closed position.
- G. Ensure that all holes in partitions, as required for attachment of related items, are accurately located and drilled, in accordance with the templates furnished by the accessory manufacturer. Conceal all evidence of drilling, cutting, and fitting in the finished work.
- H. No permanent exposed to view labels of any kind will be permitted to remain on the partitions, or doors.

### 3.3 FIELD QUALITY CONTROL

- A. Ensure that all work is free from dents, tool marks, warpage, buckle, open joints, or other defects. Protect compartments during erection, and after erection, and until final approval of the entire project by the Architect.



### 3.4 ADJUSTMENT

- A. Adjust and align hardware to provide a uniform clearance at vertical edges of doors not to exceed 3/16 inch.
- B. Adjust hinges to locate doors in partial-open position (approximately 30 degrees open) when unlatched. Return outswing doors to closed position.
- C. Test operation of movable parts, and make all adjustments necessary to ensure proper operation.

### 3.5 CLEANING

- A. Upon completion of the installation, remove all evidence of tapes and other packing materials; touch-up all scratches and surface defects and thoroughly clean and polish all exposed to view surfaces.
- B. Provide protection as necessary to prevent damage during remainder of construction period.

End of Section

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Section 10 2813  
TOILET ACCESSORIES

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Furnish and install toilet, bath and custodial accessories.
- B. Furnish and install protection padding for exposed piping.
- C. Furnish concealed anchorage devices for handicap handrails for installation under Section 06 1000 - ROUGH CARPENTRY.
- D. Furnish toilet and bath accessory templates, to locate anchorage reinforcement, to trades responsible.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY:
  - 1. Wood blocking.
  - 2. Installation of concealed anchorage devices for grab bars in toilet rooms: Section 10 2813 - TOILET ACCESSORIES.
- B. Section 09 2900 - GYPSUM BOARD: Gypsum board partitions and metal framing.
- C. Section 10 2119 – PHENOLIC TOILET COMPARTMENTS.

**1.3 REFERENCES**

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.
  - 2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 3. ASTM A240/A240M – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - 4. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
  - 5. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - 6. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.

7. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

##### A. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

#### 1.5 SUBMITTALS

- ##### A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Literature: Manufacturer's product data sheets, for each item furnished hereunder.
  2. Schedule: Complete schedule, indicating types, quantity, and model numbers of accessories for each location in which the accessories will be installed.
  3. Selection samples: Sample color chips indicating each manufacturer's full range of colors available for selection by Architect.
  4. Verification samples: Complete units, as requested by Architect.

#### 1.6 QUALITY ASSURANCE [ADD023]

##### A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

##### B. Buy American Preference

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

**1.61.7 DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials in original packages, containers or bundles bearing brand name, identification of manufacturer or supplier and item identification number corresponding with approved schedule.
- B. Store materials inside, under cover, and in manner to keep them dry, protected from weather, surface contamination, corrosion and damage from construction traffic and other causes.

**1.71.8 SEQUENCING AND SCHEDULING**

- A. Coordinate the work of this Section with placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.
- B. Coordinate the work of this Section with placement of internal wall reinforcement.

**1.81.9 WARRANTY**

- A. General: Submit the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
  - 1. Warranties shall be effective starting from Date of Project Substantial Completion and are effective for specified term lengths.
- B. Manufacturer Warranty: In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

**PART 2 - PRODUCTS****2.1 [ADD 02]****2.2 MATERIALS**

- A. Sheet steel: Cold rolled, commercial quality, ANSI/ASTM A1008.
- B. Stainless steel sheet: ASTM A240/A240M, Type 302/304.
- C. Tubing: ASTM A269 stainless steel.

**2.3 TOILET ACCESSORIES**

- A. Coat/robe hook: Surface-mounted hat and coat hook shall be Type 304 stainless steel with satin finish. Flange and support arm shall be 22 gauge (0.8mm) and equipped with a concealed, 16-gauge (1.6mm) mounting bracket that is secured to a concealed, 16 gauge (1.6mm) wall plate with a stainless steel setscrew. Hook shall be 12 gauge (2.8mm), welded to the support arm.
  - 1. **[ADD 02]**
- B. Grab bars
  - 1. Grab Bar Loading Criteria :

- a. Bending stress in a grab bar induced by the maximum bending moment from the application of 250 lbs. shall be less than the allowable stress for the material of the grab bar.
  - b. Shear stress induced in a grab bar by the application of 250 lbs. shall be less than the allowable shear stress for the material of the grab bar. If the connection between the grab bar and its mounting bracket or other supports is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.
  - c. Shear force induced in a fastener or mounting device from the application of 250 lbs. shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.
  - d. Tensile force induced in a fastener by direct tension force of 250 lbs. plus the maximum moment from the application of 250 lbs. shall be less than the allowable withdrawal load between the fastener and the supporting structure
  - e. Grab bars shall not rotate within their fittings.
2. Grab bars: Stainless steel, minimum wall thickness 18 gage (Stub's gage), with non-slip knurled, peened or striated surface, 1-1/4 inch diameter with satin finished ends, concealed 1/8 inch thick mounting flange with snap-on cover.
    - a. Grab bars adjacent to toilets: L-Shape, 40 inches horizontal and 30 inches vertical):
      - 1) **[ADD 02]**
    - b. Grab bars behind toilets, straight bar 42 inches horizontal):
      - 1) **[ADD 02]**
- C. Soap Dish: Surface mounted soap dish unit fabricated from type 304 stainless steel with satin polished finish. Shell and flange shall be drawn and beveled, one-piece, seamless construction.
    1. **[ADD 02]**
  - D. Mirrors with adjustable tilt frame: 18 inches wide by 30 inches high, having the following:
    1. Frame: one piece 3/4" by 3/4 inch stainless steel roll formed frame, with continuous integral stiffener on all sides. Corners shall be heliarc welded, ground and polished smooth. Corners.
    2. Back: Back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (5mm) thick polyethylene padding. Over which is a galvanized steel back secured to frame with concealed screws.
    3. Mounting: Side brackets with tilting with self-locking mechanism; bottom of mirror mounted to wall with full-length stainless-steel piano hinge.
    4. Mirror glass: 1/4 inch thick glass, ASTM C1048 complying with Class 1 clear, quality q3 glazing select, conforming to ANSI Z97.1, with Class 1, standard commercial quality, electro-copper back-plating protected by a corrosion-resistant zinc-coating.
    5. **[ADD 02]**

- E. Mop and broom holder: Surface mounted, nominal 34 inch long stainless steel unit with 18 gage 8 inch deep continuous shelf, 4 stainless hooks and 3 mop/broom holders, anti-slip spring loaded, rubber cam mop holders, capable of holding 7/8 to 1-1/4 inch diameter handles.

1. **[ADD 02]**

- F. Toilet tissue dispenser, double roll type: Surface-mounted toilet tissue dispenser with cast aluminum bracket, molded and extruded ABS spindles, vandelproof keyed locking mechanism, able to accommodate two 2000 sheet rolls.

1. **[ADD 02]**

#### 2.4 ADA PIPING PROTECTION

A. **[ADD 02]**

- B. Description: 1/8 inch thick pliable polyvinyl chloride protective cladding on all drainage piping including hot and cold water valve and supplies under lavatories to comply with ADA and UPC standards. Covers shall be secured by custom fit, tamper-resistant snap-to-lock fasteners.

1. Complies with ICC/ANSI A117.1 (sec 606.6).

2. PVC Base Insulation Material, Class A rated complying with 25 Flame Spread/450 Smoke Index (tested under ASTM E84).

3. **Color: White or Black as selected by Architect. [ADD 02]**

#### 2.5 LOCKS

- A. General: All locks shall be keyed alike. Provide four (4) keys, for lockable accessories, to the Owner.

#### 2.6 INSTALLATION ACCESSORIES

- A. Fasteners, screws, and bolts: Type 304 stainless, tamperproof.

- B. Expansion shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

#### 2.7 FABRICATION

- A. Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion, scratches or dents. Weld and grind smooth joints of fabricated components.

- B. Back paint components where contact is made with building finishes to prevent electrolysis.

- C. Shop assemble components and package complete with anchors and fittings. Hot dip galvanize exposed and painted ferrous metal and fastening devices. Provide steel anchor plates, adapters, and anchor components for installation.

#### 2.8 FACTORY FINISHING

- A. Ferrous metals: Clean and treat, spray apply one coat of baked-on rust and moisture-resistant primer, followed by two coats of baked-on synthetic enamel, in selected colors. Ensure that finish coating is uniform in color intensity and degree of gloss, throughout.

- B. Chrome/Nickel Plating: ASTM B456, Type SC2, satin finish.
- C. Stainless steel: Number 4 satin finish, except as otherwise specified above under the Article entitled "Toilet Accessories".

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Provide templates and rough-in measurements as required. Deliver inserts and rough-in frames to site at appropriate times for building-in by other trades
- B. Coordinate with trades responsible for providing receiving surfaces on which accessories will be installed.
- C. Exact locations of accessories within each room or area shall be as directed by the Architect.

#### **3.2 INSTALLATION**

- A. Perform installation work in accordance with the approved shop drawings and the manufacturer's installation instructions.
- B. Install toilet accessories absolutely level and in true line, securely and rigidly anchored with theft proof fasteners of the size and type most appropriate for the specific receiving surface, concealing the fasteners as far as practicable.

#### **3.3 ADJUSTING**

- A. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

#### **3.4 CLEANING**

- A. Remove all protective films and coverings from accessories, and clean and polish each piece. Remove all rubbish, packing materials, and debris, caused by the work of this Section.

End of Section



Section 10 4000  
SAFETY SPECIALTIES

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Furnish and install:
  - 1. Fire extinguishers, on wall mounted brackets.
  - 2. Fire department access emergency key cabinet.
  - 3. Blade signs for identification of extinguisher locations.

**1.2 RELATED REQUIREMENTS**

- A. Section 06 1000 - ROUGH CARPENTRY: Wood fire-treated back boards at fire extinguisher locations.
- B. Section 09 29 00 - GYPSUM BOARD: Gypsum wallboard finishes.
- C. Division 21 - FIRE SUPPRESSION: Fire hose connections and related cabinets and accessories.

**1.3 REFERENCES**

- A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
  - 1. NFPA 10 – Standard for Portable Fire Extinguishers, **2022** Edition. **[ADD 02]**

**1.4 SUBMITTALS**

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
  - 1. Literature: Manufacturer's product data sheets, indicating fabrication specifications, finishes, dimensions of cabinet and rough opening, and installation instructions.
  - 2. Shop drawings: Details showing unit dimensions, methods of construction, attachment clips and brackets; and complete installation details.
  - 3. Selection samples: Samples indicating metal finishes available for selection by Architect.
    - a. Provide additional samples as requested by Architect to facilitate initial selection of colors and finishes
  - 4. Verification samples: Fire extinguisher cabinet in specified size, finishes, and door type, if requested by Architect.

**1.5 REGULATORY REQUIREMENTS**

- A. Obtain certificate of compliance from authority having jurisdiction indicating approval of fire extinguisher cabinets and their installed locations.

**1.6 QUALITY ASSURANCE [ADD032]**

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.**
- B. Buy American Preference**
  - 1. All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

**4.61.7 DELIVERY, STORAGE AND HANDLING**

- A. Do not deliver cabinets or extinguishers to the site, until all specified submittals have been submitted to, and approved by, the Architect.**
- B. Store cabinets and extinguishers inside, under cover, and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.**

**PART 2 - PRODUCTS****2.1 [ADD 02]****2.2 FIRE EXTINGUISHERS WALL MOUNTING BRACKETS**

- A. Wall mounting Bracket: 16 gage steel surface mounted bracket, with red glossy polyester thermo-set coating, equal to the following. Provide with red letter decals spelling "FIRE EXTINGUISHER" applied to wall surface, letter size, style as required by code, location as selected by Architect.**
  - 1. [ADD 02]**

**2.3 FIRE EXTINGUISHERS**

- A. Extinguishers: Non-toxic Multi-purpose dry chemical type (mono ammonium phosphate), 20 pound capacity, multi-purpose rated '10A, 120B:C'; Heavy Duty DOT Steel Cylinder Extinguisher with metal valves and siphon tubes, replaceable molded valve stem seals, corrosion and impact resistant polyester/epoxy paint finish, pull pin-upright squeeze grip operation, and pressure gauges.**

**2.4 EMERGENCY KEY CABINETS**

- A. Fire department emergency access key cabinet ("Knox Box"): Rapid Entry System box, heavy duty, medium capacity, surface mounted, **as approved by the local fire department having jurisdiction**, having the following construction: [ADD 02]**
  - 1. Housing: 1/4 inch thick plate steel with joints welded.**
  - 2. Door: 1/2 inch thick steel plate with neoprene weather seal.**

3. Locking: 3 point lock with stainless steel lock cover.
4. Tamper switch: Provide optional UL listed alarm tamper switch.
5. **Key Capacity: 10 keys [ADD 02].**
- ~~5-6.~~ Finish: Black polyester powder coat.

## 2.5 SIGNAGE

- A. Extinguisher signage: Manufacturer's standard blade type signage white background with red text. Provide one sign at each extinguisher location. **[ADD 02]**

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- B. Beginning of installation means acceptance of project conditions.

### 3.2 INSTALLATION

- A. Install fire extinguisher cabinets, brackets, and key cabinets in accordance with manufacturer's instructions in locations indicated, and as additionally directed by regulatory authority having jurisdiction.
- B. Install level and in true line, with units securely anchored to the surrounding construction. Fit trim pieces accurately and tight to adjacent construction.
  1. Maximum variation from plumb and level: 1/8 inch.
  2. Maximum offset from true dimensional alignment: 1/4 inch.

### 3.3 CLEANING AND ADJUSTMENT

- A. Upon completion of the work of this Section in any given area, remove tools, and all packaging and debris from the work area; leave area in broom-clean condition.

End of Section

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Section 13 3419  
METAL BUILDING SYSTEMS

**PART 1 – GENERAL**

1.1 GENERAL PROVISIONS

- A. The Contract Forms, and Conditions of the Contract as provided by the Construction Manager, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

1.2 SUMMARY

- A. The work of this Section consists of prefabricated metal building ~~T-Hanger T-hangar~~ **hangar**, complete with folding ~~hanger-hangar~~ **hangar** doors as shown on the Drawings, as specified herein, and as required for a complete and proper installation. **[ADD 02]**
- B. Design, engineer, furnish and install the following:
  - 1. Shop fabricated structural steel building frame.
    - a. Shop primed primary, secondary, supplemental and miscellaneous steel building framing, z-girts, and clips
  - 2. Pre-finished sloped corrugated sheet metal roofing system having exposed fasteners.
    - a. Related flashing and running sheet metal work, for all non-specified locations in conjunction with the roofs, including soffits, gutters and downspouts.
  - 3. Pre-finished corrugated sheet metal wall panel system, having exposed fasteners.
  - 4. Exterior folding ~~hanger-hangar~~ **hangar** doors. **[ADD 02]**
  - 5. Man doors and frames (as specified under Section 08 1113).
  - 6. Sectional Overhead doors (as specified under Section 08 3613).
  - 7. Custom steel diamond plate at recessed slab edge as detailed, and hot-dipped galvanized after assembly. Provide each plate in 3 sections totaling the width indicated to provide for expansion, refer to Drawings for details, deliver to Section 03 3000 Cast-in-Place Concrete for embedment into concrete foundation.
  - 8. Trim at all openings.
  - 9. Secondary and supplemental steel supports for equipment and work of other sections including but not limited to: light fixtures, sprinkler mains, branch lines, supports for heaters, and other items included in the documents.
- C. Furnish the following products to be installed under the designated Sections:
  - 1. Anchor bolts and base plates for placement under Section 03 3000 – CAST-IN-PLACE CONCRETE.

1.3 RELATED REQUIREMENTS

- A. Section 03 0513 - CONCRETE SEALERS.

- B. Section 03 3000 - CAST-IN-PLACE CONCRETE: Concrete footings, foundations, and floor slab.
- C. Section 06 1000 - ROUGH CARPENTRY: Wood blocking, and plywood backer panels for mounting of electrical panelboards, and other equipment.
- D. ~~Section 07 8400 - FIRESTOPPING:~~ **[ADD 02]**
- E. Section 07 9200 - JOINT SEALANTS.
- F. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Requirements for metal doors and frames provided under the Work of this Section 13 34 19.
- G. Section 08 3613 - SECTIONAL DOORS: Requirements for Sectional Overhead doors provided under the Work of this Section 13 34 19.
- H. Section 08 7100 - DOOR HARDWARE.
- I. Section 09 2900 - GYPSUM BOARD.
- J. Section 09 6513 - RESILIENT BASE AND ACCESSORIES.
- K. Section 09 9100 - PAINTING:
  - 1. Finish painting of factory primed hollow metal doors and frames.
  - 2. Finish painting structural steel.
  - 3. Finish painting gypsum drywall.
- ~~L. Division 21 - FIRE PROTECTION~~ **[ADD 02]**
- ~~M.L.~~ Division 22 - PLUMBING
- ~~N.M.~~ Division 23 — HEATING, VENTILATION AND AIR CONDITIONING: rough-in utilities.
- ~~O.N.~~ Division 26 — ELECTRICAL: rough-in utilities.

#### 1.4 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
  - 1. AISI – S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
  - 2. **FGIA|AAMA 2605-22 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).** ~~AAMA 2605 – Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.~~ **[ADD 02]**
  - 3. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
  - 4. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

5. ASTM A153/A153M – Standard Specification for Zinc-Coating (Hot-Dip) on Iron and Steel Hardware.
6. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
7. ASTM A386 (Withdrawn Standard) – Specification for Zinc Coating (Hot-Dip) on Assembled Steel Products.
8. ASTM A446 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) By The Hot-Dip Process, Structural (Physical) Quality.
9. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
10. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
11. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
12. ASTM A572/A572M - Standard Specification for High Strength Low Alloy Columbium Vanadium Structural Steel.
13. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
14. ASTM C665 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
15. ASTM E94/E94M – Standard Guide for Radiographic Examination Using Industrial Radiographic Film.
16. ASTM E164 – Standard Practice for Contact Ultrasonic Testing of Weldments.
17. ASTM E165/A165M – Standard Practice for Liquid Penetrant Testing for General Industry.
18. ASTM E331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference.
19. ASTM E283/E383M – Standard Test Method for Determining rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
20. ASTM E709 – Standard Guide for Magnetic Particle Testing.
21. ASTM F3125/F3125M – Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
22. AWS A2.0 - Standard Welding Symbols.
23. AWS D1.1 - Structural Welding Code – Steel.
24. AWS D1.3, Structural Welding Code - Sheet Steel.
25. FS HH-I-558 - Insulation, Blocks, Boards, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe Fitting Covering, Thermal (Mineral Fiber, Industrial Type).
26. SSPC - Steel Structures Painting Council.
  - a. Society for Protective Coatings:
    - 1) Surface Preparation Specifications:

- a) SSPC – SP 1 – Solvent Cleaning.
    - b) SSPC – SP 2 – Hand Tool Cleaning.
    - c) SSPC – SP 3 – Power Tool Cleaning.
  - 2) Surface Preparation Specifications:
    - a) SSPC-PQ 1, Shop, Field and Maintenance Painting.
  - b. Federal Specifications:
    - 1) TT-P-645, Primer, Paint, Zinc-Chromate, Alkyd Type
- 27. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.
- 28. All applicable federal, state and municipal codes, laws and regulations for exits.
- B. General References The following reference materials are hereby made a part of this Section by reference thereto:
  - 1. MBMA - Low Rise Building Systems Manual.
- C. Definitions:
  - 1. Bay Spacing: Dimension between main frames measured normal to frame (at centerline of frame) for interior bays, and dimension from centerline of first interior main frame measured perpendicular to end wall (outside face of end-wall girt).
  - 2. Building Length: Dimension of the building measured perpendicular to main framing from end wall to end wall (outside face of girt to outside face of girt).
  - 3. Building Width: Dimension of the building measured parallel to main framing from sidewall to sidewall (outside face of girt to outside face of girt).
  - 4. Clear Span: Distance between supports of beams, girders, or trusses (measured from lowest level of connecting area of a column and a rafter frame, or knee).
  - 5. Eave Height: Vertical dimension from finished floor to eave (the line along the sidewall formed by intersection of the planes of the roof and wall).
  - 6. Clear Height under Structure: Vertical dimension from finished floor to lowest point of any part of primary or secondary structure, not including crane supports, located within clear span.
  - 7. Collateral Loads: Dead loads other than those of the metal building system, including, but not limited to: sprinklers, mechanical systems, electrical systems, ceilings and suspended equipment
  - 8. Terminology Standard: Refer to *Low Rise Building Systems Manual* as published by Metal Building Manufacturer's Association (MBMA) for definitions of terms for metal building system construction not otherwise defined in this Section or in referenced standards.

## 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. General: Coordinate the work of this Section with the respective trades responsible for installing inserts and anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.
  - 2. Submittal of prefabricated engineered building shop drawings shall be coordinated with submittals for concrete foundations. Concrete foundation



shop drawings will not be reviewed until prefabricated engineered building shop drawings have been submitted and approved in order to ensure coordination with foundation construction.

3. 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. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under **Division 2** ~~Document 00-80-13~~ CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered: **[ADD 02]**
  - a. Project Overview
  - b. Labor requirements
  - c. Operation Safety Items
  - d. Construction
  - e. Temporary Facilities and Controls
  - f. Project Closeout:
  - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

C. Pre-Installation Meetings: At least two weeks prior to commencing the work of this Section, conduct a pre-installation conference at the Project site. Comply with requirements of Section 01 3216 – CONSTRUCTION PROGRESS SCHEDULE. Coordinate time of meeting to occur prior to installation of work under the related sections named below.

1. Required attendees: Architect, General Contractor, metal building system Installer's Project Superintendent, metal building system manufacturer's technical representative and representatives of other related trades as directed by the Architect or Contractor, and representatives for installers of related work specified under the following Sections:
  - a. Section 03 3000 - CAST-IN-PLACE CONCRETE.
  - b. Section 07 9200 - JOINT SEALANTS.
  - c. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES.
  - d. Section 08 3613 - SECTIONAL OVERHEAD DOORS.
2. Agenda: Review methods and procedures related to pre-engineered building systems including, but not limited to, the following:
  - a. Scheduling of metal building system erection operations.
  - b. Review of staging, material storage locations and temporary protection requirements.
  - c. Coordination of interface work by other trades.
    - 1) Coordinate footings, foundations and other required preparatory work performed by other trades.
  - d. Structural load limitations.

- 1) Compliance with requirements for support conditions, including alignment between and attachment to, structural members.
- 2) Structural limitations of girts and columns during and after wall panel installation.
- e. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
- f. Required tests, inspections, and certifications.
- g. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect wall panels.
- h. Protection of completed Work.
- i. Establish weather and working temperature conditions to which Architect and Contractor must agree.
- j. Emergency rain protection and hurricane protection procedures.
- k. Discuss process for manufacturer's inspection and acceptance of completed Work of this Section.

D. Sequencing:

1. Field Measurements: Verify that field measurements are as indicated on shop drawings.

## 1.6 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
    - a. Include data on profiles, component dimensions, fasteners, and sealants.
  2. Shop Drawings:
    - a. Elevations, plans and details: 1/4 inch scale elevations and plans, and large scale design details showing framing, and panel attachment methods (both roof and walls); and complete installation details.
      - 1) Indicate assembly dimensions, locations of structural members, connections, attachments, openings, cambers (if required), and both live and dead design loads.
      - 2) Roof and wall panels: Indicate wall and roof system dimensions, panel layout, construction details, anchorages and method of anchorage, method of installation. Show layouts of panels on support framing, details of edge conditions, joints, panel profiles, corners, custom profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory-assembled, and field-assembled work.
      - 3) Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
      - 4) Indicate all connections and interface with adjoining work.
    - b. Anchor-Bolt Plans: Indicate anchor bolt locations, settings, sizes and material, column base plate dimensions, sizes, etc. and column base

- reactions at foundation connections. Submit in advance of erection drawings.
- c. **Structural-Framing Drawings:** Show complete fabrication of primary and secondary framing. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
  - d. **Door Schedule:** Provide schedule of doors and frames, using the same reference numbers as indicated on Drawings. Include details of reinforcement and installation requirements for finish hardware.
3. **Selection Samples:**
- a. Sample card indicating Manufacturer's full range of colors available for selection by Architect.
  - b. Provide additional samples as requested by Architect for initial selection of colors and finishes.
4. **Verification Samples:**
- a. 12 x 12 inch samples of roof and wall panels, illustrating material and finish.
    - 1) Include clips, caps, battens, fasteners, closures, and other exposed panel accessories.
  - b. **Trim and Closures:** 12 inches (300 mm) long. Include fasteners and other exposed accessories.
  - c. **Vapor Retarders:** 6-inch (150-mm) square samples.
  - d. **Accessories:** 12-inch (300-mm) long samples for each type of accessory.
5. **Certificates: [ADD 02]**
- a. **Welding certificates.**
  - b. **Erector Certificate:** Signed by manufacturer certifying that erector complies with requirements.
  - c. **Manufacturer Certificate:** Signed by manufacturer certifying that products comply with requirements.
  - d. **Material Test Reports:** Signed by manufacturers certifying that the following products comply with requirements:
    - 1) **Structural steel** including chemical and physical properties.
    - 2) **Bolts, nuts, and washers** including mechanical properties and chemical analysis.
    - 3) **Tension-control, high-strength, bolt-nut-washer assemblies.**
    - 4) **Shop primers.**
    - 5) **Nonshrink grout.**
  - ~~a.e. **Source quality-control certification for Zinc coating:** Certify zinc coating on **factory coated** steel panels is the specified thickness, in accordance with **ASTM A653 G90.**~~
  - ~~b. **Shop-Finished Products:** Manufacturer's written certification stating that metal building components and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section, and that pre-finishing has been performed as specified.~~
6. **Delegated Design Submittals:**

- a. Furnish complete structural design analysis for all structural components of the prefabricated metal buildings.
  - b. Provide manufacturer load tables indicating the selected panel material, configuration and thickness meets the design requirements for the spans shown
7. **Shop Finishing Certificates:[ADD 02]**
- a. Certificate of compliance from galvanizer: Submit notarized certificate of compliance with application for payment for galvanizing **on thresholds**, signed by galvanizer, indicating compliance with requirements of specifications. Include scope of services provided, and quantity and itemized description of items processed, zinc coating thickness as specified. **[ADD 2]**
  - b. Shop finished products: Manufacturer's written certification stating that metal building components and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section, and that shop finishing has been performed as specified.
8. Delegated Design Submittals:
- a. Furnish complete design analysis for all structural components of the prefabricated metal building. The structural engineer shall be registered in the State of Maine and shall state in writing that the structural framing and building components are in compliance with the criteria set forth in the specifications and as indicated on the Drawings and that the foundation design will support the building reactions and other loads imposed by use of the building.
  - b. Provide manufacturer load tables indicating the selected panel material, configuration and thickness meets the design requirements for the spans shown
9. Manufacturer's Instructions: Manufacturer's written installation instructions indicating preparation requirements, assembly sequence, special procedures, and field conditions requiring special attention.
10. Source Quality Control Submittals:
- a. Submit list of installations completed within the last three years, include all contacts and references.
11. Qualification Submittals:
- a. Installer/Applicator: Manufacturer's written certification stating that erector is qualified, licensed, authorized and approved to install the building system in accordance with manufacturer's requirements.
  - b. Welder's certificates.
- B. Closeout Submittals: Submit the following under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- 1. Bonds and Warranty Documentation:
    - a. Manufacturer's Warranties and Guarantees as specified elsewhere herein this Section.
  - 2. Record Documentation: Submit accurately record actual locations of concealed utilities.

## 1.7 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
1. Fabricate structural steel members in accordance with AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

**B. Buy American Preference [ADD 02]**

1. **All work of this Section shall be in compliance with 49 USC § 50101, BABA and other related Made in America Laws (Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.), U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used for this Projects shall be produced in the United States, and be certified as "Made in America".**

~~B.C.~~ Sole Source:

1. The metal building system shall be designed by the manufacturer as a complete system. All components of the system shall be supplied by or compatible with the metal building system provided by the manufacturer. The building systems shall be provided from a "single source manufacturer" with all required warranties for the complete building system originating from the single source manufacturer.
2. Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of metal building systems.

~~C.D.~~ Qualifications:

1. Manufacturer Qualifications: A qualified manufacturer and member of the Pre-engineered Building Systems Association.
- a. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional structural engineer registered in the State of Maine.
2. Installer/Erector: Installer/Erector has technical qualifications, experience, trained personnel and facilities to install specified items.
- a. Erector: The Erector shall have at least five (5) years' experience of erecting steel building systems and shall be authorized, in writing, by the manufacturer as being trained and qualified to erect their products. The erector shall also be knowledgeable of the AISC "Code of Standard Practice for Steel Buildings and Bridges" and the Metal Building Manufacturer's Association "Metal Building Systems Manual".
3. Welding Qualifications: Welder's shall be AWS D1.1 and D1.4 qualified within the previous 12 months. Qualify welding procedures and personnel according to the following:
- a. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- b. AWS D1.3, "Structural Welding Code - Sheet Steel."

4. Welders Certificates: Utilize only qualified welders employed on the Work. Submit verification that.
5. Testing Agencies: Qualified according to ASTM E 329 for testing indicated.
6. Licensed Professionals (**Delegated Design**): Design Work under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Maine. **[ADD 02]**

## 1.8 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
  1. Do not fabricate or deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
- B. Storage and Handling Requirements:
  1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
  2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
    - a. Stack and cover metal building materials with suitable weather-tight covering.
- C. Damaged material: Remove any damaged or contaminated materials from job site immediately, including materials in broken packages, packages containing water marks, or show other evidence of damage, unless Architect specifically authorizes correction thereof and usage on project.

## 1.9 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when weather conditions permit panels to be installed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements:
  1. Established Dimensions for Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating panels without field measurements, or allow for field trimming panels. Coordinate construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

## 1.10 WARRANTY

- A. General: Submit the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- B. Manufacturer Warranty:
  1. Provide ~~5~~ **ONE** year unconditional warranty which shall include coverage for weather tightness of building enclosure elements after installation. **[ADD 02]**
  2. Roof and Wall Panel Finish Warranty: Manufacturer's standard form PVDF Fluorocarbon System Warranty (**in compliance with FGIA/AAMA 2605 standards**) for film integrity, chalk rating and fade rating in which manufacturer

agrees to repair or replace panels that show evidence of deterioration within specified warranty period. **[ADD 02]**

3. Provide **FGIA|AAMA 2605 coating warranty for metals having chrome phosphate pre-treatment**, 5-year warranty which shall include coverage for exterior pre-finished surfaces to cover pre-finished color coat against **deterioratio of finish including** chipping, cracking or crazing, blistering, peeling, chalking, or fading. **[ADD 02]**
  - a. **Deterioration of finish to an extent visible to the unaided eye, at a distance of 10 feet.**
  - b. **Film integrity: 20 years.**
  - c. **Color retention (ASTM D2244): 5 delta E.**
  - d. **Chalk resistance (ASTM D4214): greater than or equal to #8 rating.**
  - a. ~~Deterioration shall include but is not limited to:~~
    - 1) ~~Color fading of more than 5 Hunter units when tested according to ASTM D2244.~~
    - 2) ~~Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.~~
    - 3) ~~Cracking, checking, peeling or failure of paint to adhere to bare metal.~~
    - 4) ~~Perforation~~
  - b. ~~Warranty Period: Film integrity for 45 years and chalk and fade rating for 35 years, and perforation for 25 years from date of Substantial Completion.~~

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS **[ADD 02]**

- A. ~~Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on Erect A Tube, Inc., Harvard IL.~~
- B. ~~Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:~~
  1. ~~Erect A Tube, Inc., Harvard IL. (Basis of Design).~~
  2. ~~Fulfab Inc., Canton, OH.~~
  3. ~~R&M Steel Company, Caldwell, ID.~~
  4. ~~Aircraft Structures, Fairfax, MN.~~
- C. ~~Acceptable Substitutions: The products specified herein establish standards of quality, design and function desired. Other manufacturers will be considered for acceptance per the following:~~
  1. ~~Contractor must provide appropriate product data with bid for the Architect to consider the substitutions as "equal" to the manufacturer and product specified. Submit supporting technical literature, samples, drawings and performance data in order for Architect/Engineer to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.~~

- ~~2. Contractor must include unit prices showing any add or deduct costs for all recommended substitutions which have a greater or lesser cost than furnishing and installing the specified manufacturer and product.~~

## 2.2 DESCRIPTION

- A. Description: Provide a complete, integrated set of structurally-framed pre-engineered building system manufacturer's standard mutually dependent components and assemblies that form a building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
1. Provide pre-engineered building system of size and with bay spacings, roof slopes, and spans indicated on Drawings.
  2. Clear span rigid frame and roof truss system.
  3. Primary Framing: Rigid frame of rafter beams and columns, braced end frames, end wall columns, wind and seismic bracing.
  4. Secondary Framing: 8 inch nominal cold-formed steel girt framing and roof purlin framing for vertical panel installation. At horizontal panel areas, secondary framing to be designed, supplied and installed, and shall comprise of 8 inches cold-formed steel stud curtain wall framing.
  5. Wall system: Preformed factory foamed, metal panels of vertical profile and horizontal orientation.
  6. Roof system: Standing seam roof panels, upper and lower layers of insulation, insulated thermal blocking, fabric liner/air and vapor barrier system, and insulation support system.
- B. Regulatory Requirements
1. Conform to applicable code for submission of design calculations, reviewed shop drawings and as required for acquiring permit.
  2. Cooperate with regulatory agency or authority and provide data as requested.

## 2.3 PERFORMANCE/DESIGN CRITERIA

- A. Delegated Design: Design pre-engineered building systems, including comprehensive engineering analysis by a qualified professional structural engineer, using performance requirements and design criteria indicated.
1. Geotech info: 1,500 psf for bearing for this project. The "sands are loose and there is significant clay thickness, although the clay won't feel much of the building load."
- B. Engineer of Record: The specialty Engineer for the pre-engineered building manufacturer (**Delegated Design**) shall be the Structural Engineer of Record (SER) for the steel framed ~~T-Hanger~~ **T-hanger** structure and shall be responsible for all design and construction affidavits, structural tests and special inspections, and all other SER duties required by the Building Code and Building Official.  
**[ADD 02]**
- C. Design Requirements and Loads:
1. Members to withstand dead load, collateral loads, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with applicable code.



- a. Metal building components shall be capable of supporting design loads without permanent deformation, loss of watertightness, or disengagement of any part of installation.
  - b. Design metal building systems to withstand the most critical effects of load factors and load combinations.
  - c. Design structural steel sections in accordance with AISC, "Specification for the Design, Fabrication, and Erection of Steel Buildings".
  - d. Design light gage cold formed structural members in accordance with latest edition of AISI, "Specifications for the Design of Light Gage Cold Formed Steel Structural Members".
  - e. Welding shall comply with AWS Standard No. D1.1.
  - f. Building Design and detailing shall comply with OSHA requirements in the applicable standard 29 CFR Part 1926 - "Safety Standards for Steel Erection".
2. Members to withstand progressive snow and live loading, and design loads due to pressure and suction of wind. Loads shall be developed in accordance with MAINE UNIFORM BUILDING AND ENERGY CODE.

D. Design Loading: Refer to Structural Drawings.

- ~~1. Wind Design Pressure: Loads shall be developed in accordance with the MAINE UNIFORM BUILDING AND ENERGY CODE and ASCE 7-16, incorporated by reference. [ADD 02]~~
  - ~~a. Basic Wind Speed: 102 miles per hour. (three second gust).~~
  - ~~b. Occupancy Risk Factor I.~~
  - ~~c. Exposure: "D"~~
  - ~~d. Snow Loads: 80 pounds per square foot [391 Kg/m<sup>2</sup>] applied on horizontal projection of roof structure.~~
  - ~~e. Seismic loading as required by MAINE UNIFORM BUILDING AND ENERGY CODE. Pre-engineered building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7-16.~~
1. Engineer metal building systems according to procedures in MBMA's "Metal Building Systems Manual." [ADD 02]
2. Design Loads: requirement and loads indicated in this specification and drawings. [ADD 02]
3. Live Loads: Include all live loads indicated on drawings. Include loads induced by maintenance workers, materials, and equipment for roof live loads. [ADD 02]
4. Roof Snow Loads: Include vertical loads induced by the weight of snow, as indicated on drawings. [ADD 02]
5. Wind Loads: Include horizontal loads induced by a basic wind speed corresponding to parameters listed on drawings. [ADD 02]
- ~~2.6.~~ 6. Collateral Loads: Superimposed dead loads to account for specific architectural, mechanical, electrical, plumbing and fire protection components are noted on relevant plans, sections and details. Component loads may not be complete at the time of drawing issuance and should be verified with the Engineer of Record, prior to fabrication of supporting elements.
  - a. Collateral loads shall be determined based upon MEP, Architectural, and other items to be installed but shall not be assumed less than a minimum

uniform load of 10 psf. Purlins shall also be designed to accommodate an additional 150 lb hanging load applied anywhere along the member.

- 3-7. Additional Loads: Coordinate with Architectural and MEP drawings for weights of mechanical equipment, and other equipment and appurtenances.
    - a. Superimposed dead loads to account for specific architectural, mechanical, electrical, plumbing and fire protection components are noted on relevant plans, sections and details. Component loads may not be complete at the time of Drawing issuance and should be verified with the eor prior to fabrication of supporting elements
  - 4-8. Anchor Rod Locations: Anchor rods and structure shall be designed so that anchors have the minimum clearances from the edges of concrete foundations and piers as indicated on the Structural Drawings.
  - 5-9. Bracing Locations: The structure shall be designed utilizing the bracing locations indicated on the approved Shop Drawings. If bracing in addition to that shown on the Shop Drawings is required, the additional locations shall be coordinated with the Foundation Designer prior to fabrication of the structure.
  - 6-10. Metal building components shall be capable of supporting design loads without permanent deformation, loss of watertightness, or disengagement of any part of installation.
- E. Deflection Limits: Exterior wall and roof system to withstand imposed live and wind loads with maximum allowable deflection of span ( $L$  = Span length) not to exceed:
- 1. Roof framing:  $L/360$ .
  - 2. Girts: Horizontal deflection of  $L/240$ .
  - 3. Roof Panels: Vertical deflection of  $1/240$  of the span.
  - 4. Walls Panels: Horizontal deflection of  $1/240$  of the span.
- 4-5. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
- F. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:
- 1. Lateral Drift for Earthquake: As required by the Building Code.
  - 2. Lateral Drift for Wind: Maximum of  $1/240$  of the building height.
- G. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- H. Assembly to permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to the following temperature ranges:
- 1. Ambient temperature range: 120 deg F (67 deg C).
  - 2. Material surfaces: 180 deg F (100 deg C).
- I. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.
- J. Air Infiltration for Wall Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of wall area when tested according to ASTM E283 at static-air-pressure difference of 1.57 lbf/sq. ft.

- K. Water Penetration for Wall Panels: No water penetration when tested according to ASTM E331 at a wind-load design pressure of not less than 2.86 lbf/sq. ft.
- L. Wind-Uplift Resistance: Provide roof assemblies that comply with UL 580 for Class 90.

#### 2.4 MATERIALS - FRAMING

- A. Structural Steel Members: ASTM A36.
- B. Structural Tubing: ASTM A500, Grade B.
- C. Plate or Bar Stock: ASTM A529.
- D. Anchor Bolts: ASTM A307, unprimed
- E. Bolts, Nuts, and Washers: ASTM A325, galvanized to ASTM A153.
- F. Welding Materials: AWS D1.1; type required for materials being welded.
- G. Primer: SSPC 15, Type 1, Red Oxide.
- H. Grout: Non-shrink type, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 2400 psi (17 MPa) in two days and 7000 psi (48 MPa) in 28 days.

#### 2.5 MATERIALS - WALL AND ROOF SYSTEM

- A. Sheet Steel Stock: ASTM A446 Grade A, galvanized to ASTM A653 G90 designation.
- B. Joint Seal Gaskets: Manufacturer's standard type.
- C. Fasteners: Manufacturer's standard type, galvanized to ASTM A123, 2.0 oz/sq ft (610 g/sq m), finish to match adjacent surfaces when exterior exposed.
- D. Bituminous Paint: Asphaltic type.
- E. Sealants: As specified in Section 07 92 00 – JOINT SEALANTS.
- F. Galvanized Steel Raised-Diamond (Checker) Plate **(Threshold)**: ASTM A786 hot rolled raised-diamond floor plate, 1/2-inch thickness hot dipped galvanized in compliance with ASTM A123/A123M. **[ADD 02]**

#### 2.6 DOORS AND FRAMES

- A. Metal Doors And Frames: As specified under Section 08 11 13 – HOLLOW METAL DOORS AND FRAMES, and provided as component of Work of this Section 13 34 19.
- B. Sectional Overhead Doors: As specified under Section 08 36 13 – SECTIONAL DOORS, and provided as component of Work of this Section 13 34 19.
  - 1. Overhead Door Frame: Formed steel sections braced to building frame.
- C. Bi-Folding ~~Hanger~~-**Hangar** Doors: Bi-fold doors shall be integral with hangar building design.

1. Framing: Square tube jig, factory welded in full size panels to eliminate any field welding.
2. Door Panels:
  - a. Metal Panels: matching wall panels on building.
  - b. Light Panels: Polycarbonate soft white light panels for upper section of bi-fold door. Provide two light panels per bi-fold door.
    - 1) Polycarbonate minimum 0.039 in thickness and to match wall panel coverage of 36 inch width.
    - 2) Seal vertical laps with trim strips.
3. Top hinges factory located to align with pre-located door truss hinges on door header to eliminate field welding.
4. Electric operator: Top mounted operator on center of door truss, provided with adjustable turnbuckles and fastened securely.
  - a. Motor: 3/4 H.P. (minimum) 230 V.A.C. single-phase thermally protected and supplied with a reset button. Motor shall be totally enclosed capacitor start.
  - b. Cable drum shall be a direct drive drum by shaft mounted gearbox. Gearbox shall be oil bath two-stage gearbox, bronze worm gear, hardened steel spur gears, tapered roller and ball bearings.
  - c. Door operator: be factory pre-wired, complete with 24 VAC momentary up and down pressure push button control, magnetic controllers, geared rotary limit switch attached to cable drum designed to coordinate reversing operation, spring set electric brake, and up-stop safety switch; over-ride safety mercury tilt switch to disconnect power in case of over travel.
    - 1) Provide lock out safety switches on manual door latches of bi-fold door so to prevent bi-fold door system from opening unless both latches are unlocked.
  - d. Power connection: heavy-duty 230-volt plug for easy connection.

D. Door Hardware:

1. Passage doors:
  - a. Lockset
  - b. Closers (doors leading to exterior).
  - c. Weatherstripping.
  - d. Hinges.
2. Sectional Overhead Doors:
  - a. Furnish lock cylinders for sectional door(s).
3. Bi-Folding ~~Hanger~~ **Hangar** Doors: **[ADD 02]**
  - a. 3 inch diameter bottom guide roller with sealed bearing and column followers.
  - b. Manual cam locks of bi-fold door.
  - c. Center cane bolt pin, 1 inch diameter with embedded floor sockets.
  - d. 16 inch minimum center plated door poppers and skid plates.
  - e. Hinge pins: 3/16 inch diameter.

- f. Cabling: 7x19 galvanized aircraft cables with wire rope clips and thimbles.
- g. Astragals and weatherstripping:
  - 1) Bottom and top 2-ply rubber.
  - 2) Sides and center 2-ply rubber.
- h. Sheave wheels: 5 inch diameter steel sheave wheels with ball bearings.

## 2.7 FABRICATION

### A. General:

- 1. Do not fabricate materials (on-site or off-site) until all specified submittals have been submitted to, and approved by, the Architect.
- 2. General: Coordinate fabrication and erection of work with related work of other trades. Provide cutouts and supplemental reinforcement as required to accommodate materials and work specified in other sections of the specifications.
- 3. Protection of Dissimilar Metals: Dissimilar materials which are not compatible with adjoining materials when exposed to moisture shall be separated by means of coatings, gaskets, or other effective means.

### B. Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

- 1. Fabricate members in accordance with AISC Specification for plate, bar, tube, or rolled structural shapes.
- 2. Make shop connections by welding or by using high-strength bolts.
- 3. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
- 4. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
- 5. Weld clips to frames for attaching secondary framing.
- 6. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication; primer shall be compatible with finish coat specified in Section 09 91 00 – PAINTING.
- 7. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
- 8. Provide framing for door openings.

### C. Secondary Structure:

- 1. Secondary framing: Structural members which carry the loads to the primary framing systems and shall include the purlins, girts, wind bracing and miscellaneous structural members.
- 2. Purlins shall be nominal 8", 10" or 12" deep "Z" shaped members; and manufactured of 16, 14, or 12 gauge steel designed for specified loads, and shall be fabricated of material based on the requirements of ASTM A1011/A1011M or ASTM A572/A572M as applicable.

3. Exterior wall girts shall be fabricated from 4", 6" square structural weld steel tube or rolling formed CEE sections of ASTM A1011/A1011M or ASTM A572/A572M as applicable, flush mount design.
4. Interior partition girt shall be fabricated from 4" or 6" x 16, 14 or 16 ga. red oxide steel "CEE" sections, when specified.
5. Provide wind bracing, rafter bracing, sheeting angles where required.

D. Wall and roof systems:

1. Siding: 36 inch width, 24 gauge, minimum 0.028 inch metal thickness, trapizoildal rib profile, on 12 inch centers, ~~equal to Metal Sales, Deer Lake PA., type "PRB" panel~~ having 1-1/4 inch high rib, with lapped edges-fitted with taped sealant gaskets. **[ADD 02]**
2. Roofing: 36 inch width, 24 gauge, minimum 0.028 inch metal thickness, trapizoildal rib profile on 12 inch centers, ~~equal to Metal Sales, Deer Lake PA., type "PRB" panel~~ having 1-1/4 inch high rib, with lapped edges-fitted with taped sealant gaskets. **[ADD 02]**
3. Girts/Purlins: Rolled formed structural shape to receive siding, roofing sheets.
4. Internal and external Corners: Same material thickness and finish as adjacent material, profile brake formed, shop cut and factory mitered to required angles. Back brace mitered internal corners with 26 gage thick sheet.
5. Expansion Joints: Same material and finish as adjacent material, standard brake formed type, of profile to suit system.
6. Flashings, Closure Pieces, Fascia, Caps: Same material and finish as adjacent material, profile to suit system.
7. Fasteners: To maintain load requirements, and weathertight installation, same finish as cladding, non-corrosive type.
8. Ventilator: Continuous airflow ridge cap, in same gage and finish as roofing panels.

E. Sheet Metal Accessories: Fabricate trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the 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. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended 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.

## 2.8 ACCESSORIES

- A. Building trim shall include eave trim, gable trim, corner trim, service door trim, bi-fold hangar door trim. All trim shall be 26 gauge. and manufactured of flat stock material equal in quality to wall sheets and color as selected from manufacturer's standard color chart. All trims to be hemmed. Trim pieces shall be packaged for shipment at factory.
- B. Roof caulking shall be at all roof sheet side laps and at pre-formed ridge caps. Roof caulk shall be a tape sealant type and shall be pre-formed butyl rubber base and shall be supplied as a 3/16 inch by 3/8 inch extruded shape.
- C. Inside and outside semi-rigid cross-linked polyethylene foam closure shall be provided as required to provide a bird proof building. Closures are to be provided on bi-fold doors, gable end walls, side walls, roof overhang, eave and rake of end wall. Closure shall be self adhesive.
- ~~D. Fuel containment galvanized angle: Provide 3 by 6 inch by 16 gauge. fuel containment galvanized angle at the base of all interior partition walls to prevent fuel spills from penetrating adjacent units. [ADD 02]~~
  - ~~1. Include fuel resistant sealant.~~
  - ~~2. Anchors by erector.~~
- ~~E.D.~~ Base angles: 2 by 4 inch by 16 gauge. R-90 Galvanized base angle for two end walls and short side walls.
  - 1. Include sealant.
  - 2. Anchors by erector.
- ~~F.E.~~ Fasteners:
  - 1. Roof fasteners: #12 x1 inch length Scotts 310 stainless steel head on carbon steel shank, hex head, with dual seal washer.
  - 2. Roof stitch screws: #12 by 3/4 inch length Scotts 310 stainless steel head screws with washers.
  - 3. Wall fasteners: #12 x1 inch length zinc plated hex head color match self-drilling sheet metal screws with washer.
  - 4. Wall sheet stitch screws: 1/4"-#14 by 3/4 inch length Zinc plated hex head color match self-drilling lap screw with washer.
  - 5. Partition sheet fasteners shall be #12 by 3/4 inch length Zinc plated hex head self-drilling screws.
  - 6. Install all sheet metal screws as shown on approved shop drawings.

## 2.9 FINISHES

- A. ~~Thresholds: Framing Members (Primary and Secondary), Girts and Purlins:~~ Provide zinc coating for iron and steel fabrications applied by the hot-dip process.
  - ~~1. Basis of design: Duncan Galvanizing, Everett, MA., product "Duragalv." [ADD 02]~~

- ~~2.1.~~ Comply with ASTM A123 for fabricated products and ASTM A153 for hardware.
  - a. Wherever possible, perform galvanizing after assembly of items.
  - b. If required, plug vent holes after galvanizing and grind smooth. Touch-up with specified liquid zinc coating.
- ~~3.2.~~ Prepare surfaces to be galvanized per SSPC SP2 or SP3 to provide a smooth surface removing all runs, drips, or sags.
- ~~4.3.~~ Galvanizing shall exhibit a rugosity (smoothness) of 16-25 microns or less when measured by a profilometer. This pertains to those elements that are less than 24 pounds per running foot.
- ~~5.4.~~ Galvanized items shall be straightened to remove all warpage and distortion caused by the galvanization process.
- ~~6.5.~~ Touch-up all breaks on hot-dip surfaces caused by cutting, welding, drilling or undue abrasion with specified liquid zinc coating. Apply liquid zinc by brush or spray on all damaged areas in two coats to a total dry film thickness of not less than 3 mils. Apply first coat within two hours after damage to hot-dip film to prevent undue oxidation of exposed surface. On all welds remove weld spatter by power wire brushing or equivalent before applying liquid zinc coating. Repair material should extend at least 3 inches beyond all edges of the damaged galvanized area as possible to assure continuity of galvanic protection

**B. Framing Members: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications: [ADD 02]**

- 1. Finish: Primer: SSPC-Paint 25, Type II, zinc oxide, alkyd primer, and compatible with specified topcoats (refer to Section 09 91 00).**

**B.C. Wall and Roof Panels: Coil Coated Polyvinylidene Fluoride (PVDF) resin based, high performance thermoplastic organic coating conforming to **FGIA/AAMA 2605-22 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix)**. AAMA A620, AAMA 2605, NAAMM Metal Finishes Manual, and the following: [ADD 02]**

- ~~1.~~ Resin base of 70 percent PVDF by weight, Arkema, Inc., product "Kynar 500" or Solvay Solexis, Inc. product "Hylar 5000". **[ADD 02]**
- ~~2.~~ Finish Coating shall be manufactured as one of the following products: **[ADD 02]**
  - ~~a.~~ Akzo Nobel; product: "Trinar Ultra."
  - ~~b.~~ P.P.G. Industries Inc.; product "Duranar."
  - ~~c.~~ Valspar Corp., product: "Fluropon."
- ~~3.2.~~ Surface Preparation: Properly clean aluminum with inhibited chemical cleaner and pretreat with acid chromate-fluoride-phosphate conversion coating, in accordance with Aluminum Association method AA-C12C42.
- ~~4.3.~~ Prime all surfaces with a corrosion resistant, epoxy-based primer compatible with finish coating, averaging 0.2 to 0.3 mils dry film thickness, fully oven-cured.



- ~~5.4.~~ On finished side of coil, provide one color coat, of polyvinylidene flouride enamel averaging 0.7 to 0.8 mil dry film thickness on all exposed surfaces, including all exposed screws, fastenings.
  - a. On reverse side of coil provide off-white washcoat.
- ~~6.5.~~ Color and Appearance: Color shall be selected by Architect from paint manufacturer's full range of standard (non-metallic, non-mica) colors. The available library of standard colors shall not be less than 16 colors.

## 2.10 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to evaluate product.
- B. Testing: Test and inspect shop connections for pre-engineered buildings according to the following:
  - 1. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM F3125, grade A490 Bolts."
  - 2. Welded Connections: In addition to visual inspection, shop-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:
    - a. Liquid Penetrant Inspection: ASTM E165.
    - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
    - c. Ultrasonic Inspection: ASTM E164.
    - d. Radiographic Inspection: ASTM E94.
- C. Product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
  - 1. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position.
  - 2. Beginning of installation means acceptance of existing substrate and project conditions.

### 3.2 ERECTION - FRAMING

- A. General:
  - 1. Erect pre-engineered building system according to manufacturer's written erection instructions and erection drawings. Refer to FAA 7460 for requirements pertaining to cranes.
  - 2. Erect framing in accordance with AISC Specification.
    - a. Bolt settings and other dimensions shall be held to a tolerance of plus or minus 3 mm (1/8-inch). Use templates or other gaging devices to assure

- accurate spacing of anchor bolts. Bolt field connections unless otherwise indicated on approved shop drawings.
- b. Building erection shall comply with the applicable standards listed in 29 CFR Part 1926 - "Safety Standards for Steel Erection".
  3. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated on approved shop drawings.
  4. Do not field cut, drill, or alter structural members without written approval from pre-engineered building system manufacturer's professional engineer.
- B. Base and Bearing 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. 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.
  3. Promptly pack 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 shrinkage-resistant grouts.
- C. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure.
  2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- D. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.
    - a. Joint Type: Snug tightened or pretensioned.
- E. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.
- F. After erection, prime welds, abrasions, and surfaces not shop primed.
- 3.3 ERECTION - WALL AND ROOFING SYSTEMS
- A. General: Install in accordance with manufacturer's instructions.

- B. General: Install metal panels in orientation, sizes, and locations indicated on approved shop drawings and in accordance with manufacturer's instructions. Install panels perpendicular to girts and subgirts, unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Field cutting of metal panels by torch is not permitted.
  2. Shim or otherwise plumb substrates receiving metal panels.
  3. Rigidly fasten base end of metal panels and allow eave end free movement due to thermal expansion and contraction. Predrill panels.
  4. Flash and seal metal panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until weather barrier and flashings that will be concealed by metal panels are installed.
  5. Install screw fasteners in predrilled holes.
  6. Locate and space fastenings in uniform vertical and horizontal alignment.
  7. Install flashing and trim as metal panel work proceeds.
  8. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
  9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
  10. Align bottom 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.
  11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal panel manufacturer.
- D. Install attachment system required to support all panels and to provide a complete weathertight wall system, including subgirts, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.
1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.
  2. Do not begin installation until weather barrier and flashings that will be concealed by composite panels are installed.

### 3.4 INSTALLATION - ACCESSORIES

- A. General: 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 assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
  3. Provide concealed fasteners except where noted on approved shop drawings.
  4. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
- B. 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 excessive oil canning, 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 result in 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 with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type 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 deep, filled with mastic sealant (concealed within joints).
- C. Install passage doors, overhead doors, and bi-fold ~~hanger~~ **hangar** doors, in accordance with manufacturers instructions and as additionally specified. **[ADD 02]**
- D. Seal wall and roof accessories watertight and weather tight with sealant, in accordance with Section 07 92 00.

### 3.5 TOLERANCES

- A. Framing Members, maximum variation from plumb or level: 1/4 inch (6 mm) from level; 1/8 inch (3 mm) from plumb.
- B. Siding and Roofing, maximum offset: 1/8 inch (3 mm) from true position

### 3.6 FIELD QUALITY CONTROL

- A. Field inspection will be performed under the provisions of Section 01 45 33 - CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES.
- B. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  1. Inspection of fabricators.
  2. Steel frame construction.
- C. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- D. The pre-engineered building structural engineer of record or his delegated representative shall visit the site a minimum of two times during construction, once during performance of the work and once after the work is complete.

- E. Tests and Inspections:
  - 1. Shop-Bolted Connections (all): Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM F3125, grade A490 Bolts."
  - 2. High-Strength, Field-Bolted Connections: Connections shall be tested and inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
  - 3. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:
    - a. Liquid Penetrant Inspection: ASTM E 165.
    - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
    - c. Ultrasonic Inspection: ASTM E 164.
    - d. Radiographic Inspection: ASTM E 94.
- F. Product will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.

### 3.7 ADJUSTING

- A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.
- B. Door Hardware: Adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate as intended.
- C. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet noncumulative, on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

### 3.8 CLEANING

- A. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

### 3.9 PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.
- B. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.
  - 1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
  - 2. Apply a compatible primer of same type and color as shop primer used on adjacent surfaces.

- C. Wall Panels: Replace wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- D. Doors and Frames: Immediately after installation, sand rusted or damaged areas of prime coat until smooth and apply touchup of compatible air-drying primer.
  - 1. Immediately before final inspection, remove protective wrappings from doors and frames.

End of Section

**SECTION 22 0523****GENERAL-DUTY VALVES FOR PLUMBING PIPING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Applications.
- B. General requirements.
- C. Ball valves.

**1.02 REFERENCE STANDARDS**

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications; 2019.
- C. MSS SP-72 - Ball Valves with Flanged or Butt-Welding Ends for General Service; 2010a.
- D. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- E. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- F. NSF 372 - Drinking Water System Components - Lead Content; 2016.

**1.03 SUBMITTALS**

- A. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer:
  - 1. Obtain valves for each valve type from single manufacturer.
  - 2. Company must specialize in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Welding Materials and Procedures: Comply with ASME BPVC-IX.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Prepare valves for shipping as follows:
  - 1. Minimize exposure of operable surfaces by setting plug and ball valves to open position.
  - 2. Protect valve parts exposed to piped medium against rust and corrosion.
  - 3. Protect valve piping connections such as grooves, weld ends, threads, and flange faces.
- B. Use the following precautions during storage:
  - 1. Maintain valve end protection and protect flanges and specialties from dirt.
    - a. Provide temporary inlet and outlet caps.
    - b. Maintain caps in place until installation.
  - 2. Store valves in shipping containers and maintain in place until installation.
    - a. Store valves indoors in dry environment.
    - b. Store valves off the ground in watertight enclosures when indoor storage is not an option.

**PART 2 PRODUCTS****2.01 APPLICATIONS**

- A. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).
- B. Provide the following valves for the applications if not indicated on drawings:
- C. Required Valve End Connections for Non-Wafer Types:
  - 1. Copper Tube:
    - a. 2 NPS (50 DN) and Smaller: solder-joint valve-end

- D. Domestic, Hot and Cold Water Valves:
  - 1. 2 NPS (50 DN) and Smaller:
    - a. Bronze and Brass: Provide with solder-joint ends.
    - b. Ball: Two piece, full port, brass with brass trim.

## **2.02 GENERAL REQUIREMENTS**

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
  - 1. Hand Lever: Quarter-turn valves 6 NPS (150 DN) and smaller.
- D. Valve-End Connections:
  - 1. Solder Joint Connections: ASME B16.18.
- E. General ASME Compliance:
  - 1. Solder-joint Connections: ASME B16.18.
- F. Potable Water Use:
  - 1. Certified: Approved for use in compliance with NSF 61 and NSF 372.
  - 2. Lead-Free Certified: Wetted surface material includes less than 0.25 percent lead content.
- G. Bronze Valves:
  - 1. Copper alloys containing more than 15 percent zinc are not permitted.
- H. Source Limitations: Obtain each valve type from a single manufacturer.

## **2.03 BRONZE BALL VALVES**

- A. Two Piece, Full Port with Bronze Trim:
  - 1. Comply with MSS SP-110.
  - 2. WSP Rating: 150 psi (1035 kPa).
  - 3. WOG Rating: 600 psi (4140 kPa).
  - 4. Body: Forged bronze or dezincified-brass alloy.
  - 5. Ends Connections: Pipe thread or solder.
  - 6. Seats: PTFE.
  - 7. Stem: Bronze, blowout proof.
  - 8. Ball: Chrome plated brass.
  - 9. Operator: Provide lockable handle and stem extension.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Discard all packing materials and verify that valve interior, including threads and flanges are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

### **3.02 INSTALLATION**

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

**END OF SECTION**



**SECTION 22 0553****IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Pipe markers.

**1.02 REFERENCE STANDARDS**

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2015.

**1.03 SUBMITTALS**

- A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.

**PART 2 PRODUCTS****2.01 PLUMBING COMPONENT IDENTIFICATION GUIDELINE**

- A. Pipe Markers: 3/4 inch (20 mm) diameter and higher.

**2.02 IDENTIFICATION APPLICATIONS**

- A. Piping: Pipe markers.

**2.03 PIPE MARKERS**

- A. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- B. Color code as follows:
  - 1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.

**PART 3 EXECUTION****3.01 PREPARATION**

- A. Degrease and clean surfaces to receive adhesive for identification materials.

**3.02 INSTALLATION**

- A. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

**END OF SECTION**

**SECTION 22 0719**  
**PLUMBING PIPING INSULATION**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Flexible elastomeric cellular insulation.
- B. Piping insulation.
- C. Jacketing and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 8400 - Firestopping.

**1.03 REFERENCE STANDARDS**

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.
- B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2020.
- C. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2019.
- D. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2018).
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

**1.04 SUBMITTALS**

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

**1.05 QUALITY ASSURANCE**

- A. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

**1.07 FIELD CONDITIONS**

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

**PART 2 PRODUCTS****2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

**2.02 GLASS FIBER**

- A. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible, with wicking material to transport condensed water to the outside of the system for evaporation to the atmosphere.
  - 1. K (Ksi) Value: ASTM C177, 0.23 at 75 degrees F (0.034 at 24 degrees C).
  - 2. Maximum Service Temperature: 220 degrees F (104 degrees C).
  - 3. Maximum Moisture Absorption: 0.2 percent by volume.

- B. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/Pa s m).
- C. Tie Wire: 0.048 inch (1.22 mm) stainless steel with twisted ends on maximum 12 inch (300 mm) centers.
- D. Vapor Barrier Lap Adhesive: Compatible with insulation.

## **2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION**

- A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
  - 1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
  - 2. Maximum Service Temperature: 220 degrees F (104 degrees C).
  - 3. Connection: Waterproof vapor barrier adhesive.
- B. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

## **2.04 JACKETING AND ACCESSORIES**

- A. ABS Plastic Jacket:
  - 1. Manufacturers:
  - 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
    - a. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
    - b. Maximum Service Temperature: 180 degrees F (82 degrees C).
    - c. Moisture Vapor Permeability: 0.012 perm inch (0.018 ng/(Pa s m)), when tested in accordance with ASTM E96/E96M.
    - d. Thickness: 30 mil, 0.03 inch (0.75 mm).
    - e. Connections: Brush on welding adhesive.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Exposed Piping: Locate insulation and cover seams in least visible locations.
- C. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- D. Glass fiber insulated pipes conveying fluids below ambient temperature:
  - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
  - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- E. For hot piping conveying fluids 140 degrees F (60 degrees C) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- F. Glass fiber insulated pipes conveying fluids above ambient temperature:
  - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
  - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- G. Inserts and Shields:

1. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
  2. Insert Location: Between support shield and piping and under the finish jacket.
  3. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.
- H. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 8400.

### **3.03 SCHEDULES**

- A. Domestic Hot Water Supply:
1. Glass Fiber Insulation:
    - a. Pipe Size Range: all inch.
    - b. Thickness: 1 inch.
- B. Domestic Hot Water Recirculation:
1. Glass Fiber Insulation:
    - a. Pipe Size Range: All sizes.
    - b. Thickness: 1 inch.
- C. Domestic Cold Water:
1. Glass Fiber Insulation:
    - a. Pipe Size Range: All sizes.
    - b. Thickness: 1 inch.

**END OF SECTION**

**SECTION 22 1005**  
**PLUMBING PIPING**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Sanitary waste piping, buried within 5 feet (1500 mm) of building.
- B. Domestic water piping, buried within 5 feet (1500 mm) of building.
- C. Pipe, pipe fittings, specialties, and connections for piping systems.
  - 1. Sanitary sewer.
  - 2. Domestic water.
  - 3. Flanges, unions, and couplings.
  - 4. Pipe hangers and supports.

**1.02 REFERENCE STANDARDS**

- A. ASME B31.9 - Building Services Piping; 2017.
- B. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications; 2019.
- C. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2020.
- D. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- E. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- F. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2020a.
- G. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter; 2012a.
- H. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012 (Reapproved 2018).
- I. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe; 2015.
- J. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.
- K. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2015.
- L. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.
- M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- N. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2019a.
- O. ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing; 2019a.
- P. AWWA C651 - Disinfecting Water Mains; 2014.
- Q. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- R. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

- S. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- T. NSF 372 - Drinking Water System Components - Lead Content; 2016.
- U. PPI TR-4 - PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB), and Minimum Required Strength (MRS) Ratings For Thermoplastic Piping Materials or Pipe; 2017.
- V. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

### **1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

### **1.04 QUALITY ASSURANCE**

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.
- C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.
- D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.
- E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

### **1.06 FIELD CONDITIONS**

- A. Do not install underground piping when bedding is wet or frozen.

## **PART 2 PRODUCTS**

### **2.01 GENERAL REQUIREMENTS**

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

### **2.02 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING**

- A. Cast Iron Pipe: ASTM A74 service weight.
  - 1. Fittings: Cast iron.
  - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
- B. PVC Pipe: ASTM D2665 or ASTM D3034.
  - 1. Fittings: PVC.
  - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

### **2.03 SANITARY SEWER PIPING, ABOVE GRADE**

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
  - 1. Fittings: Cast iron.
  - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

- B. Copper Tube: ASTM B306, DWV.
  - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.32, solvent.
  - 2. Joints: ASTM B32, alloy Sn50 solder.
- C. PVC Pipe: ASTM D2665.
  - 1. Fittings: PVC.
  - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

## **2.04 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING**

- A. PE Pipe: ASTM D2239.
  - 1. Fittings: ASTM D2609, PE.
  - 2. Joints: Mechanical with stainless steel clamp.
- B. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
  - 1. PPI TR-4 Pressure Design Basis:
    - a. 160 psig (1102 kPa) at maximum 73 degrees F (23 degrees C).
  - 2. Fittings: Brass and engineered polymer (EP) ASTM F1960.
  - 3. Joints: Mechanical compression fittings.

## **2.05 DOMESTIC WATER PIPING, ABOVE GRADE**

- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
  - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
  - 2. Joints: ASTM B32, alloy Sn95 solder.
- B. CPVC Pipe: ASTM D2846/D2846M, ASTM F441/F441M, or ASTM F442/F442M.
  - 1. Fittings: CPVC; ASTM D2846/D2846M, ASTM F437, ASTM F438, or ASTM F439.
  - 2. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement.
  - 3. Design basis for pipe and fittings: Flowguard Gold.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that excavations are to required grade, dry, and not over-excavated.

### **3.02 PREPARATION**

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Provide access where valves and fittings are not exposed.
- G. Provide support for utility meters in accordance with requirements of utility companies.
- H. Install water piping to ASME B31.9.
- I. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- J. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- K. Sleeve pipes passing through partitions, walls, and floors.
- L. Inserts:

1. Provide inserts for placement in concrete formwork.
  2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- M. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9.
  2. Support horizontal piping as indicated.
  3. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
  4. Place hangers within 12 inches (300 mm) of each horizontal elbow.
  5. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
  6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
  7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
  8. Provide copper plated hangers and supports for copper piping.
  9. Support cast iron drainage piping at every joint.

### 3.04 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- D. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

### 3.05 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch (10 mm) vertically of location indicated and slope to drain at minimum of 1/4 inch per foot (1:50) slope.
- B. Water Piping: Slope at minimum of 1/8 inch per foot (1:0) and arrange to drain at low points.

### 3.06 FIELD TESTS AND INSPECTIONS

- A. Verify and inspect systems according to requirements by the Authority Having Jurisdiction. In the absence of specific test and inspection procedures proceed as indicated below.
- B. Domestic Water Systems:
  1. Perform hydrostatic testing for leakage prior to system disinfection.
  2. Test Preparation: Close each fixture valve or disconnect and cap each connected fixture.
  3. General:
    - a. Fill the system with water and raise static head to 10 psi (345 kPa) above service pressure. Minimum static head of 50 to 150 psi (345 to 1,034 kPa). As an exception, certain codes allow a maximum static pressure of 80 psi (551.6 kPa).
- C. Test Results: Document and certify successful results, otherwise repair, document, and retest.

### 3.07 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system.
- B. Prior to starting work, verify system is complete, flushed, and clean.
- C. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- D. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- F. Maintain disinfectant in system for 24 hours.



- G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- H. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

### **3.08 SERVICE CONNECTIONS**

- A. Provide new sanitary sewer services. Before commencing work, check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- B. Provide new water service complete with approved double check backflow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.
  - 1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
  - 2. Provide 18 gauge, 0.0478-inch (1.21 mm) galvanized sheet metal sleeve around service main to 6 inch (150 mm) above floor and 6 feet (1800 mm) minimum below grade. Size for minimum of 2 inches (50 mm) of loose batt insulation stuffing.

### **3.09 SCHEDULES**

- A. Pipe Hanger Spacing:
  - 1. Metal Piping:
    - a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):
      - 1) Maximum Hanger Spacing: 6.5 ft (2 m).
      - 2) Hanger Rod Diameter: 3/8 inches (9 mm).
  - 2. Plastic Piping:
    - a. All Sizes:
      - 1) Maximum Hanger Spacing: 6 ft (1.8 m).
      - 2) Hanger Rod Diameter: 3/8 inch (9 mm).

**END OF SECTION**

**SECTION 22 1006**  
**PLUMBING PIPING SPECIALTIES**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Drains.
- B. Cleanouts.
- C. Double check valve assemblies.
- D. Trap-seal primers.

**1.02 REFERENCE STANDARDS**

- A. ASME A112.6.3 - Floor and Trench Drains; 2019.
- B. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent; 2009.
- C. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- D. NSF 372 - Drinking Water System Components - Lead Content; 2016.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years documented experience.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept specialties on site in original factory packaging. Inspect for damage.

**PART 2 PRODUCTS****2.01 GENERAL REQUIREMENTS****2.02 DRAINS**

- A. Floor Drain (FD-1):
  - 1. ASME A112.6.3; lacquered cast iron or stainless steel, two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer.

**2.03 CLEANOUTS**

- A. Cleanouts at Interior Finished Floor Areas (CO-1):
  - 1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.

**2.04 DOUBLE CHECK-VALVE ASSEMBLIES**

- A. Double Check Valve Assembly (DCV-1):
  - 1. ASSE 1012; cast bronze body with corrosion resistant internal parts and stainless steel springs; two independently operating check valves with intermediate atmospheric vent.
  - 2. Size: 3/4 to 2 inch, NPS (20 to 50 mm, DN) assembly with threaded full port ball valves.
  - 3. Maximum Working Parameters: 175 psi (1,207 kPa) at 180 degrees F (82.2 degrees C).
  - 4. Accessories: Provide lead-free Y-strainer and pit-mounted protective enclosure.

**2.05 TRAP-SEAL PRIMERS**

- A. Description: (TP-1): Pressure drop activated trap primer.
  - 1. Construction: C693 lead-free brass body; EPDM O-rings; Dow #7 Silicone; #60 stainless steel mesh; stainless steel adjustment screw.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Install floor cleanouts at elevation to accommodate finished floor.

**END OF SECTION**

**SECTION 22 3000**  
**PLUMBING EQUIPMENT**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Residential electric water heaters.
- B. Diaphragm-type compression tanks.
- C. In-line circulator pumps.

**1.02 REFERENCE STANDARDS**

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels; 2023.
- C. UL 174 - Standard for Household Electric Storage Tank Water Heaters; Current Edition, Including All Revisions.
- D. UL 1995 - Heating and Cooling Equipment; Current Edition, Including All Revisions.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittals procedures.
- B. Product Data:
  - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
  - 2. Provide electrical characteristics and connection requirements.
- C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

**1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

**PART 2 PRODUCTS****2.01 WATER HEATERS**

- A. Residential Electric Water Heaters: (DWH-1)
  - 1. Type: Automatic, electric, vertical storage.
  - 2. Minimum Efficiency Required: ASHRAE Std 90.1 I-P.
  - 3. Electrical Characteristics:
  - 4. Tank: Glass lined welded steel, thermally insulated with one inch (25 mm) thick glass fiber; encased in corrosion-resistant steel jacket; baked-on enamel finish.
  - 5. Controls: Automatic water thermostat with externally adjustable temperature range from 120 to 170 degrees F (49 to 77 degrees C), flanged or screw-in nichrome elements, enclosed controls and electrical junction box and operating light. Wire double element units so elements do not operate simultaneously.
  - 6. Accessories:
    - a. Water Connections: Brass.
    - b. Dip Tube: Brass.
    - c. Drain valve.

- d. Anode: Magnesium.
- e. Temperature and Pressure Relief Valve: ASME labeled.

## **2.02 DIAPHRAGM-TYPE COMPRESSION TANKS**

- A. Construction: Welded steel, tested and stamped in accordance with ASME BPVC-VIII-1; supplied with National Board Form U-1, rated for working pressure of 125 psig (860 kPa), with flexible EPDM diaphragm sealed into tank, and steel legs or saddles.

## **2.03 IN-LINE CIRCULATOR PUMPS**

- A. Casing: Bronze, rated for 125 psig (860 kPa) working pressure, with stainless steel rotor assembly.
- B. Impeller: Bronze.
- C. Shaft: Alloy steel with integral thrust collar and two oil lubricated bronze sleeve bearings.
- D. Seal: Carbon rotating against a stationary ceramic seat.
- E. Drive: Flexible coupling.

# **PART 3 EXECUTION**

## **3.01 INSTALLATION**

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions required for applicable certifications.
- B. Electrical Work: Provide manual control and protective devices with associated wiring to interconnect related interfaced devices required for specified operation.
- C. Coordinate system, equipment, and piping work with applicable electrical, fuel, gas, vent, drain, and waste support interconnections as included or provided by other trades.
- D. Domestic Water Storage Tanks:
  - 1. Provide steel pipe support, independent of building structural framing members.
  - 2. Clean and flush prior to delivery to site. Seal until pipe connections are made.
- E. Pumps:
  - 1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

## **3.02 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements for additional requirements.

**END OF SECTION**

**SECTION 22 4000  
PLUMBING FIXTURES**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Water closets
- B. Tank type water closets.
- C. Lavatories
- D. Mop sinks.

**1.02 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2013.
- C. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- D. ASME A112.18.1 - Plumbing Supply Fittings; 2018, with Errata.
- E. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2018.
- F. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- G. NSF 372 - Drinking Water System Components - Lead Content; 2016.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

**1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty for electric water cooler.

**PART 2 PRODUCTS****2.01 GENERAL REQUIREMENTS**

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

**2.02 TANK TYPE WATER CLOSETS**

- A. Floor-Mounted Bowl:(WC-1)
  - 1. ASME A112.19.2; siphon jet, vitreous china, 16.5 inches (420 mm) high, close-coupled closet combination with elongated rim, insulated vitreous china closet tank with fittings and lever flushing valve, bolt caps, vandalproof cover locking device.
  - 2. Water Consumption: 1.28 gal (4.8 L) per flush, maximum.
  - 3. Tank Height 30"

4. Trapway Outlet: 4 inch (100 mm, DN).
- B. Toilet Seats:
  1. Plastic: Solid, white, elongated, closed front, slow-closing self sustaining hinged seat cover,, and brass bolts with covers.

### 2.03 LAVATORIES

- A. Wall-Hung Basin:
  1. Vitreous China, Grade A: ASME A112.19.2; white, rectangular commercial-grade sink with predrilled holes, rear-center drain, front overflow, and hanger. Size 21-1/4" x 18-1/4" with 4-inch (100 mm) centerset spacing.
  2. Carrier:
    - a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.
- B. Supply Faucet: ASME A112.18.1; chrome plated combination supply fitting with pop-up waste, water economy aerator with maximum flow of 1.5 gpm, single lever handle. Factory integral scald protection and check valve
- C. Provide lavatory with combination stop and strainer.
- D. Accessories:
  1. Chrome-plated 17 gauge, 0.0538 inch (1.37 mm) brass P-trap with clean-out plug and arm with escutcheon.
  2. Wheel handle stops.
  3. Flexible supplies.

### 2.04 MOP SINKS

- A. Bowl: 24 by 24 by 10 inches high, white molded stone, floor mounted, with 1-inch wide shoulders, vinyl bumper guard, stainless steel strainer.
- B. Trim: ASME A112.18.1 exposed wall type supply with cross handles, spout wall brace, vacuum breaker, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges.
- C. Accessories:
  1. 5 feet (1.5 m) of 1/2 inch (13 mm) diameter plain end reinforced plastic hose.
  2. Hose clamp hanger.
  3. Mop hanger.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

### 3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

### 3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall supports and bolts.
- E. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.

**3.04 INTERFACE WITH WORK OF OTHER SECTIONS**

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

**3.05 ADJUSTING**

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

**3.06 CLEANING**

- A. Clean plumbing fixtures and equipment.

**3.07 PROTECTION**

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**



**SECTION 23 0513****COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. General construction and requirements.
- B. Applications.
- C. Single phase electric motors.

**1.02 REFERENCE STANDARDS**

- A. NEMA MG 1 - Motors and Generators; 2018.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

**1.04 QUALITY ASSURANCE**

- A. Comply with NFPA 70.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering.

**1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

**PART 2 PRODUCTS****2.01 GENERAL CONSTRUCTION AND REQUIREMENTS**

- A. Construction:
  - 1. Open drip-proof type except where specifically noted otherwise.
  - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
  - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- B. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- C. Wiring Terminations:
  - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
  - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

**2.02 APPLICATIONS****2.03 SINGLE PHASE POWER - SPLIT PHASE MOTORS**

- A. Starting Torque: Less than 150 percent of full load torque.
- B. Starting Current: Up to seven times full load current.
- C. Breakdown Torque: Approximately 200 percent of full load torque.
- D. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.

- E. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

#### **2.04 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS**

- A. Starting Torque: Exceeding one fourth of full load torque.
- B. Starting Current: Up to six times full load current.
- C. Multiple Speed: Through tapped windings.
- D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

#### **2.05 SINGLE PHASE POWER - CAPACITOR START MOTORS**

- A. Starting Torque: Three times full load torque.
- B. Starting Current: Less than five times full load current.
- C. Pull-up Torque: Up to 350 percent of full load torque.
- D. Breakdown Torque: Approximately 250 percent of full load torque.
- E. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.
- F. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve bearings.
- G. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.

**END OF SECTION**

**SECTION 23 0593****TESTING, ADJUSTING, AND BALANCING FOR HVAC****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Testing, adjustment, and balancing of air systems.

**1.02 REFERENCE STANDARDS**

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 110 - Methods of Testing Performance of Laboratory Fume Hoods; 2016, with Errata.
- C. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008, with Errata (2019).
- D. NEBB (TAB) - Procedural Standard for Testing Adjusting and Balancing of Environmental Systems; 2019.
- E. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2023.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
  - 1. Include at least the following in the plan:
    - a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
    - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
    - c. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
    - d. Final test report forms to be used.
    - e. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
  - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
  - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
  - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
  - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
  - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.

**PART 2 PRODUCTS - NOT USED****PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. Perform total system balance in accordance with one of the following:
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
  - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.

**3.02 EXAMINATION**

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
  - 1. Systems are started and operating in a safe and normal condition.
  - 2. Temperature control systems are installed complete and operable.
  - 3. Proper thermal overload protection is in place for electrical equipment.
  - 4. Duct systems are clean of debris.
  - 5. Fans are rotating correctly.
  - 6. Air outlets are installed and connected.
- B. Beginning of work means acceptance of existing conditions.

**3.03 PREPARATION**

- A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
  - 1. Require attendance by all installers whose work will be tested, adjusted, or balanced.

**3.04 ADJUSTMENT TOLERANCES**

- A. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

**3.05 RECORDING AND ADJUSTING**

- A. Ensure recorded data represents actual measured or observed conditions.
- B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

**3.06 AIR SYSTEM PROCEDURE**

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

**3.07 SCOPE**

- A. Test, adjust, and balance the following:
  - 1. Fans.

**3.08 MINIMUM DATA TO BE REPORTED**

- A. Exhaust Fans:
  - 1. Location.
  - 2. Manufacturer.
  - 3. Model number.
  - 4. Serial number.
  - 5. Air flow, specified and actual.

6. Total static pressure (total external), specified and actual.
7. Fan RPM.

**END OF SECTION**

**SECTION 23 0713**  
**DUCT INSULATION**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Duct insulation.

**1.02 REFERENCE STANDARDS**

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- B. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.
- F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

**1.04 QUALITY ASSURANCE**

- A. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of experience and approved by manufacturer.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

**1.06 FIELD CONDITIONS**

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

**PART 2 PRODUCTS****2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

**2.02 GLASS FIBER, FLEXIBLE**

- A. Insulation: ASTM C553; flexible, noncombustible blanket.
  - 1. K (Ksi) value: 0.36 at 75 degrees F (0.052 at 24 degrees C), when tested in accordance with ASTM C518.
  - 2. Maximum Water Vapor Absorption: 5.0 percent by weight.
- B. Vapor Barrier Jacket:
  - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
  - 2. Moisture Vapor Permeability: 0.02 perm inch (0.029 ng/(Pa s m)), when tested in accordance with ASTM E96/E96M.
  - 3. Secure with pressure-sensitive tape.

**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Test ductwork for design pressure prior to applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

**3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Insulated Ducts Conveying Air Below Ambient Temperature:
  - 1. Provide insulation with vapor barrier jackets.
  - 2. Finish with tape and vapor barrier jacket.
  - 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
  - 4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- D. Insulated Ducts Conveying Air Above Ambient Temperature:
  - 1. Provide with or without standard vapor barrier jacket.
  - 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- E. Slope exterior ductwork to shed water.

**3.03 SCHEDULES**

- A. Exhaust Ducts Within 10 ft (3 m) of Exterior Openings: 2" THICK

**END OF SECTION**

**SECTION 23 3100**  
**HVAC DUCTS AND CASINGS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Metal ducts.

**1.02 REFERENCE STANDARDS**

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- C. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2024.
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for duct materials.

**1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of documented experience.

**1.05 FIELD CONDITIONS**

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

**1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

**PART 2 PRODUCTS****2.01 GENERAL REQUIREMENTS**

- A. Provide UL Class 1 ductwork, fittings, hangers, supports, and appurtenances in accordance with NFPA 90A and SMACNA (DCS) guidelines unless stated otherwise.
- B. Provide metal duct unless otherwise indicated. Fibrous glass duct can be substituted at the Contractor's option.
- C. Acoustical Treatment: Provide sound-absorbing liners and sectional silencers for metal-based ducts in compliance with Section 23 3319.
- D. Duct Shape and Material in accordance with Allowed Static Pressure Range:
- E. Duct Sealing and Leakage in accordance with Static Pressure Class:
  - 1. Duct Pressure Class and Material for Common Mechanical Ventilation Applications:
    - a. Supply Air: 1/2 in-wc (125 Pa) pressure class, galvanized steel.
    - b. General Exhaust Air: 1/2 in-wc (125 Pa) pressure class, galvanized steel.
- F. Duct Fabrication Requirements:
  - 1. Duct and Fitting Fabrication and Support: SMACNA (DCS) including specifics for continuously welded round and oval duct fittings.
  - 2. Use reinforced and sealed sheet-metal materials at recommended gauges for indicated operating pressures or pressure class.
  - 3. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide airfoil turning vanes of perforated metal with glass fiber insulation.



4. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
5. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
6. Provide turning vanes of perforated metal with glass fiber insulation when an acoustical lining is required.
7. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

## **2.02 METAL DUCTS**

- A. Material Requirements:
  1. Galvanized Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Round Metal Ducts:
  1. Round Single Wall Duct: Round lock seam duct with galvanized steel outer wall.
  2. Round Connection System: Interlocking duct connection system in accordance with SMACNA (DCS).

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install products following the manufacturer's instructions.
- C. Comply with safety standards NFPA 90A and NFPA 90B.
- D. Duct sizes indicated are precise inside dimensions. For lined ducts, maintain sizes inside lining.
- E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

**END OF SECTION**

**SECTION 23 3423**  
**HVAC POWER VENTILATORS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Ceiling exhaust fans.

**1.02 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on fans and accessories, including fan curves with specified operating point plotted, power, rpm, sound power levels at rated capacity, and electrical characteristics and connection requirements.

**PART 2 PRODUCTS****2.01 CEILING EXHAUST FANS**

- A. Centrifugal Fan Unit: Direct driven with galvanized steel housing, resiliently mounted motor, gravity backdraft damper in discharge.
- B. Grille: Molded white plastic.
- C. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is reached with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

**PART 3 EXECUTION****3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Hung Ceiling Fans:
  - 1. Install fans with resilient mountings and flexible electrical leads, see Section 23 0548.
  - 2. Install flexible connections between fan and ductwork; see Section 23 3300. Ensure metal bands of connectors are parallel with minimum 1 inch (25 mm) flex between ductwork and fan while running.

**END OF SECTION**

**SECTION 23 8200**  
**CONVECTION HEATING AND COOLING UNITS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Electric wall heaters.

**1.02 REFERENCE STANDARDS**

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide typical catalog of information including arrangements.

**PART 2 PRODUCTS****2.01 ELECTRIC WALL HEATERS**

- A. Provide products listed, classified, and labeled by Underwriters Laboratories Inc. (UL), Intertek (ETL), or testing firm acceptable to authority having jurisdiction as suitable for purpose indicated.
- B. Heating Element Assembly:
  - 1. Thermal safety cut-out within electric terminal box with automatically reset switch located near electric terminal box.
  - 2. Horizontal Projection Units:
    - a. Steel fins copper brazed to steel sheath and epoxy sealed for moisture resistance.
- C. Housing:
  - 1. Suitable for wall mount using provided hardware appendages.
  - 2. Horizontal Projection Units:
    - a. Construction materials to consist of aluminum frame with high gloss baked enamel finish.
    - b. Provide with factory accessories for wall mounting.
    - c. Provisions for access to internal components for maintenance, adjustments, and repair.
- D. Air Inlets and Outlets:
  - 1. Inlets: Provide stamped louvers or protective grilles with fan blade guard.
  - 2. Outlets: Provide diffuser cones, directional louvers, or radial diffusers.
- E. Fan: Factory balanced, direct drive, axial type with fan guard.
- F. Motor: Totally enclosed, thermally protected, and provided with permanently lubricated bearings. provide thermal overload safety shutdown.
- G. Controls:
  - 1. Factory internal thermostat

**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Verify that surfaces are suitable for installation.

**3.02 INSTALLATION**

- A. Install in accordance with manufacturer's recommendations.
- B. Install equipment exposed to finished areas after walls and ceilings are finished and painted.
- C. Do not damage equipment or finishes.

**3.03 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements for additional requirements.

**3.04 CLEANING**

- A. See Section 01 7419 - Construction Waste Management and Disposal for additional requirements.
- B. After construction and painting is completed, clean exposed surfaces of units.
- C. Vacuum clean coils and inside of units.
- D. Touch-up marred or scratched surfaces of factory-finished cabinets using finish materials furnished by the manufacturer.

**3.05 PROTECTION**

- A. Provide finished cabinet units with protective covers during the balance of construction.

**END OF SECTION**

**SECTION 26 0519****LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Wire pulling lubricant.
- F. Cable ties.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 8400 - Firestopping.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2023.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).
- E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.
- F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2020.
- G. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- H. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.
- I. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- L. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- M. UL 267 - Outline of Investigation for Wire-Pulling Compounds; Current Edition, Including All Revisions.
- N. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- O. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- P. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
  - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
  - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- B. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

**1.08 FIELD CONDITIONS**

- A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

**PART 2 PRODUCTS****2.01 CONDUCTOR AND CABLE APPLICATIONS**

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Metal-clad cable is not permitted.

**2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS**

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Provide conductors and cables with lead content less than 300 parts per million.
- D. Provide new conductors and cables manufactured not more than one year prior to installation.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

- F. Comply with NEMA WC 70.
- G. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- H. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- I. Conductors for Grounding and Bonding: Also comply with Section 26 0526.
- J. Conductor Material:
  - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
  - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
  - 3. Tinned Copper Conductors: Comply with ASTM B33.
- K. Minimum Conductor Size:
  - 1. Branch Circuits: 12 AWG.
    - a. Exceptions:
      - 1) 20 A, 120 V circuits longer than 75 feet (23 m): 10 AWG, for voltage drop.
      - 2) 20 A, 120 V circuits longer than 150 feet (46 m): 8 AWG, for voltage drop.
  - 2. Control Circuits: 14 AWG.
- L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- M. Conductor Color Coding:
  - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
  - 2. Color Coding Method: Integrally colored insulation.
  - 3. Color Code:
    - a. 240/120 V, 1 Phase, 3 Wire System:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Neutral/Grounded: White.
    - b. Equipment Ground, All Systems: Green.

## 2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
  - 1. Feeders and Branch Circuits:
    - a. Size 10 AWG and Smaller: Solid.
    - b. Size 8 AWG and Larger: Stranded.
  - 2. Control Circuits: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
  - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
    - a. Size 4 AWG and Larger: Type XHHW-2.
    - b. Installed Underground: Type XHHW-2.
    - c. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

## 2.04 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 26 0526.

- C. Wiring Connectors for Splices and Taps:
  - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
  - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- D. Wiring Connectors for Terminations:
  - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
  - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
  - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
  - 4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
  - 5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
  - 6. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
  - 7. Conductors for Control Circuits: Use crimped terminals for all connections.
- E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
- H. Mechanical Connectors: Provide bolted type or set-screw type.
- I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
- J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.

## 2.05 ACCESSORIES

- A. Electrical Tape:
  - 1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
  - 2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
  - 3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil (0.76 mm); suitable for continuous temperature environment up to 194 degrees F (90 degrees C) and short-term 266 degrees F (130 degrees C) overload service.
  - 4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil (3.2 mm); suitable for continuous temperature environment up to 176 degrees F (80 degrees C).
  - 5. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil (2.3 mm).
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
- C. Wire Pulling Lubricant:



1. Listed and labeled as complying with UL 267.
2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
3. Suitable for use at installation temperature.

D. Cable Ties: Material and tensile strength rating suitable for application.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 PREPARATION**

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

#### **3.03 INSTALLATION**

- A. Circuiting Requirements:
  1. Unless dimensioned, circuit routing indicated is diagrammatic.
  2. When circuit destination is indicated without specific routing, determine exact routing required.
  3. Arrange circuiting to minimize splices.
  4. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location indicated.
  5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
  6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted.
  7. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Installation in Raceway:
  1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
  2. Pull all conductors and cables together into raceway at same time.
  3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
  4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- G. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
- H. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet (1.5 m) of slack.

- I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- J. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- K. Make wiring connections using specified wiring connectors.
  - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
  - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
  - 3. Do not remove conductor strands to facilitate insertion into connector.
  - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.
  - 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
  - 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
  - 1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
    - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
  - 2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
    - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
    - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
  - 3. Wet Locations: Use heat shrink tubing.
- M. Insulate ends of spare conductors using vinyl insulating electrical tape.
- N. Identify conductors and cables in accordance with Section 26 0553.
- O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

### **3.04 FIELD QUALITY CONTROL**

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
  - 1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
- C. Correct deficiencies and replace damaged or defective conductors and cables.

### **END OF SECTION**

**SECTION 26 0526****GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground bars.
- E. Ground rod electrodes.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.
- D. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Verify exact locations of underground metal water service pipe entrances to building.
  - 2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
  - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not install ground rod electrodes until final backfill and compaction is complete.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
- B. Project Record Documents: Record actual locations of grounding electrode system components and connections.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

## **PART 2 PRODUCTS**

### **2.01 GROUNDING AND BONDING REQUIREMENTS**

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Grounding System Resistance:
  - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
  - 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
- E. Grounding Electrode System:
  - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
    - a. Provide continuous grounding electrode conductors without splice or joint.
    - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
  - 2. Metal Underground Water Pipe(s):
    - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet (3.0 m) at an accessible location not more than 5 feet (1.5 m) from the point of entrance to the building.
    - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
    - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
  - 3. Metal In-Ground Support Structure:
    - a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
  - 4. Concrete-Encased Electrode:
    - a. Provide connection to concrete-encased electrode consisting of not less than 20 feet (6.0 m) of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
  - 5. Ground Rod Electrode(s):
    - a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
    - b. Space electrodes not less than 10 feet (3.0 m) from each other and any other ground electrode.
    - c. Where location is not indicated, locate electrode(s) at least 5 feet (1.5 m) outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.

6. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
  7. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
    - a. Ground Bar Size: 1/4 by 2 by 12 inches (6 by 50 by 300 mm) unless otherwise indicated or required.
    - b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
    - c. Ground Bar Mounting Height: 18 inches (450 mm) above finished floor unless otherwise indicated.
- F. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
  2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
  3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
  4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
  5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
  6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
  7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
    - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
  8. Provide bonding for metal building frame.
  9. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.

## 2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
  2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
1. Use insulated copper conductors unless otherwise indicated.
    - a. Exceptions:
      - 1) Use bare copper conductors where installed underground in direct contact with earth.
      - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
  2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
  3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

- D. Ground Bars:
  - 1. Description: Copper rectangular ground bars with mounting brackets and insulators.
  - 2. Size: As indicated.
  - 3. Holes for Connections: As indicated or as required for connections to be made.
- E. Ground Rod Electrodes:
  - 1. Comply with NEMA GR 1.
  - 2. Material: Copper-bonded (copper-clad) steel.
  - 3. Size: 3/4 inch (19 mm) diameter by 10 feet (3.0 m) length, unless otherwise indicated.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
  - 1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches (150 mm) below finished grade.
- D. Make grounding and bonding connections using specified connectors.
  - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
  - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
  - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
  - 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
  - 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 26 0553.

### **3.03 FIELD QUALITY CONTROL**

- A. Inspect and test in accordance with NETA ATS except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- D. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

**END OF SECTION**

**SECTION 26 0529****HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0533.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
- B. Section 26 0533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- C. Section 26 5100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.
- D. Section 26 5600 - Exterior Lighting: Additional support and attachment requirements for exterior luminaires.

**1.03 REFERENCE STANDARDS**

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- D. MFMA-4 - Metal Framing Standards Publication; 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
  - 2. Coordinate work to provide additional framing and materials required for installation.
  - 3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
  - 4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
  - 5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems.

**1.06 QUALITY ASSURANCE**

- A. Maintain at project site one copy of each referenced document that prescribes execution requirements.
- B. Installer Qualifications for Powder-Actuated Fasteners: Certified by fastener system manufacturer with current operator's license.
- C. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**PART 2 PRODUCTS****2.01 SUPPORT AND ATTACHMENT COMPONENTS**

- A. General Requirements:
  - 1. Comply with the following. Where requirements differ, comply with most stringent.
    - a. NFPA 70.
    - b. Requirements of authorities having jurisdiction.
  - 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
  - 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
  - 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported with minimum safety factor of 3. Include consideration for vibration, equipment operation, and shock loads where applicable.
  - 5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
  - 6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
    - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
    - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
  - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
  - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
- D. Metal Channel/Strut Framing Systems:
  - 1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
  - 2. Comply with MFMA-4.
  - 3. Channel Material:
    - a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
    - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
  - 4. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch (2.66 mm).
  - 5. Minimum Channel Dimensions: 1-5/8 inch (41 mm) wide by 13/16 inch (21 mm) high.
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
  - 1. Minimum Size, Unless Otherwise Indicated or Required:
    - a. Equipment Supports: 1/2-inch (13 mm) diameter.
    - b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch (6 mm) diameter.
    - c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch (10 mm) diameter.
    - d. Trapeze Support for Multiple Conduits: 3/8-inch (10 mm) diameter.
    - e. Outlet Boxes: 1/4-inch (6 mm) diameter.
    - f. Luminaires: 1/4-inch (6 mm) diameter.
- F. Anchors and Fasteners:
  - 1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
  - 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
  - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
  - 4. Hollow Masonry: Use toggle bolts.
  - 5. Hollow Stud Walls: Use toggle bolts.
  - 6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
  - 7. Sheet Metal: Use sheet metal screws.



8. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
  - a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
  - b. Comply with MFMA-4.
  - c. Channel Material: Use galvanized steel.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install hangers and supports in accordance with NECA 1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
  1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
  2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
  3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
  4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Conduit Support and Attachment: See Section 26 0533.13 for additional requirements.
- I. Box Support and Attachment: See Section 26 0533.16 for additional requirements.
- J. Interior Luminaire Support and Attachment: See Section 26 5100 for additional requirements.
- K. Exterior Luminaire Support and Attachment: See Section 26 5600 for additional requirements.
- L. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.
- M. Secure fasteners in accordance with manufacturer's recommended torque settings.
- N. Remove temporary supports.

#### **3.03 FIELD QUALITY CONTROL**

- A. Inspect support and attachment components for damage and defects.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective support and attachment components.

### **END OF SECTION**

**SECTION 26 0533.13**  
**CONDUIT FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Galvanized steel rigid metal conduit (RMC).
- B. Flexible metal conduit (FMC).
- C. Liquidtight flexible metal conduit (LFMC).
- D. Galvanized steel electrical metallic tubing (EMT).
- E. Rigid polyvinyl chloride (PVC) conduit.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 8400 - Firestopping.
- B. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.
- C. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- D. Section 26 0529 - Hangers and Supports for Electrical Systems.
- E. Section 26 0533.16 - Boxes for Electrical Systems.
- F. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.
- E. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2017.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- G. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.
- H. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.
- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
- K. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- L. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.
- M. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- N. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
- O. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- P. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.

2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
  3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
  4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
  5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

### 1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.
- B. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2-inch (53 mm) trade size and larger.

### 1.06 QUALITY ASSURANCE

- A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

## PART 2 PRODUCTS

### 2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
1. Under Slab on Grade: Use galvanized steel rigid metal conduit (RMC) or rigid PVC conduit.
  2. Exterior, Direct-Buried: Use rigid PVC conduit.
  3. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from underground.
  4. Where rigid polyvinyl (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows for bends.
- D. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel electrical metallic tubing (EMT).
- E. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC).
1. Locations subject to physical damage include, but are not limited to:
    - a. Where exposed below 8 feet (2.4 m).
- F. Flexible Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit (FMC).
  2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
  3. Maximum Length: 6 feet (1.8 m) unless otherwise indicated.

### 2.02 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70.

- B. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for purpose intended.
- D. Minimum Conduit Size, Unless Otherwise Indicated:
  - 1. Branch Circuits: 3/4-inch (21 mm) trade size.
  - 2. Branch Circuit Homeruns: 3/4-inch (21 mm) trade size.
  - 3. Control Circuits: 1/2-inch (16 mm) trade size.
  - 4. Flexible Connections to Luminaires: 3/8-inch (12 mm) trade size.
- E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

### **2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)**

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Factory-Painted, Color-Coded Galvanized Steel RMC: Apply according to indicated color code.
- C. Fittings:
  - 1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
  - 2. Material: Use steel or malleable iron.
  - 3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

### **2.04 FLEXIBLE METAL CONDUIT (FMC)**

- A. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.
- B. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Material: Use steel or malleable iron.

### **2.05 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)**

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Material: Use steel or malleable iron.

### **2.06 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)**

- A. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
  - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
  - 2. Material: Use steel or malleable iron.
  - 3. Connectors and Couplings: Use compression/gland or set-screw type.
    - a. Do not use indenter type connectors and couplings.

### **2.07 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT**

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 or Schedule 80 as indicated; rated for use with conductors rated 90 degrees C.
- B. Fittings:
  - 1. Manufacturer: Same as manufacturer of conduit to be connected.

2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

## **2.08 ACCESSORIES**

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.
- B. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- C. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf (5.6 kN).
- D. Conduit Mechanical Seals:
  1. Listed as complying with UL 514B.
  2. Specifically designed for sealing conduit openings against water, moisture, gases, and dust.
  3. Suitable for sealing around conductors/cables to be installed.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in accordance with NECA 1.
- C. Galvanized Steel Rigid Metal Conduit (RMC): Install in accordance with NECA 101.
- D. Rigid Polyvinyl Chloride (PVC) Conduit: Install in accordance with NECA 111.
- E. Conduit Routing:
  1. Unless dimensioned, conduit routing indicated is diagrammatic.
  2. When conduit destination is indicated without specific routing, determine exact routing required.
  3. Unless otherwise approved, do not route exposed conduits:
    - a. Across floors.
    - b. Across roofs.
    - c. Across building exterior surfaces.
  4. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
  5. Arrange conduit to maintain adequate headroom, clearances, and access.
  6. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
  7. Arrange conduit to provide no more than 150 feet (46 m) between pull points.
  8. Route conduits above water and drain piping where possible.
  9. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
  10. Maintain minimum clearance of 6 inches (150 mm) between conduits and piping for other systems.
- F. Conduit Support:
  1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.
  2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

- G. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
  2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
  3. Use suitable adapters where required to transition from one type of conduit to another.
  4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
  5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
  6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
  7. Secure joints and connections to provide mechanical strength and electrical continuity.
- H. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
  2. Make penetrations perpendicular to surfaces unless otherwise indicated.
  3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
  4. Conceal bends for conduit risers emerging above ground.
  5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
  6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
  7. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 8400.
- I. Underground Installation:
1. Provide underground warning tape along entire conduit length; see Section 26 0553.
- J. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
  2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
  3. Where conduits are subject to earth movement by settlement or frost.
- K. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
    - a. Where conduits enter building from outside.
    - b. Where service conduits enter building from underground distribution system.
    - c. Where conduits enter building from underground.
    - d. Where conduits may transport moisture to contact live parts.
  2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
    - a. Where conduits pass from outdoors into conditioned interior spaces.
    - b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- L. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches (300 mm) at each end.
- M. Provide grounding and bonding; see Section 26 0526.

N. Identify conduits; see Section 26 0553.

### **3.03 FIELD QUALITY CONTROL**

- A. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- B. Correct deficiencies and replace damaged or defective conduits.

### **3.04 CLEANING**

- A. Clean interior of conduits to remove moisture and foreign matter.

### **3.05 PROTECTION**

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

**END OF SECTION**

**SECTION 26 0533.16**  
**BOXES FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 3100 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- C. Section 26 0529 - Hangers and Supports for Electrical Systems.
- D. Section 26 0533.13 - Conduit for Electrical Systems:
  - 1. Conduit bodies and other fittings.
- E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 26 2726 - Wiring Devices:
  - 1. Wall plates.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
  - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  - 3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
  - 4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
  - 5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
  - 6. Coordinate the work with other trades to preserve insulation integrity.
  - 7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
  - 8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for outlet and device boxes and junction and pull boxes.



- B. Project Record Documents: Record actual locations for outlet and device boxes.

## **1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## **PART 2 PRODUCTS**

### **2.01 BOXES**

- A. General Requirements:
  - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
  - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
  - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
  - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
  - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
  - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
  - 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
  - 3. Do not use "through-wall" boxes designed for access from both sides of wall.
  - 4. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
  - 5. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
  - 6. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
  - 7. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
  - 8. Wall Plates: Comply with Section 26 2726.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- E. Box Locations:

1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 3100 as required where approved by the Architect.
  2. Unless dimensioned, box locations indicated are approximate.
  3. Locate boxes as required for devices installed under other sections or by others.
  4. Locate boxes so that wall plates do not span different building finishes.
  5. Locate boxes so that wall plates do not cross masonry joints.
  6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
  7. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
    - a. Within joists in areas with no ceiling.
- F. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
  2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
- G. Install boxes plumb and level.
- H. Close unused box openings.
- I. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- J. Provide grounding and bonding in accordance with Section 26 0526.
- K. Identify boxes in accordance with Section 26 0553.

### **3.03 CLEANING**

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

### **3.04 PROTECTION**

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

**END OF SECTION**

**SECTION 26 0553**  
**IDENTIFICATION FOR ELECTRICAL SYSTEMS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Underground warning tape.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

**1.03 REFERENCE STANDARDS**

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
  - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
  - 2. Do not install identification products until final surface finishes and painting are complete.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.

**1.07 FIELD CONDITIONS**

- A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

**PART 2 PRODUCTS****2.01 IDENTIFICATION REQUIREMENTS**

- A. Identification for Equipment:
  - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
    - a. Panelboards:
      - 1) Identify ampere rating.
      - 2) Identify voltage and phase.
      - 3) Identify power source and circuit number. Include location when not within sight of equipment.
      - 4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
      - 5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
      - 6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device.

2. Service Equipment:
  - a. Use identification nameplate to identify each service disconnecting means.
3. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70, including but not limited to the following.
  - a. Service equipment.
  - b. Industrial control panels.
  - c. Motor control centers.
  - d. Elevator control panels.
  - e. Industrial machinery.
- B. Identification for Conductors and Cables:
  1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
  2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment.
  3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
    - a. At each source and load connection.
    - b. Within boxes when more than one circuit is present.
  4. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
  5. Use underground warning tape to identify direct buried cables.
- C. Identification for Boxes:
  1. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
- D. Identification for Devices:
  1. Identification for Communications Devices: Comply with Section 27 1000.
  2. Use identification label or engraved wallplate to identify serving branch circuit for all receptacles.
  3. Use identification label or engraved wallplate to identify load controlled for wall-mounted control devices controlling loads that are not visible from the control location and for multiple wall-mounted control devices installed at one location.
- E. Identification for Luminaires:
  1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

## 2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
  1. Materials:
    - a. Indoor Clean, Dry Locations: Use plastic nameplates.
    - b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
  2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch (1.6 mm); engraved text.
  3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
  4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
  5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.
- B. Identification Labels:
  1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.

2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
  1. Minimum Size: 1 inch (25 mm) by 2.5 inches (64 mm).
  2. Legend:
    - a. Equipment designation or other approved description.
  3. Text: All capitalized unless otherwise indicated.
  4. Minimum Text Height:
    - a. Equipment Designation: 1/2 inch (13 mm).
  5. Color:
    - a. Normal Power System: White text on black background.
- D. Format for Receptacle Identification:
  1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
  2. Legend: Power source and circuit number or other designation indicated.
  3. Text: All capitalized unless otherwise indicated.
  4. Minimum Text Height: 3/16 inch (5 mm).
  5. Color: Black text on clear background.
- E. Format for Control Device Identification:
  1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
  2. Legend: Load controlled or other designation indicated.
  3. Text: All capitalized unless otherwise indicated.
  4. Minimum Text Height: 3/16 inch (5 mm).
  5. Color: Black text on clear background.

## **2.03 WIRE AND CABLE MARKERS**

- A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, or heat-shrink sleeve type markers suitable for the conductor or cable to be identified.
- B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- C. Legend: Power source and circuit number or other designation indicated.
- D. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- E. Minimum Text Height: 1/8 inch (3 mm).
- F. Color: Black text on white background unless otherwise indicated.

## **2.04 UNDERGROUND WARNING TAPE**

- A. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
- B. Foil-backed Detectable Type Tape: 3 inches (76 mm) wide, with minimum thickness of 5 mil (0.1 mm), unless otherwise required for proper detection.
- C. Legend: Type of service, continuously repeated over full length of tape.
- D. Color:
  1. Tape for Buried Power Lines: Black text on red background.
  2. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.

- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
  - 1. Surface-Mounted Equipment: Enclosure front.
  - 2. Flush-Mounted Equipment: Inside of equipment door.
  - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
  - 4. Elevated Equipment: Legible from the floor or working platform.
  - 5. Branch Devices: Adjacent to device.
  - 6. Interior Components: Legible from the point of access.
  - 7. Boxes: Outside face of cover.
  - 8. Conductors and Cables: Legible from the point of access.
  - 9. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Install underground warning tape above buried lines with one tape per trench at 3 inches (75 mm) below finished grade.
- G. Mark all handwritten text, where permitted, to be neat and legible.

### **3.03 FIELD QUALITY CONTROL**

- A. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

**END OF SECTION**

**SECTION 26 0923**  
**LIGHTING CONTROL DEVICES**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Occupancy sensors.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- C. Section 26 0529 - Hangers and Supports for Electrical Systems.
- D. Section 26 0533.16 - Boxes for Electrical Systems.
- E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 26 2726 - Wiring Devices: Devices for manual control of lighting, including wall switches.
- G. Section 26 5100 - Interior Lighting.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate placement of lighting control devices with millwork, furniture, equipment and other potential conflicts.
  - 2. Coordinate placement of wall switch occupancy sensors with installed door swings.
  - 3. Coordinate placement of occupancy sensors with millwork, furniture, equipment and other potential obstructions to motion detection coverage.
  - 4. Coordinate lighting control device product selections with luminaire characteristics; see Section 26 5100 and lighting fixture schedule.
  - 5. Notify Architect of conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Include ratings, operating modes or sequence of functions, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
- B. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Operation and Maintenance Data: Include detailed information on device programming and setup.

**1.06 QUALITY ASSURANCE**

- A. Comply with NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- C. Product Evaluation and Listing Organization Qualifications: Organization engaged in evaluation of products and services, including those recognized by OSHA as Nationally Recognized Testing Laboratories (NRTL), and acceptable to authorities having jurisdiction.

**1.07 DELIVERY, STORAGE, AND PROTECTION**

- A. Store products in clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

**1.08 FIELD CONDITIONS**

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

**1.09 WARRANTY**

- A. Provide five year manufacturer warranty for occupancy sensors.

**PART 2 PRODUCTS****2.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS**

- A. Provide products listed, classified, and labeled as suitable for purpose intended.
- B. Unless specifically indicated as excluded, provide components necessary for complete operating system including, but not limited to, conduit, wiring, connectors, hardware, and accessories.

**2.02 OCCUPANCY SENSORS**

- A. General Requirements:
  - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
  - 2. Sensor Technology:
    - a. Passive Infrared (PIR) Occupancy Sensors: Designed to detect occupancy by sensing movement of thermal energy between zones.
  - 3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
  - 4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during adjustable turn-off delay time interval.
  - 5. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
  - 6. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
  - 7. Sensitivity: Field adjustable.
  - 8. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
  - 9. Load Rating for Line Voltage Occupancy Sensors: As required to control load indicated on drawings.
- B. Wall Switch Occupancy Sensors:
  - 1. General Requirements:
    - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
    - b. Unless otherwise indicated or required to control load indicated on drawings, provide line voltage units with self-contained relay.
    - c. Operation: Field selectable to operate either as occupancy sensor (automatic on/off) or as vacancy sensor (manual-on/automatic off).
    - d. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during delayed-off time interval.



- e. Finish: Color to be selected.
- 2. Passive Infrared/Ultrasonic Dual Technology Wall Switch Occupancy Sensors: Capable of detecting motion within area of 900 square feet (83.6 sq m).

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that service voltage and ratings of lighting control devices are appropriate for service voltage and load requirements at location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 PREPARATION**

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

#### **3.03 INSTALLATION**

- A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes as required for installation of lighting control devices; see Section 26 0533.16.
  - 1. Mounting Heights: Unless otherwise indicated, as follows:
    - a. Wall Switch Occupancy Sensors: 48 inches (1.2 m) above finished floor.
  - 2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
- C. Maintain separation of remote-control, signaling, and power-limited circuits.
  - 1. See manufacturer instructions and Section 26 0519 for control wiring conductors, wiring methods, and identification requirements.
- D. Install lighting control devices in accordance with manufacturer's instructions.
- E. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- F. Install lighting control devices plumb and level, and held securely in place.
- G. Where required and not furnished with lighting control device, provide wall plate; see Section 26 2726.
- H. Provide required supports; see Section 26 0529.
- I. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- J. Occupancy Sensor Locations:
  - 1. Location Adjustments: Within design intent, reasonably minor adjustments to locations may be made in order to optimize coverage and avoid conflicts or problems affecting coverage.

2. Locate ultrasonic and dual technology passive infrared/ultrasonic occupancy sensors minimum of 4 feet (1.2 m) from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.

#### **3.04 FIELD QUALITY CONTROL**

- A. Inspect each lighting control device for damage and defects.
- B. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area.
- C. Correct wiring deficiencies and replace damaged or defective conductors, cables, and lighting control devices.

#### **3.05 ADJUSTING**

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
- C. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.

#### **3.06 CLEANING**

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

#### **3.07 CLOSEOUT ACTIVITIES**

- A. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.

**END OF SECTION**

**SECTION 26 2416****PANELBOARDS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Lighting and appliance panelboards.
- B. Load centers.
- C. Overcurrent protective devices for panelboards.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 4300 - Surge Protective Devices.

**1.03 REFERENCE STANDARDS**

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e, with Amendments (2022).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- E. NEMA PB 1 - Panelboards; 2011.
- F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 1000 Volts or Less; 2023.
- G. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- M. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
  - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  - 3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
  - 4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.

5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### **1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  1. Panelboard Keys: Two of each different key.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

#### **1.08 FIELD CONDITIONS**

- A. Maintain ambient temperature within the following limits during and after installation of panelboards:
  1. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).

### **PART 2 PRODUCTS**

#### **2.01 PANELBOARDS - GENERAL REQUIREMENTS**

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
  1. Altitude: Less than 6,600 feet (2,000 m).
  2. Ambient Temperature:
    - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- C. Short Circuit Current Rating:
  1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- D. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.

- E. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- F. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- G. Bussing: Sized in accordance with UL 67 temperature rise requirements.
  - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
  - 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
  - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
    - a. Indoor Clean, Dry Locations: Type 1.
    - b. Outdoor Locations: Type 3R.
  - 2. Boxes: Galvanized steel unless otherwise indicated.
    - a. Provide wiring gutters sized to accommodate the conductors to be installed.
    - b. Provide painted steel boxes for surface-mounted panelboards, finish to match fronts.
  - 3. Fronts:
    - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
    - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
    - c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
  - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- J. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
- K. Surge Protective Devices: Where factory-installed, internally mounted surge protective devices are provided in accordance with Section 26 4300, list and label panelboards as a complete assembly including surge protective device.

## 2.02 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
  - 1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
  - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
  - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
  - 2. Phase and Neutral Bus Material: Copper.
  - 3. Ground Bus Material: Copper.
- D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- E. Enclosures:
  - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
  - 2. Provide clear plastic circuit directory holder mounted on inside of door.

## 2.03 LOAD CENTERS

- A. Description: Circuit breaker type load centers listed and labeled as complying with UL 67; ratings, configurations, and features as indicated on the drawings.
- B. Bussing:
  - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.

- 2. Bus Material: Copper.
- C. Circuit Breakers: Thermal magnetic plug-in type.
- D. Enclosures:
  - 1. Provide surface-mounted enclosures unless otherwise indicated.
  - 2. Fronts: Provide cover without door to cover access to load terminals, wiring gutters, and other live parts, with exposed access to overcurrent protective device handles.
  - 3. Provide circuit directory label on inside of door or individual circuit labels adjacent to circuit breakers.

## **2.04 OVERCURRENT PROTECTIVE DEVICES**

- A. Molded Case Circuit Breakers:
  - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
  - 2. Interrupting Capacity:
    - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating not less than the available let thru current at the service
    - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
  - 3. Conductor Terminations:
    - a. Provide mechanical lugs unless otherwise indicated.
    - b. Lug Material: Copper, suitable for terminating copper conductors only.
  - 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
  - 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
  - 6. Do not use tandem circuit breakers.
  - 7. Do not use handle ties in lieu of multi-pole circuit breakers.

## **2.05 SOURCE QUALITY CONTROL**

- A. Factory test panelboards according to NEMA PB 1.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 26 0529.
- F. Install panelboards plumb.
- G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.

- I. Provide grounding and bonding in accordance with Section 26 0526.
- J. Install all field-installed branch devices, components, and accessories.
- K. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- L. Provide filler plates to cover unused spaces in panelboards.

**3.03 FIELD QUALITY CONTROL**

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Correct deficiencies and replace damaged or defective panelboards or associated components.

**3.04 ADJUSTING**

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.
- C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

**3.05 CLEANING**

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

**END OF SECTION**

**SECTION 26 2726  
WIRING DEVICES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Wall switches.
- B. Receptacles.
- C. Wall plates and covers.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0533.16 - Boxes for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2014h, with Amendments (2017).
- B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification); 2014g, with Amendment (2017).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
- E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).
- F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.
- I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
- J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.
- K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
  - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
  - 3. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
  - 4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Operation and Maintenance Data:
  - 1. GFCI Receptacles: Include information on status indicators.



- D. Project Record Documents: Record actual installed locations of wiring devices.

## **1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Products: Listed, classified, and labeled as suitable for the purpose intended.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## **1.07 DELIVERY, STORAGE, AND PROTECTION**

- A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

## **PART 2 PRODUCTS**

### **2.01 WIRING DEVICES - GENERAL REQUIREMENTS**

- A. Provide wiring devices suitable for intended use with ratings adequate for load served.
- B. Except where explicitly permitted, substitution of combination switch-and-receptacle devices for separate switches and receptacles is not permitted.
- C. Wiring Device Applications:
  - 1. Receptacles Installed Outdoors or in Damp or Wet Locations: Use weather-resistant GFCI receptacles with weatherproof covers.
- D. Wiring Device Finishes:
  - 1. Provide wiring device finishes as described below, unless otherwise indicated.
  - 2. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.

### **2.02 WALL SWITCHES**

- A. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
  - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- B. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw or three way as indicated on the drawings.
- C. Pilot Light Wall Switches: Industrial specification grade, 20 A, 120/277 V with red illuminated standard toggle type switch actuator and maintained contacts; illuminated with load off; single pole single throw as indicated on the drawings.

### **2.03 RECEPTACLES**

- A. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
  - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
  - 2. NEMA configurations specified are according to NEMA WD 6.
- B. Convenience Receptacles:
  - 1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
- C. GFCI Receptacles:
  - 1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.

2. Tamper Resistant and Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations.
- D. Locking Receptacles: Industrial specification grade, configuration as indicated on the drawings.

#### **2.04 WALL PLATES AND COVERS**

- A. Wall Plates: Comply with UL 514D.
  1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
  2. Size: Standard.
  3. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.
- C. Weatherproof Receptacle Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 PREPARATION**

- A. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

#### **3.03 INSTALLATION**

- A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of wiring devices provided under this section.
  1. Mounting Heights: Unless otherwise indicated, as follows:
    - a. Wall Switches: 48 inches (1200 mm) above finished floor.
  2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Where required, connect wiring devices using pigtails not less than 6 inches (150 mm) long. Do not connect more than one conductor to wiring device terminals.
- E. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- F. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- G. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- H. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- I. Install wall switches with OFF position down.

- J. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- K. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- L. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- M. Identify wiring devices in accordance with Section 26 0553.

**3.04 FIELD QUALITY CONTROL**

- A. Inspect each wiring device for damage and defects.
- B. Operate each wall switch with circuit energized to verify proper operation.
- C. Test each receptacle to verify operation and proper polarity.
- D. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- E. Correct wiring deficiencies and replace damaged or defective wiring devices.

**3.05 ADJUSTING**

- A. Adjust devices and wall plates to be flush and level.

**3.06 CLEANING**

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

**END OF SECTION**

**SECTION 26 2813****FUSES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fuses.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- B. Section 26 2913 - Enclosed Controllers: Fusible switches.

**1.03 REFERENCE STANDARDS**

- A. NEMA FU 1 - Low Voltage Cartridge Fuses; 2012.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements; Current Edition, Including All Revisions.
- D. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
    - a. Fusible Switches for Enclosed Motor Controllers: See Section 26 2913.
  - 2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.
  - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.
- B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Fuses: One set(s) of three for each type and size installed.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**PART 2 PRODUCTS****2.01 APPLICATIONS**

- A. Feeders:
  - 1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.
- B. General Purpose Branch Circuits: Class RK1, time-delay.
- C. Individual Motor Branch Circuits: Class RK1, time-delay.

**2.02 FUSES**

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.

- B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.
- C. Provide fuses of the same type, rating, and manufacturer within the same switch.
- D. Comply with UL 248-1.
- E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.
- F. Voltage Rating: Suitable for circuit voltage.
- G. Class R Fuses: Comply with UL 248-12.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that fuse ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.
- B. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 INSTALLATION**

- A. Do not install fuses until circuits are ready to be energized.
- B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

**END OF SECTION**

**SECTION 26 2913**  
**ENCLOSED CONTROLLERS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Enclosed NEMA controllers for low-voltage (600 V and less) applications:
  - 1. Manual motor starters.
- B. Overcurrent protective devices for motor controllers, including overload relays.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 2813 - Fuses: Fuses for fusible switches.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- C. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- D. NEMA ICS 6 - Industrial Control and Systems: Enclosures; 1993 (Reaffirmed 2016).
- E. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013.
- F. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.
- I. UL 60947-1 - Low-Voltage Switchgear and Controlgear - Part 1: General Rules; Current Edition, Including All Revisions.
- J. UL 60947-4-1 - Low-Voltage Switchgear and Controlgear - Part 4-1: Contactors and Motor-starters - Electromechanical Contactors and Motor-starters; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
  - 2. Coordinate the work to provide motor controllers and associated overload relays suitable for use with the actual motors to be installed.
  - 3. Coordinate the work to provide controllers and associated wiring suitable for interface with control devices to be installed.
  - 4. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  - 5. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
  - 6. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Project Record Documents: Record actual installed locations of controllers and final equipment settings.
- D. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

**1.08 FIELD CONDITIONS**

- A. Maintain field conditions within required service conditions during and after installation.

**PART 2 PRODUCTS****2.01 ENCLOSED CONTROLLERS**

- A. Provide enclosed controller assemblies consisting of all required components, control power transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Description: Enclosed controllers complying with NEMA ICS 2, and listed and labeled as complying with UL 60947-1 and UL 60947-4-1; ratings, configurations and features as indicated on the drawings.
- D. Service Conditions:
  - 1. Provide controllers and associated components suitable for operation under the following service conditions without derating:
    - a. Altitude:
      - 1) Class 1 Km Equipment (devices utilizing power semiconductors, e.g. variable frequency controllers): Less than 3,300 feet (1,000 m).
      - 2) Class 2 Km Equipment (electromagnetic and manual devices): Less than 6,600 feet (2,000 m).
    - b. Ambient Temperature: Between 32 degrees F (0 degrees C) and 104 degrees F (40 degrees C).
  - 2. Provide controllers and associated components suitable for operation at indicated ratings under the service conditions at the installed location.

- E. Short Circuit Current Rating:
  - 1. Provide controllers with listed short circuit current rating not less than the available fault current at the installed location.
- F. Conductor Terminations: Suitable for use with the conductors to be installed.
- G. Enclosures:
  - 1. Comply with NEMA ICS 6.
  - 2. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
    - a. Indoor Clean, Dry Locations: Type 1 or Type 12.
    - b. Outdoor Locations: Type 3R or Type 4.
  - 3. Finish: Manufacturer's standard unless otherwise indicated.
- H. Manual Motor Starters:
  - 1. Description: NEMA ICS 2, Class A manually-operated motor controllers with overload relay(s).
  - 2. Configuration: Non-reversing unless otherwise indicated.
  - 3. Fractional-Horsepower Manual Motor Starters:
    - a. Furnish with toggle operator.
    - b. Overload Relays: Bimetallic or melting alloy thermal type.
    - c. Provide means for locking operator in the OFF position.
  - 4. Integral-Horsepower Manual Motor Starters:
    - a. Furnish with toggle or pushbutton operator.
    - b. Overload Relays: Bimetallic or melting alloy thermal type.
    - c. Provide means for locking operator in the OFF position.

## 2.02 OVERCURRENT PROTECTIVE DEVICES

- A. Overload Relays:
  - 1. Provide overload relays and, where applicable, associated current elements/heaters, selected according to actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.
  - 2. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.
  - 3. Trip-free operation.
  - 4. Visible trip indication.
  - 5. Resettable.
    - a. Employ manual reset unless otherwise indicated.
    - b. Do not employ automatic reset with two-wire control.
  - 6. Bimetallic Thermal Overload Relays:
    - a. Interchangeable current elements/heaters.
    - b. Adjustable trip; plus/minus 10 percent of nominal, minimum.
    - c. Trip test function.
  - 7. Melting Alloy Thermal Overload Relays:
    - a. Interchangeable current elements/heaters.
- B. Fusible Disconnect Switches:
  - 1. Description: Quick-make, quick-break, dead-front fusible switch units complying with NEMA KS 1, and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.
  - 2. Fuse Clips: As required to accept indicated fuses.
  - 3. Provide externally operable handle with means for locking in the OFF position. Provide means for locking switch cover in the closed position. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.



**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that ratings of enclosed controllers are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed controllers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

**3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install controllers in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install enclosed controllers plumb and level.
- F. Provide grounding and bonding in accordance with Section 26 0526.
- G. Install all field-installed devices, components, and accessories.
- H. Provide fuses complying with Section 26 2813 for fusible switches as indicated.
- I. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- J. Set field-adjustable controllers and associated components according to installed motor requirements, in accordance with manufacturer's recommendations and NFPA 70.
- K. Identify enclosed controllers in accordance with Section 26 0553.

**3.03 FIELD QUALITY CONTROL**

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Motor Starters: Perform inspections and tests listed in NETA ATS, Section 7.16.1.1. Tests listed as optional are not required.
- C. Fusible Switches: Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.
- D. Correct deficiencies and replace damaged or defective enclosed controllers or associated components.

**3.04 ADJUSTING**

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

**3.05 CLEANING**

- A. Clean dirt and debris from controller enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

**3.06 CLOSEOUT ACTIVITIES**

- A. Demonstration: Demonstrate proper operation of controllers to Owner, and correct deficiencies or make adjustments as directed.

**3.07 PROTECTION**

- A. Protect installed enclosed controllers from subsequent construction operations.

**END OF SECTION**

**SECTION 26 4300**  
**SURGE PROTECTIVE DEVICES**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Surge protective devices for service entrance locations.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 1449 - Standard for Surge Protective Devices; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate size and location of overcurrent device compatible with the actual surge protective device and location to be installed. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to ordering equipment.

**1.05 SUBMITTALS**

- A. Product Data: Include detailed component information, voltage, surge current ratings, repetitive surge current capacity, voltage protection rating (VPR) for all protection modes, maximum continuous operating voltage (MCOV), nominal discharge current (I-n), short circuit current rating (SCCR), connection means including any required external overcurrent protection, enclosure ratings, outline and support point dimensions, weight, service condition requirements, and installed features.
- B. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Operation and Maintenance Data: Include information on status indicators and recommended maintenance procedures and intervals.
- D. Project Record Documents: Record actual connections and locations of surge protective devices.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**1.07 DELIVERY, STORAGE, AND PROTECTION**

- A. Store in a clean, dry space in accordance with manufacturer's written instructions.

**1.08 FIELD CONDITIONS**

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

**1.09 WARRANTY**

- A. Manufacturer's Warranty: Provide minimum five year warranty covering repair or replacement of surge protective devices showing evidence of failure due to defective materials or workmanship.

**PART 2 PRODUCTS****2.01 SURGE PROTECTIVE DEVICES - GENERAL REQUIREMENTS**

- A. Description: Factory-assembled surge protective devices (SPDs) for 60 Hz service; listed, classified, and labeled as suitable for the purpose intended; system voltage as indicated on the drawings.
- B. Unless otherwise indicated, provide field-installed, externally-mounted or factory-installed, internally-mounted SPDs.
- C. List and label as complying with UL 1449, Type 1 when connected on line side of service disconnect overcurrent device and Type 1 or 2 when connected on load side of service disconnect overcurrent device.
- D. Protected Modes:
  - 1. Delta Systems: L-G, L-L.
- E. UL 1449 Voltage Protection Ratings (VPRs):
  - 1. 240/120V System Voltage: Not more than 1,000 V for L-N, L-G, and N-G modes and 1,200 V for L-L mode.
- F. UL 1449 Maximum Continuous Operating Voltage (MCOV): Not less than 115% of nominal system voltage.
- G. Enclosure Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
  - 1. Outdoor locations: Type 3R.

**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that the service voltage and configuration marked on the SPD are consistent with the service voltage and configuration at the location to be installed.
- C. Verify system grounding and bonding is in accordance with Section 26 0526, including bonding of neutral and ground for service entrance and separately derived systems where applicable. Do not energize SPD until deficiencies have been corrected.
- D. Verify that conditions are satisfactory for installation prior to starting work.

**3.02 INSTALLATION**

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Do not energize SPD until bonding of neutral and ground for service entrance and separately derived systems is complete in accordance with Section 26 0526 where applicable. Replace SPDs damaged by improper or missing neutral-ground bond.

**3.03 FIELD QUALITY CONTROL****3.04 CLEANING**

- A. Repair scratched or marred exterior surfaces to match original factory finish.

**END OF SECTION**

**SECTION 26 5100**  
**INTERIOR LIGHTING**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Interior luminaires.
- B. Ballasts and drivers.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0529 - Hangers and Supports for Electrical Systems.
- B. Section 26 0533.16 - Boxes for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 2726 - Wiring Devices: Manual wall switches.
- E. Section 26 5600 - Exterior Lighting.

**1.03 REFERENCE STANDARDS**

- A. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products; 2019.
- B. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources ; 2021.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems; 2006.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- H. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
  - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
  - 3. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
  - 1. LED Luminaires:
    - a. Include estimated useful life, calculated based on IES LM-80 test data.
    - b. Include IES LM-79 test report upon request.

- B. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- C. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### **1.07 DELIVERY, STORAGE, AND PROTECTION**

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

#### **1.08 FIELD CONDITIONS**

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

#### **1.09 WARRANTY**

- A. Provide 5-year manufacturer warranty for LED luminaires, including drivers.

### **PART 2 PRODUCTS**

#### **2.01 LUMINAIRE TYPES**

- A. Furnish products as indicated in luminaire schedule included on the drawings.

#### **2.02 LUMINAIRES**

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. LED Luminaires:
  - 1. Components: UL 8750 recognized or listed as applicable.
  - 2. Tested in accordance with IES LM-79 and IES LM-80.
  - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

#### **2.03 BALLASTS AND DRIVERS**

- A. Ballasts/Drivers - General Requirements:
  - 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
  - 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.

- B. Dimmable LED Drivers:
  - 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
  - 2. Control Compatibility: Fully compatible with the dimming controls to be installed.

#### **2.04 ACCESSORIES**

- A. Stems for Suspended Luminaires: Steel tubing, minimum 1/2" size, factory finished to match luminaire or field-painted as directed.
- B. Threaded Rods for Suspended Luminaires: Zinc-plated steel, minimum 1/4" size, field-painted as directed.
- C. Architectural Trims for LED Lighting:
  - 1. Description: Trims designed for integration into architectural elements, with channels to accommodate LED tape lighting system.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 PREPARATION**

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

#### **3.03 INSTALLATION**

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Suspended Luminaires:
  - 1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
  - 2. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet (1.2 m) between supports.
  - 3. Install canopies tight to mounting surface.
- G. Install accessories furnished with each luminaire.
- H. Bond products and metal accessories to branch circuit equipment grounding conductor.

#### **3.04 FIELD QUALITY CONTROL**

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

**3.05 CLEANING**

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

**3.06 CLOSEOUT ACTIVITIES**

- A. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

**3.07 PROTECTION**

- A. Protect installed luminaires from subsequent construction operations.

**END OF SECTION**

**SECTION 26 5600**  
**EXTERIOR LIGHTING**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Exterior luminaires.
- B. Ballasts.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0533.16 - Boxes for Electrical Systems.
- D. Section 26 5100 - Interior Lighting.

**1.03 REFERENCE STANDARDS**

- A. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products; 2019.
- B. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources ; 2021.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2000 (Reaffirmed 2006).
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- G. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

**1.05 SUBMITTALS**

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, and installed accessories; include model number nomenclature clearly marked with all proposed features.
  - 1. LED Luminaires:
    - a. Include estimated useful life, calculated based on IES LM-80 test data.
    - b. Include IES LM-79 test report upon request.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- C. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- D. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

**1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.



- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide 5-year manufacturer warranty for all LED luminaires, including drivers.

### **PART 2 PRODUCTS**

#### **2.01 LUMINAIRE TYPES**

- A. Furnish products as indicated in luminaire schedule included on the drawings.

#### **2.02 LUMINAIRES**

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. LED Luminaires:
  - 1. Components: UL 8750 recognized or listed as applicable.
  - 2. Tested in accordance with IES LM-79 and IES LM-80.
  - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

#### **2.03 BALLASTS AND DRIVERS**

- A. Ballasts/Drivers - General Requirements:
  - 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
  - 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
- B. Dimmable LED Drivers:
  - 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
  - 2. Control Compatibility: Fully compatible with the dimming controls to be installed.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.

- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

**3.02 PREPARATION**

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

**3.03 INSTALLATION**

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires in accordance with NECA/IESNA 501.
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Install accessories furnished with each luminaire.
- G. Bond products and metal accessories to branch circuit equipment grounding conductor.
- H. Install lamps in each luminaire.

**3.04 FIELD QUALITY CONTROL**

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

**3.05 CLEANING**

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

**3.06 CLOSEOUT ACTIVITIES**

- A. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.

**3.07 PROTECTION**

- A. Protect installed luminaires from subsequent construction operations.

**END OF SECTION**

## **DRAWINGS**







SCHEDULE A - SITE PLAN WITHOUT RESTROOM, WATER, AND SEWER

| Bid Item   | Description Of Item                                                                                     | Unit | Quantity |
|------------|---------------------------------------------------------------------------------------------------------|------|----------|
| B-001-1    | T-HANGAR BUILDING - ARCHITECTURAL                                                                       | LS   | 1        |
| B-001-2    | T-HANGAR BUILDING - FOUNDATION AND SLAB                                                                 | LS   | 1        |
| B-001-3    | T-HANGAR BUILDING - ELECTRICAL                                                                          | LS   | 1        |
| B-001-4    | T-HANGAR BUILDING - GENERAL BID                                                                         | LS   | 1        |
| M-150-1    | FIELD SURVEY AND STAKEOUT                                                                               | LS   | 1        |
| M-200-1    | MAINTENANCE AND PROTECTION OF TRAFFIC                                                                   | LS   | 1        |
| M-300-1    | GRASSED SOIL FILTER SYSTEM                                                                              | SF   | 1,600    |
| C-100      | CONTRACTORS QUALITY CONTROL PROGRAM                                                                     | LS   | 1        |
| C-102-5.1a | INSTALLATION AND REMOVAL OF PIPE INLET PROTECTION                                                       | EA   | 1        |
| C-102-5.1b | INSTALLATION AND REMOVAL OF EROSION CONTROL BARRIER                                                     | LF   | 2,560    |
| C-102-5.1c | INSTALLATION AND REMOVAL OF CHECK DAM                                                                   | EA   | 8        |
| C-102-5.1d | INSTALLATION OF EROSION CONTROL MATTING                                                                 | SY   | 3,400    |
| C-102-5.1e | INSTALLATION AND REMOVAL OF INLET PROTECTION                                                            | EA   | 7        |
| C-102-5.1f | INSTALLATION OF STONE SLOPE WITH GEOTEXTILE                                                             | CY   | 110      |
| C-105      | MOBILIZATION (10% MAX)                                                                                  | LS   | 1        |
| P-101-5.1  | PAVEMENT REMOVAL                                                                                        | SY   | 800      |
| P-101-5.6  | COLD MILLING (0-4")                                                                                     | SY   | 225      |
| P-151-4.1  | CLEARING AND GRUBBING                                                                                   | AC   | 0.10     |
| P-151-4.2  | REMOVE UTILITY POLES                                                                                    | EA   | 5        |
| P-152-4.1  | UNCLASSIFIED EXCAVATION                                                                                 | CY   | 5,100    |
| P-152-4.2  | EMBANKMENT IN PLACE                                                                                     | CY   | 4,000    |
| P-154-5.1  | SUBBASE COURSE                                                                                          | CY   | 4,270    |
| P-209-5.1  | CRUSHED AGGREGATE BASE COURSE - 6" DEPTH                                                                | CY   | 1,120    |
| P-403-8.1  | ASPHALT MIXTURE SURFACE COURSE                                                                          | TON  | 1,300    |
| P-603-5.1  | EMULSIFIED ASPHALT TACK COAT                                                                            | GAL  | 470      |
| P-605-5.1  | JOINT SEALING FILLER                                                                                    | LF   | 490      |
| P-620-5.1  | MARKINGS                                                                                                | SF   | 810      |
| P-620-5.2  | REFLECTIVE MEDIA                                                                                        | LB   | 50       |
| F-162-5.1  | REMOVE CHAINLINK FENCE                                                                                  | LF   | 770      |
| F-162-5.2  | CHAIN LINK FENCE                                                                                        | LF   | 910      |
| T-901-5.1  | SEEDING                                                                                                 | KSF  | 150      |
| T-905-5.1  | TOPSOIL (OBTAINED ON SITE OR REMOVED FROM STOCKPILE)                                                    | CY   | 1,000    |
| T-908-5.1  | MULCHING                                                                                                | SY   | 16,700   |
| D-701-5.1a | 6 INCH CPE PIPE                                                                                         | LF   | 35       |
| D-701-5.1b | 12 INCH REINFORCED CONCRETE PIPE                                                                        | LF   | 90       |
| D-705-5.2  | CUT AND CAP UNDERDRAIN CLEANOUT                                                                         | EA   | 2        |
| D-752-5.1  | HEADWALL                                                                                                | EA   | 1        |
| D-752-5.2  | FLARED END SECTION                                                                                      | EA   | 1        |
| L-108-5.1  | NO. 8 AWG 5kV L-824 TYPE C CABLE INSTALLED IN TRENCH OR DUCT BANK                                       | LF   | 1,400    |
| L-108-5.2  | NO. 6 AWG, SOLID, BARE COPPER COUNTERPOISE WIRE, INSTALLED IN TRENCH INCLUDING CONNECTIONS/TERMINATIONS | LF   | 2,800    |
| L-108-5.3  | NO. 1/0 AWG 600V THWN-2 TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT                                 | LF   | 4,100    |
| L-108-5.4  | NO. 1/0 AWG, STRANDED, EQUIPMENT GROUND, INSTALLED IN DUCT BANK OR CONDUIT                              | LF   | 1,400    |
| L-108-5.5  | ADDITIONAL GROUND RODS                                                                                  | EA   | 9        |
| L-110-5.1  | NON-ENCASED ELECTRICAL DUCT BANK, 1-WAY 2-INCH                                                          | LF   | 1,300    |
| L-110-5.2  | CONCRETE ENCASED ELECTRICAL DUCT BANK, 4-WAY 4-INCH                                                     | LF   | 100      |
| L-110-5.3a | REMOVAL AND DISPOSAL OF DIRECT BURIED CABLE                                                             | LF   | 1,500    |
| L-110-5.3b | REMOVAL AND DISPOSAL OF CONDUIT                                                                         | LF   | 600      |
| L-110-5.4  | NON-ENCASED ELECTRICAL DUCT BANK, 2-WAY 4-INCH                                                          | LF   | 540      |
| L-115-5.1  | REMOVE EXISTING ELECTRIC HANDHOLE                                                                       | EA   | 2        |
| L-115-5.2  | REMOVE AND DISPOSE OF DUCT MARKER                                                                       | EA   | 1        |
| L-115-5.3  | INSTALL L-867E ELECTRIC HANDHOLE IN TURF                                                                | EA   | 4        |
| L-115-5.4  | INSTALL 4'x4' CONCRETE JUNCTION STRUCTURE IN TURF                                                       | EA   | 2        |
| L-115-5.5  | INSTALL 4'x4' LOAD RATED CONCRETE JUNCTION STRUCTURE IN PROPOSED PAVEMENT                               | EA   | 1        |
| L-125-5.1  | AIRFIELD SIGNAGE (L-858 LED, SIZE 2) WITH FOUNDATION WITH L-830 TRANSFORMER                             | EA   | 2        |
| L-125-5.2  | BASE MOUNTED TAXIWAY EDGE LIGHTS (L-861T LED) WITH L-830 TRANSFORMER                                    | EA   | 9        |
| L-125-5.3  | REMOVE AND RELOCATE EXISTING BASE-MOUNTED TAXIWAY EDGE LIGHT AND BASE                                   | EA   | 4        |
| L-125-5.4  | RETROREFLECTIVE TAXIWAY EDGE MARKER (L-853)                                                             | EA   | 28       |
| 33-4100-1  | UNDERDRAIN PIPE AND FITTINGS                                                                            | LF   | 750      |
| X-600-1    | REPLACE UNKNOWN COMMUNICATION AND ELECTRIC CABLES                                                       | ALL  | 1        |
| X-600-2    | INVESTIGATE DEPTH OF GAS LINE                                                                           | ALL  | 1        |
| X-600-3    | SERVICE CONNECTION COORDINATION WITH CMP (TAXILANE & SERVICE ROAD)                                      | ALL  | 1        |
| X-600-4    | SERVICE CONNECTION COORDINATION WITH CMP (T-HANGAR)                                                     | ALL  | 1        |
| X-600-5    | SERVICE CONNECTION COORDINATION WITH COMMUNICATION PROVIDER (TAXILANE & SERVICE ROAD)                   | ALL  | 1        |
| X-800-1    | PERMANENT VEHICLE TRAFFIC SIGN                                                                          | EA   | 1        |

SCHEDULE A - ADDITIVE ALTERNATE NO. 1 - MOTORIZED VEHICLE GATE

| Bid Item  | Description Of Item                      | Unit | Quantity |
|-----------|------------------------------------------|------|----------|
| C-105     | MOBILIZATION (10% MAX)                   | LS   | 1        |
| P-101-5.1 | PAVEMENT REMOVAL                         | SY   | 100      |
| P-101-5.6 | COLD MILLING (0-4")                      | SY   | 110      |
| P-152-4.1 | UNCLASSIFIED EXCAVATION                  | CY   | 20       |
| P-209-5.1 | CRUSHED AGGREGATE BASE COURSE - 6" DEPTH | CY   | 20       |
| P-403-8.1 | ASPHALT MIXTURE SURFACE COURSE           | TON  | 20       |
| P-603-5.1 | EMULSIFIED ASPHALT TACK COAT             | GAL  | 10       |
| P-605-5.1 | JOINT SEALING FILLER                     | LF   | 40       |
| F-162-5.3 | VEHICLE GATE                             | EA   | 1        |

SCHEDULE B - RESTROOM, WATER, AND SEWER

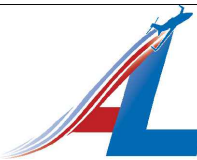
| Bid Item   | Description Of Item                                                      | Unit | Quantity |
|------------|--------------------------------------------------------------------------|------|----------|
| C-105      | MOBILIZATION (10% MAX)                                                   | LS   | 1        |
| B-001-5    | RESTROOM ARCHITECTURAL                                                   | LS   | 1        |
| B-001-6    | RESTROOM PLUMBING                                                        | LS   | 1        |
| B-001-7    | RESTROOM ELECTRICAL                                                      | LS   | 1        |
| B-001-8    | RESTROOM GENERAL BID                                                     | LS   | 1        |
| 31 2316.26 | TRENCH ROCK REMOVAL                                                      | CY   | 3        |
| 33 3113-1  | SEWER PIPE AND FITTINGS (4" PVC)                                         | LF   | 280      |
| 33 3113-2  | SEWER CLEANOUTS                                                          | EA   | 2        |
| 33 3113-3  | SEWER MANHOLE CONNECTION                                                 | EA   | 1        |
| 33 3113-4  | SEWER CONNECTION FEE                                                     | AL   | 1        |
| 33 0561-1  | CONCRETE MANHOLES (SEWER)                                                | EA   | 1        |
| 33 1416-1  | WATER PIPE AND FITTINGS (1")                                             | LF   | 180      |
| 33 1416-2  | WATER VALVES (WATER CURB STOP WITH BOX)                                  | EA   | 1        |
| 33 1416-3  | MUNICIPAL WATER CONNECTION FEE                                           | AL   | 1        |
| P-403-8.1  | ASPHALT MIXTURE SURFACE COURSE (3" DEPTH) (FLIGHT LINE DRIVE UTILITIES)  | TON  | 4        |
| P-209-5.1  | CRUSHED AGGREGATE BASE COURSE - 6" DEPTH - (FLIGHT LINE DRIVE UTILITIES) | CY   | 5        |
| P-154-5.1  | SUBBASE COURSE - 12" DEPTH - (FLIGHT LINE DRIVE UTILITIES)               | CY   | 8        |

Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



McFarland Johnson  
53 Regional Drive  
Concord, NH 03301



Fennick  
McCredie  
Architecture

Team:

Architect:

Fennick McCredie Architecture  
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Boston, Ma 02110  
t. 617.350.7900

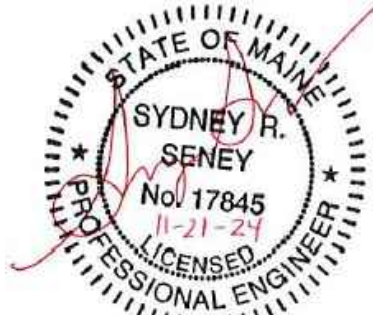
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



ISSUED FOR BID

| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

|             |                |
|-------------|----------------|
| Job No.:    | 19186.01       |
| Drawn By:   | MRB            |
| Checked By: | JTG            |
| Issue:      | ISSUED FOR BID |
| Date:       | 11/21/2024     |
| Scale:      | NTS            |

Drawing Title:

QUANTITIES

Drawing No.:

C-002



TOTAL CONTRACT DURATION: 150 CALENDAR DAYS

WORK AREA 1: WORK AREA 1 CONSISTS OF WORK OUTSIDE THE TAXIWAY A OBJECT FREE AREA.

WORK AREA 2: WORK AREA 2 CONSISTS OF WORK INSIDE THE TAXIWAY OBJECT FREE AREA. WORK AREA 2 CLOSURES A PORTION OF TAXIWAY A FROM THE BASED AIRCRAFT APRON TO THE TAXIWAY A RUN-UP AREA. DURING THIS CLOSURE, AIRCRAFT WILL BACK TAXI ON RUNWAY 4 TO THE RUN-UP AREA ADJACENT TO WORK AREA 2.

### WORK AREA 1 SUMMARY

DURATION: 150 CALENDAR DAYS  
CLOSURES: NONE  
LIQUIDATED DAMAGES: \$500 BEYOND 150 CALENDAR DAYS








PRIMARY WORK TO BE COMPLETED:

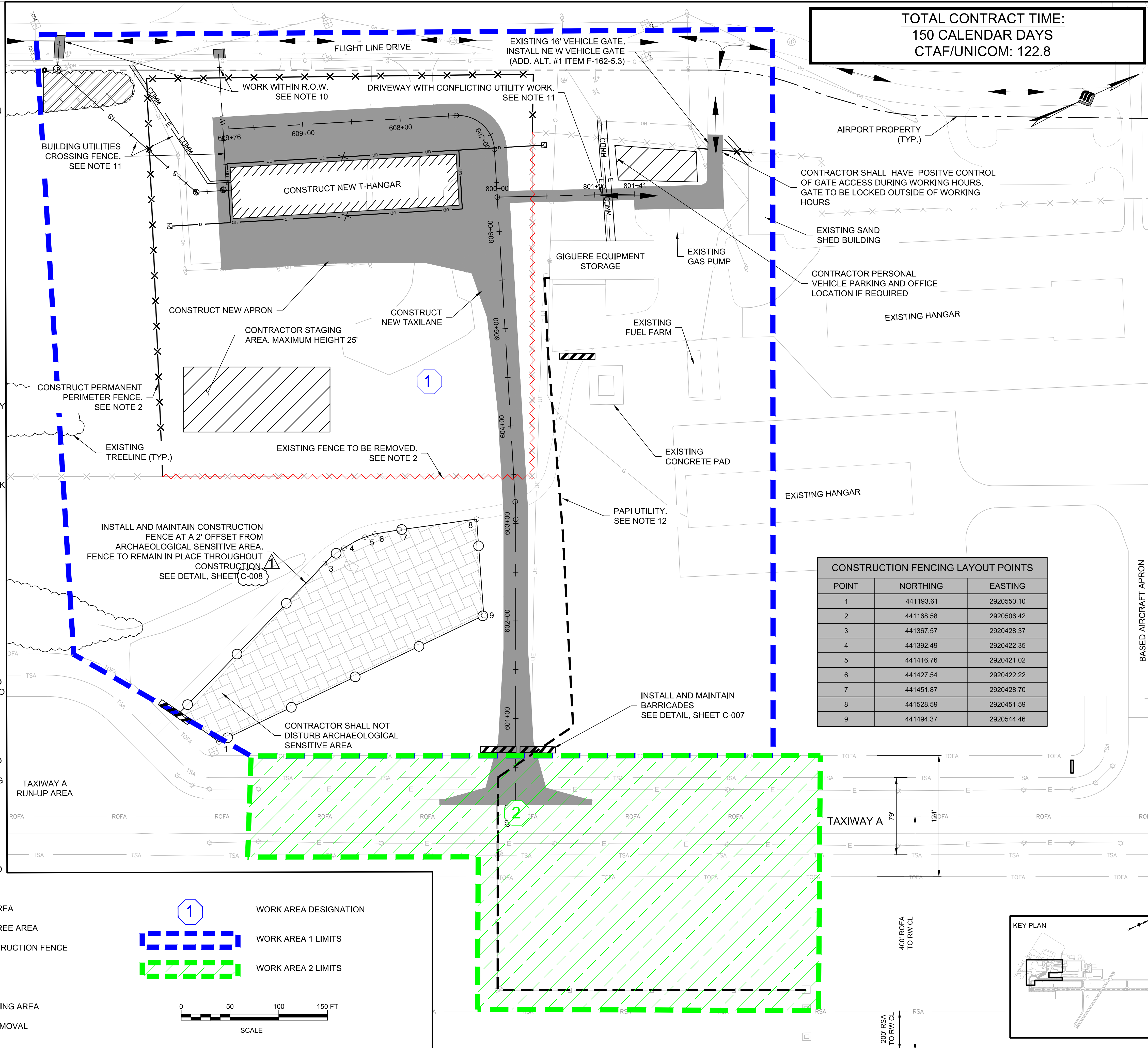
- EROSION CONTROL BMP
- EARTHWORK
- GRADING
- UTILITY INSTALL
- PAPI INSTALL
- FENCE REMOVAL/INSTALLATION
- PAVING
- HANGAR CONSTRUCTION
- MARKING
- DRAINAGE INSTALLATION

OVERALL NOTES

1. PRIOR TO THE START OF ANY WORK, CONTRACTOR SHALL INSTALL CONSTRUCTION FENCE AROUND THE ARCHEOLOGICAL SENSITIVE AREA.
2. CONTRACTOR SHALL MAINTAIN THE AIRPORT SECURITY AND WILDLIFE PERIMETER BARRIER THROUGH TEMPORARY AND PERMANENT MEASURES AT NO ADDITIONAL COST.
3. CONTRACTOR WILL PLACE LIGHTED BARRICADES TO THE APPROVAL OF THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND THE AIRPORT PRIOR TO THE CLOSURE OF ANY AREAS.
4. ALL CONSTRUCTION PERSONNEL AND EQUIPMENT WILL REMAIN WITHIN ACTIVE WORK AREA LIMITS.
5. ALL WORK WILL BE PERFORMED IN THE DESIGNATED WORK AREA. ANY CLOSURE TO BE COORDINATED WITH THE RPR AND THE AIRPORT WITH A MINIMUM OF 72 HOURS NOTICE IN ADVANCE.
6. WORK AREAS WILL BE CLEAR FROM FOREIGN OBJECT DEBRIS (FOD) PRIOR TO LEAVING THE AIRPORT WHEN CROSSING ACTIVE PAVEMENT. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A VACUUM SWEEPER WITH DEDICATED OPERATOR AT ALL TIMES AND WILL PROVIDE ADEQUATE SWEEPING AND MAINTENANCE OF THE HAUL ROUTES.
7. ALL PAVEMENT AFFECTED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
8. IF WORK BEGINS AFTER APRIL 30TH THE ENGINEER SHALL CONDUCT AN UPLAND SANDPIPER BIRD SURVEY WILL BE CONDUCTED. ANY SANDPIPER ACTIVITY MAY DELAY CONSTRUCTION UNTIL BREEDING SEASON IS OVER (SEPTEMBER 1)
9. TREE REMOVAL IS RESTRICTED FROM JUNE 1 TO AUGUST 15.
10. CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY AND PERFORM ALL TRAFFIC CONTROL MEASURES REQUIRED TO CONDUCT WORK WITHIN RIGHT OF WAY (R.O.W.) WHILE MAINTAINING ACCESS TO EXISTING ACCESS DRIVES ON ADJACENT PROPERTIES (INCIDENTAL TO ITEM M-200-1).
11. CONTRACTOR SHALL PHASE INSTALLATION OF UTILITIES WITH CONFLICTING INFRASTRUCTURE AT NO ADDITIONAL COST.
12. CONTRACTOR SHALL PROVIDE TEMPORARY MEASURES TO MAINTAIN PAPI OPERATIONAL DURING CONSTRUCTION IF REQUIRED. OR INSTALL NEW PAPI CIRCUIT WHILE KEEPING THE PAPI OPERATIONAL
13. EXISTING SERVICE ROAD WILL BE CLOSED DURING CONSTRUCTION. CONTRACTOR SHALL INSTALL BARRICADES AS SHOWN.
14. ALL CONSTRUCTION SAFETY AND PHASING PLAN WORK IS INCIDENTAL TO ITEM M-200-1.
15. SINGLE LANE ROAD CLOSURE IS REQUIRED FOR WORK ON FLIGHT TLINE DRIVE
16. WORK IN FLIGHT LINE DRIVE RESTRICTED FROM NOV.15 TO APRIL 15

LEGEND:

|                                                                                     |      |                              |
|-------------------------------------------------------------------------------------|------|------------------------------|
|  | TSA  | TAXIWAY SAFETY AREA          |
|  | TOFA | TAXIWAY OBJECT FREE AREA     |
|  |      | TEMPORARY CONSTRUCTION FENCE |
|  |      | BARRICADE                    |
|  |      | HAUL ROUTE                   |
|  |      | CONTRACTOR STAGING AREA      |
|  |      | EXISTING FENCE REMOVAL       |



Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE  
AUBURN, ME 04210

Client:



**Auburn-Lewiston  
Municipal Airport**  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

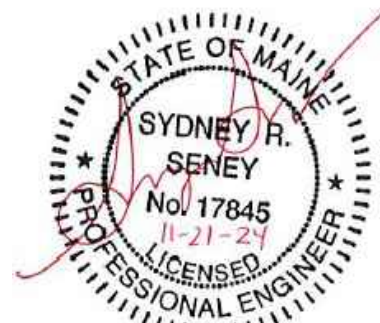
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**Structural/MEP Engineer:**  
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Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



**ISSUED FOR BID**

| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

|             |                |
|-------------|----------------|
| Job No.:    | 19186.01       |
| Drawn By:   | MRB            |
| Checked By: | JTG            |
| Issue:      | ISSUED FOR BID |
| Date:       | 11/21/2024     |
| Scale:      | 1" = 50'       |

Drawing Title:

# CONSTRUCTION SAFETY & PHASING PLAN - OVERALL & WORK AREA 1

Drawing No.:

C-005



WORK AREA 2 SUMMARY

WORK AREA 2 INCLUDES THE AREA INSIDE THE TAXIWAY A OBJECT FREE AREA.

- DURATION: 14 CALENDAR DAYS CONCURRENT WITH WORK AREA CLOSURES: TAXIWAY A FROM TAXIWAY A RUN-UP AREA TO BASED AIRCRAFT APRON.
- LIQUIDATED DAMAGES: NONE
- RESTRICTIONS:
- TAXIWAY A LIGHTING MUST BE INSTALLED AND OPERATIONAL PRIOR TO RE-OPENING TAXIWAY.
  - NEW TAXILANE SHALL BE PAVED OR TEMPORARILY STABILIZED PRIOR TO OPENING TAXIWAY A.

PRIMARY WORK TO BE COMPLETED:

- EROSION CONTROL BMP
- EARTHWORK
- GRADING
- AIRFIELD ELECTRICAL
- PAPI INSTALL
- PAVING
- MARKING
- DRAINAGE INSTALLATION

OVERALL NOTES

- PRIOR TO THE START OF ANY WORK, CONTRACTOR SHALL INSTALL CONSTRUCTION FENCE AROUND THE ARCHEOLOGICAL SENSITIVE AREA.
- CONTRACTOR SHALL MAINTAIN THE AIRPORT SECURITY AND WILDLIFE PERIMETER BARRIER THROUGH TEMPORARY AND PERMANENT MEASURES AT NO ADDITIONAL COST.
- CONTRACTOR WILL PLACE LIGHTED BARRICADES TO THE APPROVAL OF THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND THE AIRPORT PRIOR TO THE CLOSURE OF ANY AREAS.
- ALL CONSTRUCTION PERSONNEL AND EQUIPMENT WILL REMAIN WITHIN ACTIVE WORK AREA LIMITS.
- ALL WORK WILL BE PERFORMED IN THE DESIGNATED WORK AREA. ANY CLOSURE TO BE COORDINATED WITH THE RPR AND THE AIRPORT WITH A MINIMUM OF 72 HOURS NOTICE IN ADVANCE.
- WORK AREAS WILL BE CLEAR FROM FOREIGN OBJECT DEBRIS (FOD) PRIOR TO LEAVING THE AIRPORT WHEN CROSSING ACTIVE PAVEMENT. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A VACUUM SWEEPER WITH DEDICATED OPERATOR AT ALL TIMES AND WILL PROVIDE ADEQUATE SWEEPING AND MAINTENANCE OF THE HAUL ROUTES.
- ALL PAVEMENT AFFECTED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
- IF WORK BEGINS AFTER APRIL 30TH THE ENGINEER SHALL CONDUCT AN UPLAND SANDPIPER BIRD SURVEY WILL BE CONDUCTED. ANY SANDPIPER ACTIVITY MAY DELAY CONSTRUCTION UNTIL BREEDING SEASON IS OVER (SEPTEMBER 1)
- TREE REMOVAL IS RESTRICTED FROM JUNE 1 TO AUGUST 15.
- CONTRACTOR SHALL OBTAIN ALL PERMITS NECESARY AND PERFORM ALL TRAFFIC CONTROL MEASURES REQUIRED TO CONDUCT WORK WITHIN RIGHT OF WAY (R.O.W.) WHILE MAINTAINING ACCESS TO EXISTING ACCESS DRIVES ON ADJACENT PROPERTIES (INCIDENTAL TO ITEM M-200-1).
- CONTRACTOR SHALL PHASE INSTALLATION OF UTILITIES WITH CONFLICTING INFRASTRUCTURE AT NO ADDITIONAL COST.
- CONTRACTOR SHALL PROVIDE TEMPORARY MEASURES TO MAINTAIN PAPI OPERATIONAL DURING CONSTRUCTION IF REQUIRED. OR INSTALL NEW PAPI CIRCUIT WHILE KEEPING THE PAPI OPERATIONAL
- EXISTING SERVICE ROAD WILL BE CLOSED DURING CONSTRUCTION. CONTRACTOR SHALL INSTALL BARRICADES AS SHOWN.
- ALL CONSTRUCTION SAFETY AND PHASING PLAN WORK IS INCIDENTAL TO ITEM M-200-1.
- SINGLE LANE ROAD CLOSURE IS REQUIRED FOR WORK ON FLIGH TLNE DRIVE
- WORK IN FLIGHT LINE DRIVE RESTRICTED FROM NOV.15 TO APRIL 15

PAPI NOTES

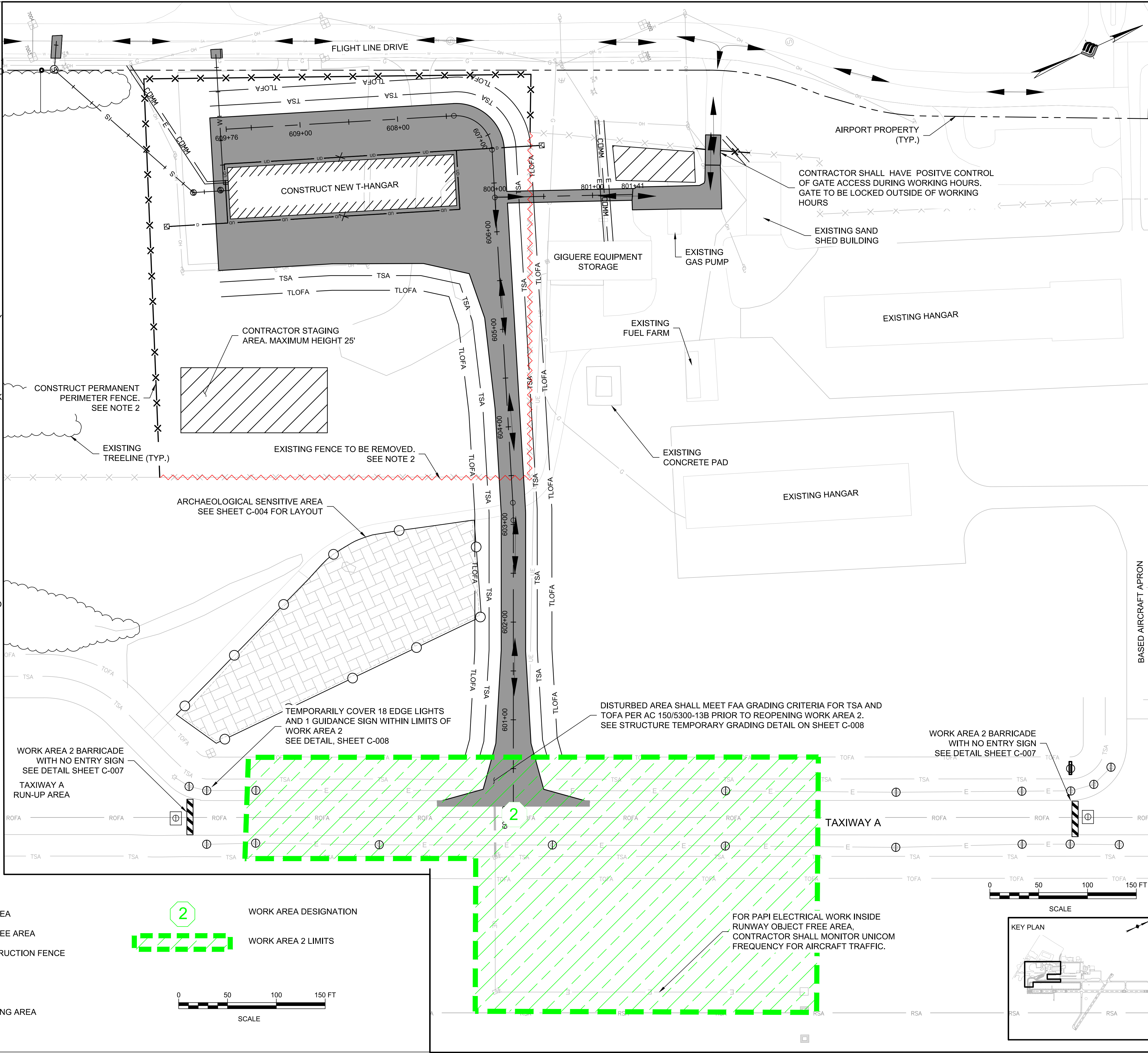
- NEW PAPI CABLE MUST BE INSTALLED PRIOR TO TAXILANE CONSTRUCTION DUE TO CONFLICT OF NEW TAXILANE WITH EXISTING PAPI CABLE.
- NEW PAPI CABLE CAN BE INSTALLED INDEPENDENT OF TAXILANE WORK IN WORK AREA 2. TIME USED TO INSTALL PAPI CABLE WILL BE DEDUCTED FROM THE 14 DAY DURATION.

LEGEND:

- TSA

TAXIWAY SAFETY AREA
- TOFA

TAXIWAY OBJECT FREE AREA
- TEMPORARY CONSTRUCTION FENCE
- BARRICADE
- HAUL ROUTE
- CONTRACTOR STAGING AREA
- EDGE LIGHT COVER



Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

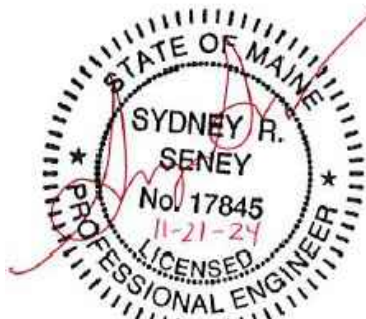
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

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| 12.11.24 | ADDENDUM | NO.2     |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: 1" = 50'

Drawing Title:

CONSTRUCTION  
SAFETY &  
PHASING PLAN -  
WORK AREA 2

Drawing No.:

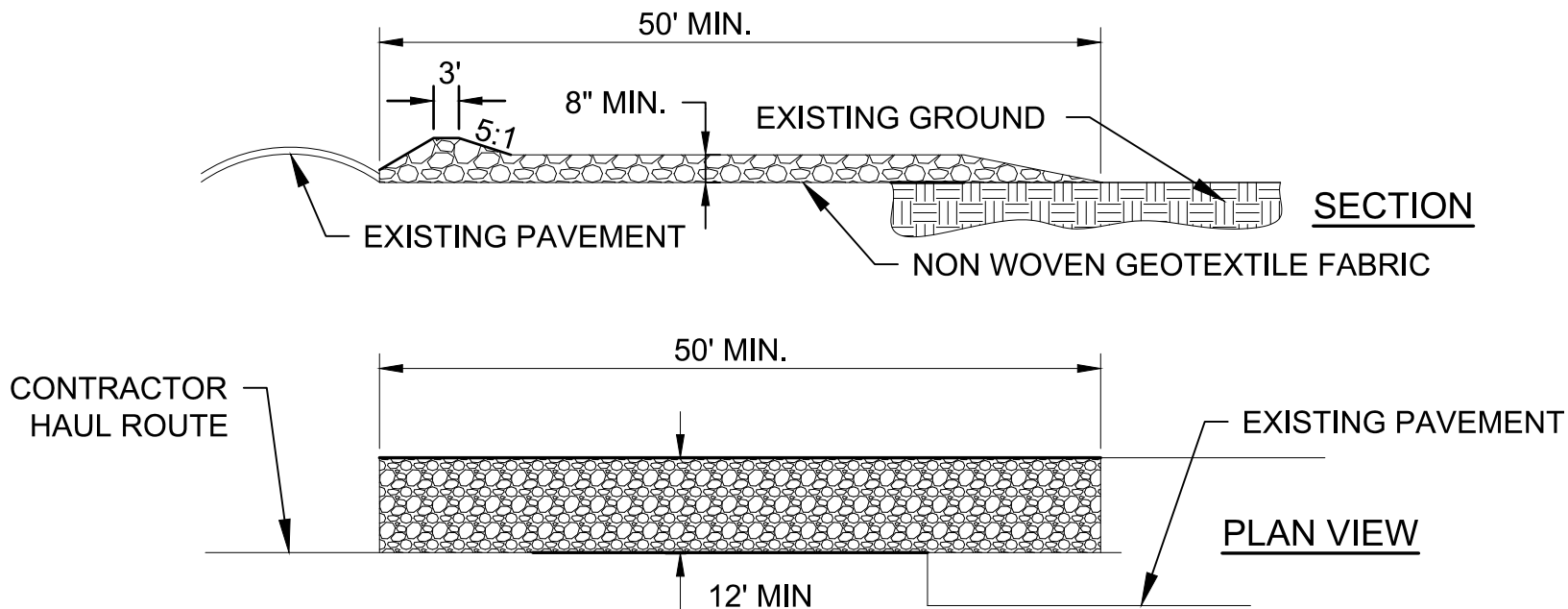
C-006



CONSTRUCTION SAFETY AND PHASING NOTES:

- THE CONTRACTOR WILL SUBMIT A WRITTEN SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) TO THE RESIDENT PROJECT REPRESENTATIVE (RPR), LEWISTON AIRPORT OPERATIONS/MANAGEMENT (LEW) AND FAA FOR REVIEW AND APPROVAL PRIOR TO MOBILIZATION AND BEFORE ANY CONSTRUCTION IS ALLOWED TO BE PERFORMED. ANY DELAY IN THE ISSUANCE OF THE NOTICE TO PROCEED DUE TO THE FAILURE BY THE CONTRACTOR TO OBTAIN AN APPROVED SPCD WILL NOT BE GROUNDS FOR ANY CONTRACT TIME EXTENSION. THE CONTRACTOR WILL BECOME KNOWLEDGEABLE OF THE REQUIREMENTS AND PROCEDURES OF THE FAA ADVISORY CIRCULAR NO. 150/5370-2G (OR CURRENT EDITION) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" AND THE APPROVED "CONSTRUCTION SAFETY AND PHASING PLAN" (CSPP), AND INCORPORATE RELEVANT ITEMS INTO THE SPCD WHICH IS REQUIRED TO MEET OR EXCEED THE PROJECT'S CSPP REQUIREMENTS. THE SPCD WILL BE MODIFIED AND UPDATED AS REQUIRED THROUGHOUT THE PROJECT TO ADDRESS EACH PHASE AND/OR SUB PHASE AS WORK PROGRESSES. SOME, BUT NOT ALL OF THE ITEMS, TO BE ADDRESSED IN THE SPCD ARE AS FOLLOWS:
  - IDENTIFICATION AND QUALIFICATIONS OF DEDICATED SAFETY & SECURITY POINT OF CONTACT
  - WORK SCHEDULING, COORDINATION, AND NOTIFICATION PROCEDURES OF CONSTRUCTION ACTIVITIES.
  - AIRFIELD COMMUNICATIONS AND 24-HOUR EMERGENCY NOTIFICATION PROCEDURES.
  - CONSTRUCTION OPERATIONS ADJACENT TO OR WITHIN SAFETY AREAS, OBJECT FREE AREAS, NAVAID CRITICAL AREAS, AND APPROACH SURFACES. (I.E. GRADING, HAULING MATERIALS, ETC.)
  - METHODS AND REQUIREMENTS FOR SEPARATING CONSTRUCTION AREAS FROM AIRPORT OPERATIONS AREAS (AOA).
  - AIRPORT OPERATIONS AREAS.
  - PREVENTING INTERFERENCE WITH AIRPORT OWNED OR FAA OWNED NAVAID (PAPI, ILS, LOC, OR OTHER) EQUIPMENT AND CRITICAL AREAS.
  - CONTROL OF FOREIGN OBJECT DEBRIS (FOD) AND DUST.
  - CONSTRUCTION VEHICLE REQUIREMENTS, PROCEDURES AND DRIVER TRAINING FOR ESCORT DRIVERS.
  - OPERATIONS WITHIN MOVEMENT AND NON-MOVEMENT AREAS TO PREVENT RUNWAY INCURSIONS.
  - CONTRACTOR ACCESS POINTS, VEHICLE CROSSING LOCATIONS, SECURITY FENCING AND GATES, AND EMPLOYEE SECURITY TRAINING.
  - PROCEDURES, REQUIREMENTS, AND COORDINATION OF RUNWAY AND/OR TAXIWAY CLOSURES, INCLUDING NOTICE TO AIRMEN (NOTAM) COORDINATION
  - LIGHTED CHANNELIZER CONE PLACEMENT LOCATIONS, AND TEMPORARY CONSTRUCTION SIGN LOCATIONS.
  - PROCEDURES FOR MANAGING HAZARDOUS MATERIALS
  - PROCEDURES FOR LOCATING & PROTECTING EXISTING UNDERGROUND UTILITIES
- THESE SAFETY AND PHASING PLANS HAVE BEEN APPROVED BY THE FAA AND LEW AIRPORT OPERATIONS. COMBINING, MODIFYING, OR ALTERNATING WORK AREAS WITHOUT APPROVAL OF THE FAA AND LEW AIRPORT OPERATIONS THROUGH THE RPR WILL NOT BE ALLOWED. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR PREPARE THEIR BID BASED ON THE CONSTRUCTION PHASING SHOWN IN THESE DOCUMENTS. APPROVED MODIFICATIONS WILL RESULT IN NO ADDITIONAL PROJECT DURATION OF ADDITIONAL COST TO THE OWNER. ANY PROPOSED CHANGES FROM THE CONTRACTOR WILL BE SUBMITTED THROUGH THE RPR/ENGINEER WHO WILL SUBMIT IT TO THE AIRPORT AND FAA. PROPOSED CHANGES MAY NOT BE ACCEPTED.
- ALL OF THE CONTRACTOR'S AND SUBCONTRACTOR'S EMPLOYEES WILL HAVE A "TAILGATE" SAFETY MEETING EVERY SHIFT CHANGE OR START OF EACH DAY PRIOR TO ANY WORK WITH THE RPR AND LEW OPERATIONS PRESENT TO REVIEW THE DAY'S WORK AND SAFETY PROCEDURES. THIS DAILY COORDINATION OF THE CONSTRUCTION ACTIVITIES WILL BE HELD TO CLEARLY IDENTIFY THE LIMITS OF WORK FOR THE DAY. THE CONTRACTOR WILL NOT EXCEED THE LIMITS OF WORK WITHOUT APPROVAL FROM THE RPR. IN ADDITION, A SIGN-IN SHEET WILL BE KEPT FOR THE ATTENDANCE AT THIS MEETING.
- THE CONTRACTOR WILL PROVIDE A COMPETENT SAFETY PERSON (WHO ALSO COULD BE THE SUPERINTENDENT OR OTHER SUPERVISORY PERSON) FAMILIAR WITH AIRPORT SAFETY TO MONITOR CONSTRUCTION ACTIVITIES. THIS INDIVIDUAL WILL BE RESPONSIBLE FOR MONITORING CONSTRUCTION ACTIVITIES AND PERSONNEL TO ENSURE THAT THEY ADHERE TO THE SAFETY REQUIREMENTS ESTABLISHED BY THE CONTRACT DOCUMENTS (INCLUDING THE CSPP), THE SPCD, THE REGULATIONS AND REQUIREMENTS OF THE AIRPORT, FAA, AND OTHER APPLICABLE AGENCIES. THIS COMPETENT SAFETY PERSON AND SUPERVISORY PERSON (IF DIFFERENT) WILL BE EQUIPPED WITH CONTRACTOR PROVIDED RADIOS FOR MONITORING FAA FREQUENCY, AND COMMUNICATING WITH LEW OPERATIONS AND THE RPR.
- THE CONTRACTOR WILL PROVIDE A POINT OF CONTACT TO THE OWNER AND RPR WHO CAN BE CONTACTED AT ANY TIME THROUGHOUT THE COURSE OF THE CONTRACT. THIS INDIVIDUAL WILL BE CAPABLE OF COORDINATING AN IMMEDIATE RESPONSE TO CORRECT ANY CONSTRUCTION RELATED ACTIVITY THAT MAY ADVERSELY AFFECT THE OPERATIONAL SAFETY OF THE AIRPORT.
- UPON RECEIPT OF APPROVAL FOR A CLOSURE AND BEFORE EQUIPMENT ENTERS THE AIRFIELD FOR CONSTRUCTION WORK TO COMMENCE, THE WORK AREA WILL BE SECURED WITH ALL LIGHTING EQUIPMENT, CHANNELIZER CONES, AND SAFETY BARRICADES. THE WORK AREA WILL BE CLEARLY DELINEATED AND ALL SAFETY REQUIREMENTS WILL BE APPROVED BY THE RPR PRIOR TO BEGINNING ANY WORK.
- CONSTRUCTION SIGNS (I.E. "CONSTRUCTION TRAFFIC" WITH ARROWS, "NO UNAUTHORIZED VEHICLES BEYOND THIS POINT" OR OTHER STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICE (MUTCD) SIGNS) WILL BE LOCATED AT THE WORK AREA EGRESS/INGRESS POINTS AND/OR OTHER DESIGNATED LOCATIONS. THERE WILL BE NO SEPARATE PAYMENT FOR PROVIDING THESE SIGNS (INCIDENTAL TO ITEM M-200 MAINTENANCE AND PROTECTION OF TRAFFIC).
- THE CONTRACTOR WILL VERIFY THAT NO PAVEMENT LIPS OR PAVEMENT EDGES EXCEED 3 INCHES WITHIN ALL ACTIVE AIRCRAFT OPERATIONAL AREAS, AS DEFINED BY THE CSPP.
- TEMPORARY TAXIWAY CLOSURES AND/OR RUNWAY CLOSURES IN ACCORDANCE WITH THE CSPP ARE SUBJECT TO WIND/WEATHER AVAILABILITY AND ARE SUBJECT TO A RECALL TIME TO BE DETERMINED BY LEW OPERATIONS AND AS OUTLINED IN THE CSPP.
- IF WORKING UNDER A TAXIWAY CAUTION ALLOWED BY AN APPROVED CSPP, ALL ADJACENT PAVEMENTS WILL BE AVAILABLE FOR AN UNLIMITED NUMBER OF AIRCRAFT OPERATIONS. THE CONTRACTOR WILL CONDUCT WORK IN SUCH A MANNER THAT NO INTERFERENCE WITH AIRCRAFT OPERATIONS WILL OCCUR. THE CONTRACTOR WILL HAVE A FULL-TIME RADIO ESCORT AT EACH WORK AREA WHICH IS BEING WORKED ON UNDER A CAUTION. THE CONTRACTOR WILL RELOCATE PERSONNEL AND EQUIPMENT AT LEAST 62 FEET (ADG II TOFA) FROM THE TAXIWAY CENTERLINE TO ALLOW SAFE PASSAGE OF AIRCRAFT, AS REQUIRED.
- THE CONTRACTOR WILL PROVIDE A MINIMUM OF ONE (1) RADIO VEHICLE ESCORTS AT ALL TIMES AND AT LEAST TWO (2) RADIO VEHICLE ESCORTS DURING HEAVY HAULING OPERATIONS, WITH A LICENSED DRIVER WITH EXPERIENCE AND KNOWLEDGE OF WORKING ON AIRPORTS, TO DIRECT CONSTRUCTION TRAFFIC TO AND FROM THE WORK AREAS WHEN INSIDE THE AIRPORT OPERATIONS AREA (AOA) AT ALL TIMES UNLESS OTHERWISE OUTLINED IN THE CSPP. ADDITIONAL ESCORTS MAY BE REQUIRED DURING MILLING, EXCAVATION AND PAVING OPERATIONS AND AS DETERMINED BY THE RPR AND LEW

OPERATIONS DEPENDING ON CONTRACTOR OPERATIONS. THE CONTRACTOR WILL STAGE VEHICLES COMING ONTO THE AOA AT THE GATE, AND BE ESCORTED, WITH A MAXIMUM OF 3 VEHICLES IN CONVOY BEHIND THE ESCORT VEHICLE, TO THE WORK AREAS. RADIO VEHICLE ESCORT WILL HAVE RADIOS CAPABLE OF COMMUNICATING WITH RPR AND LEW AIRPORT OPERATIONS AND NOT USING THE FAA FREQUENCY

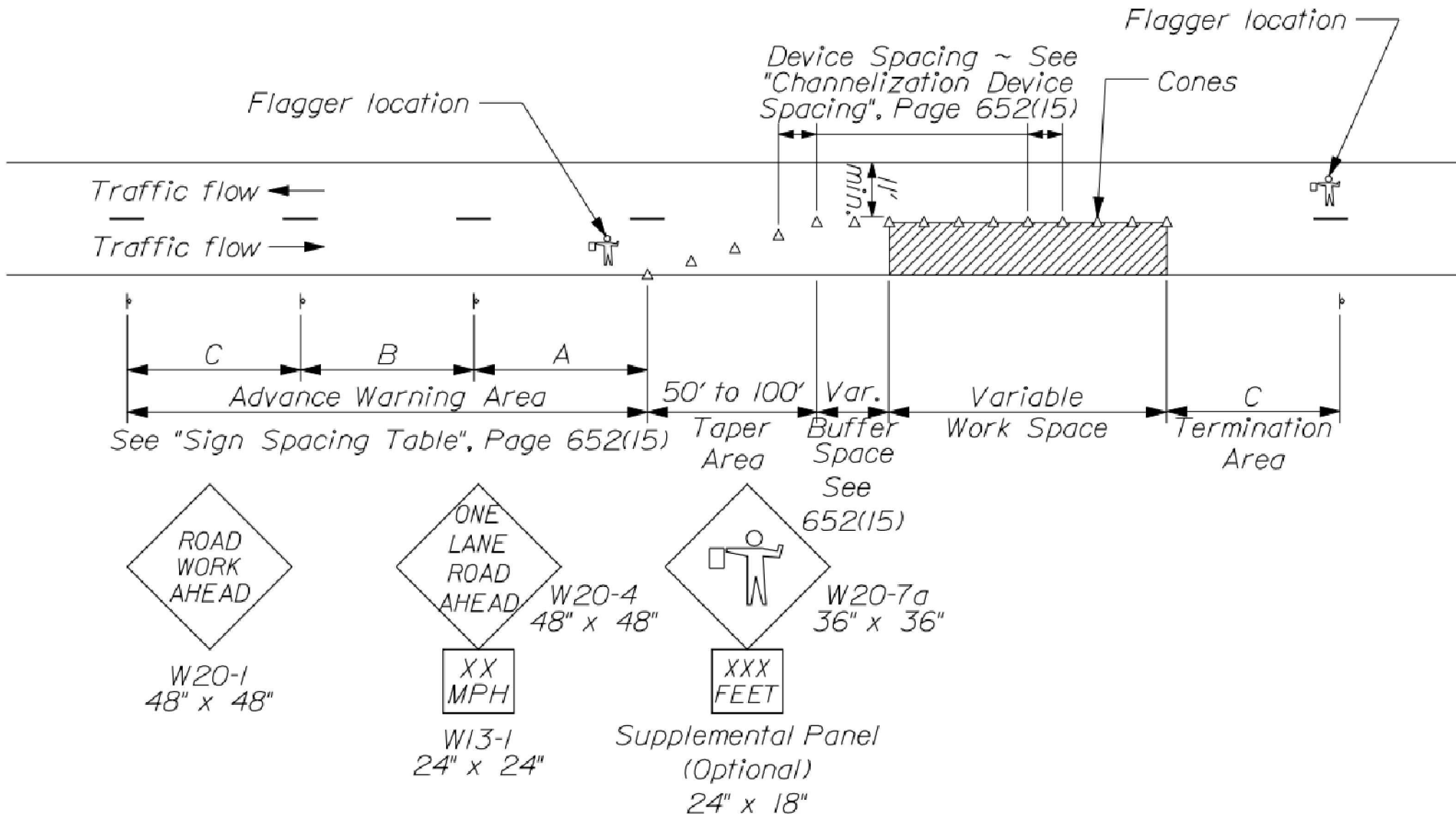


STABILIZED CONSTRUCTION ENTRANCE NOTES:

- LENGTH - NOT LESS THAN 50 FEET.
- THICKNESS - NOT LESS THAN 8".
- WIDTH - 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
- GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
- SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
- MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

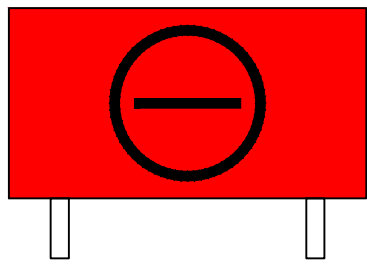
STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.  
(INCIDENTAL TO ITEM M-200-1)

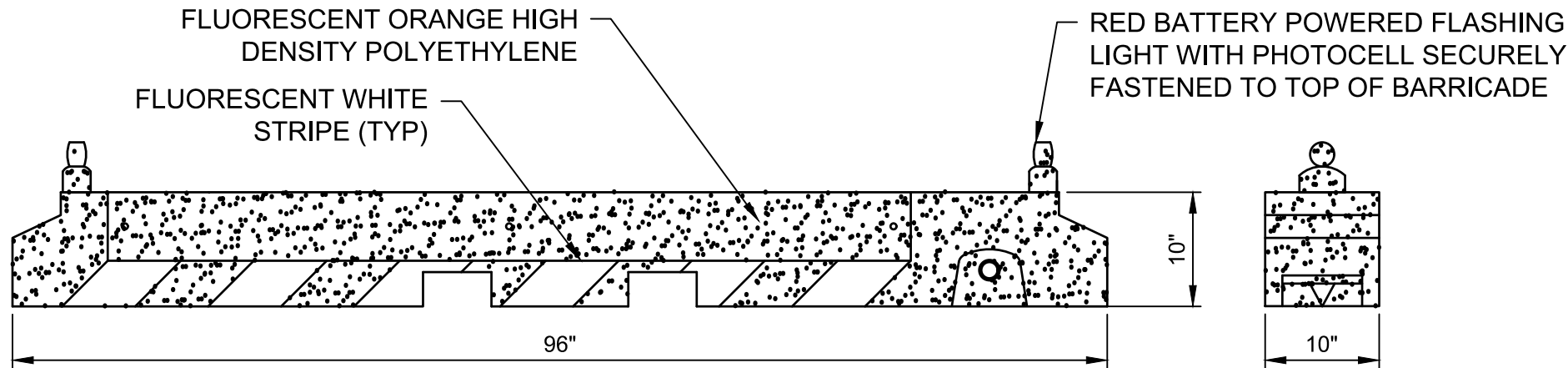


SINGLE LANE CLOSURE DETAIL

N.T.S.  
(INCIDENTAL TO ITEM M-200-1)



SUPPLEMENT LOW PROFILE BARRICADES WITH NO ENTRY SIGN AT ALL ACTIVE TAXIWAY CROSSINGS AS SHOWN ON C-006 (INCIDENTAL TO ITEM M-200-1)

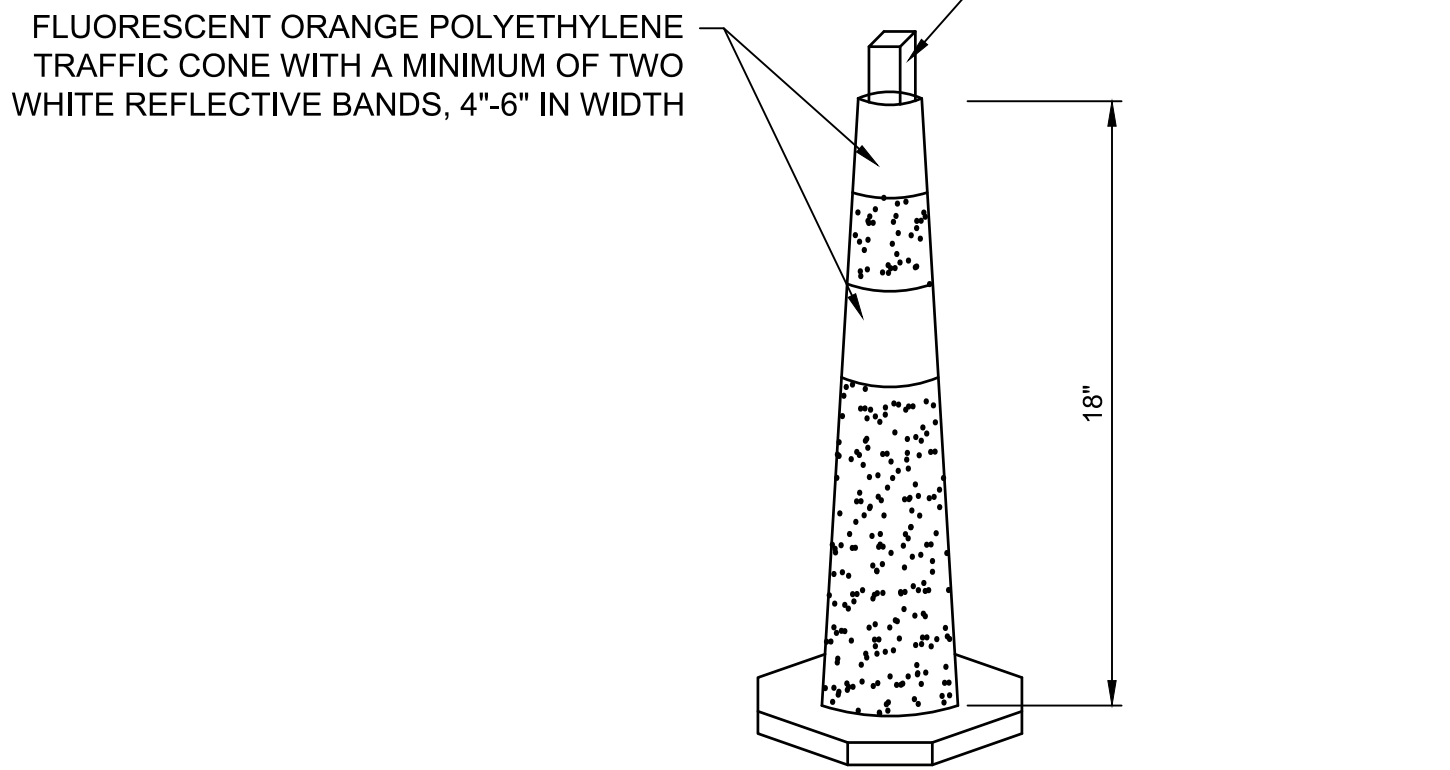


AVIATION BARRICADE NOTES:

- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED BARRICADES.
- BARRICADES WILL BE PLACED END TO END TO CREATE A CONTINUOUS BARRIER.
- BARRICADES WILL BE ADEQUATELY WEIGHTED TO WITHSTAND HIGH WINDS AND / OR JET BLAST.
- CONTRACTOR WILL MOVE BARRICADES AT THE DIRECTION OF THE RPR OR AIRPORT OPERATIONS.

WATER BALLASTED LOW PROFILE LIGHTED SAFETY BARRICADE

N.T.S.  
(INCIDENTAL TO ITEM M-200-1)



SA DELINEATION MARKER NOTES:

- MARKER CONES WILL BE SPACED AT 20 FEET ON CENTER TO PROTECT THE SAFETY AREA AND WILL BE PLACED 60 FEET FROM RUNWAY CENTERLINE.
- CONTRACTOR WILL FREQUENTLY INSPECT MARKER CONES AND WILL RELOCATE ANY MISALIGNED CONES.
- TRAFFICE CONES WILL BE ADEQUATELY SECURED TO WITHSTAND HIGH WINDS AND / OR JET BLAST BY USING GRADE STAKES AS SHOWN.

WORK AREA DELINEATION MARKER

NOT TO SCALE  
(BASE BID)(INCIDENTAL TO ITEM M-200-1)

Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



McFarland Johnson  
53 Regional Drive  
Concord, NH 03301



Fennick  
McCredie  
Architecture

Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

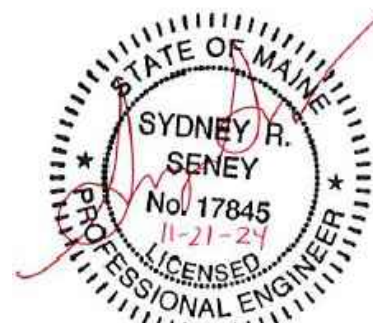
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
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Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
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Stamp:



ISSUED FOR BID

No. Date Revision

A12.11.2024 ADDENDUM NO.2

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: NTS

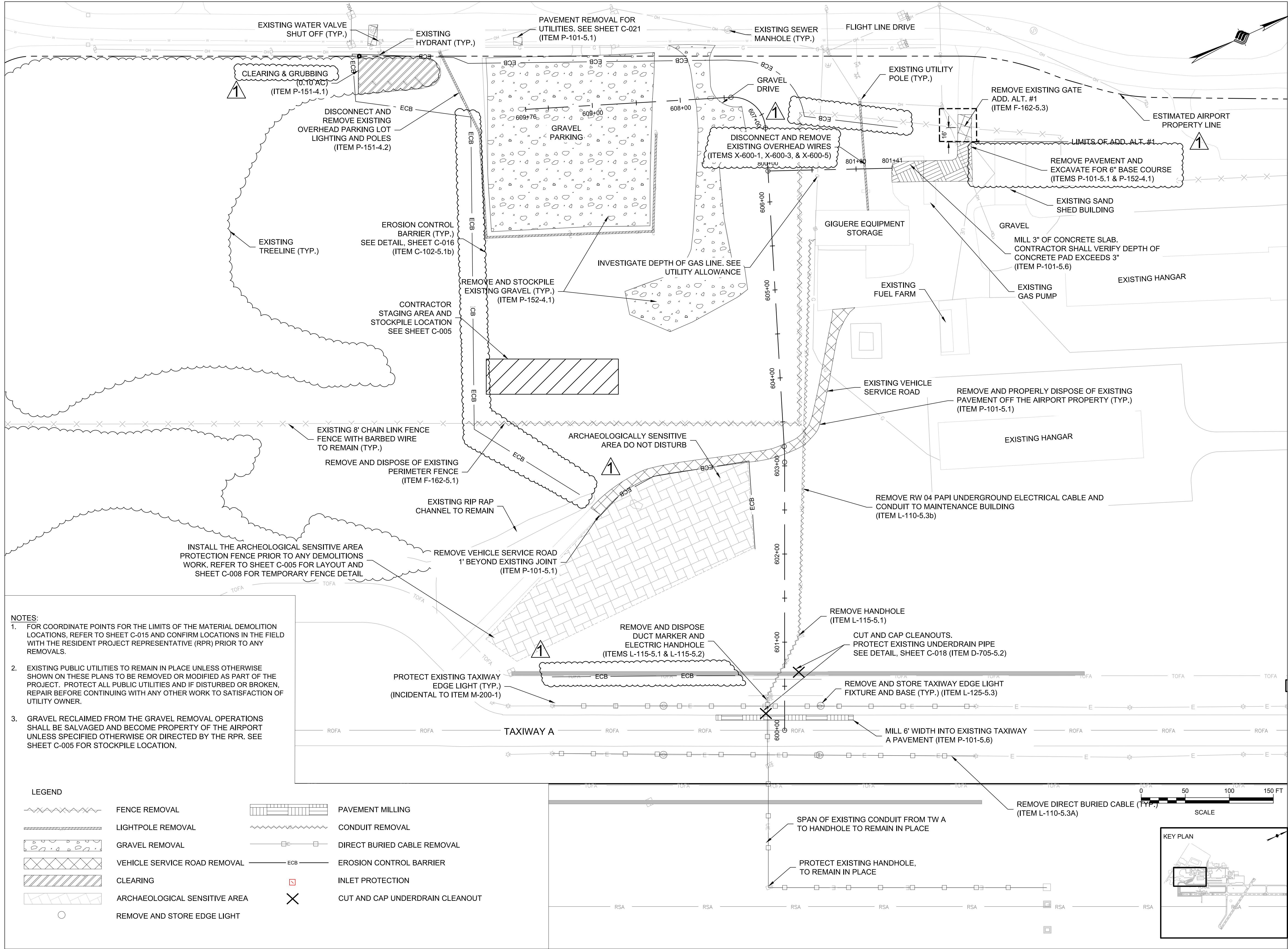
Drawing Title:

CONSTRUCTION  
SAFETY &  
PHASING  
DETAILS (1 OF 2)

Drawing No.:

C-007





Project:

# CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631



McFarland Johnson

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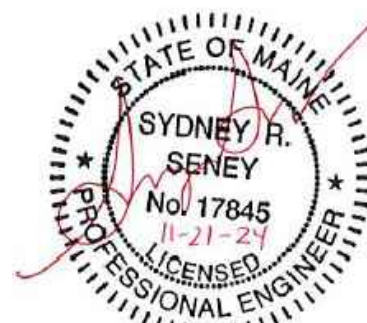
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Civil Engineer:

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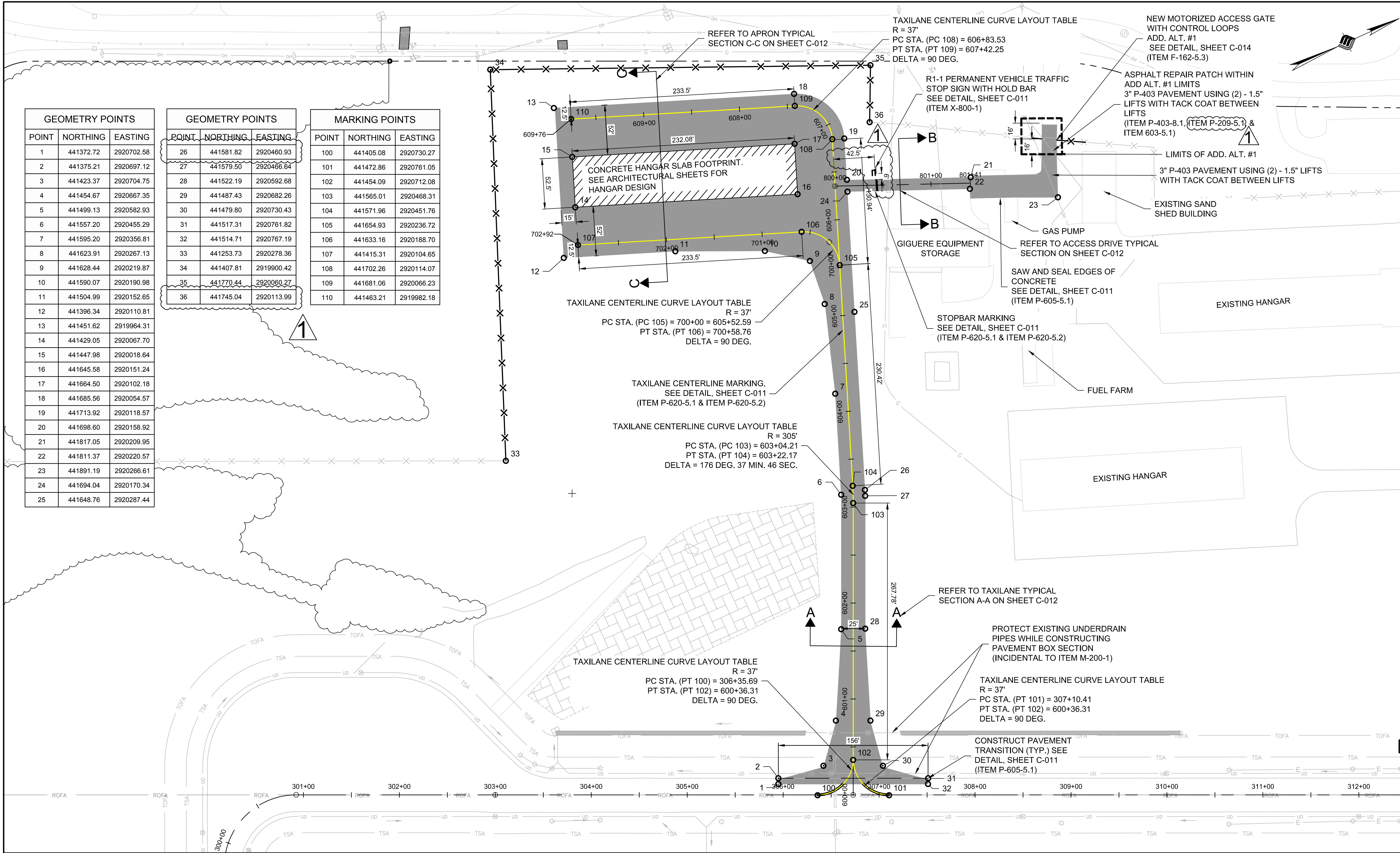
Drawing Title:

## DEMOLITION PLAN

Drawing No.:

## C-009





Project:

# CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:

  
**Auburn-Lewiston  
Municipal Airport**  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631

  
**McFarland Johnson**  
53 Regional Drive  
Concord, NH 03301

  
**Fennick  
McCredie  
Architecture**

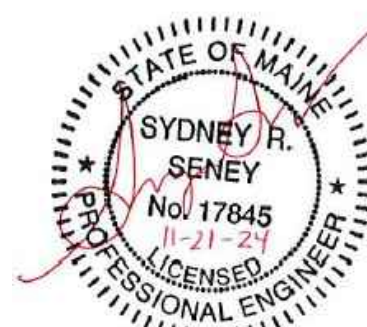
Team:

**Architect:**  
Fennick McCredie Architecture  
70 Franklin Street  
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t. 617.350.7900

**Structural/MEP Engineer:**  
McFarland Johnson  
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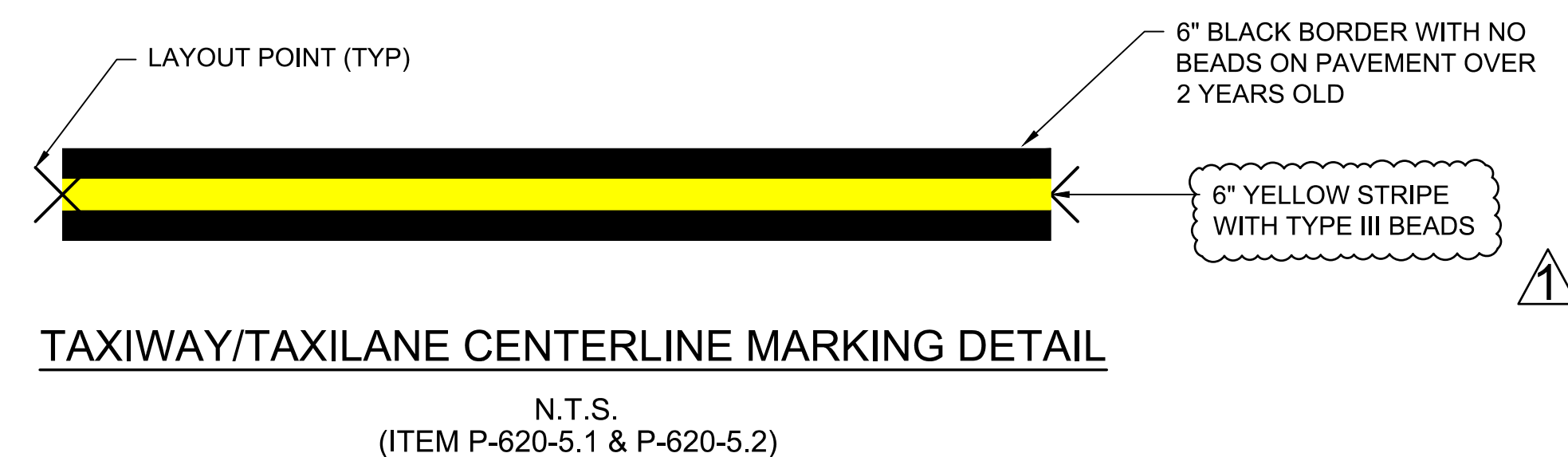
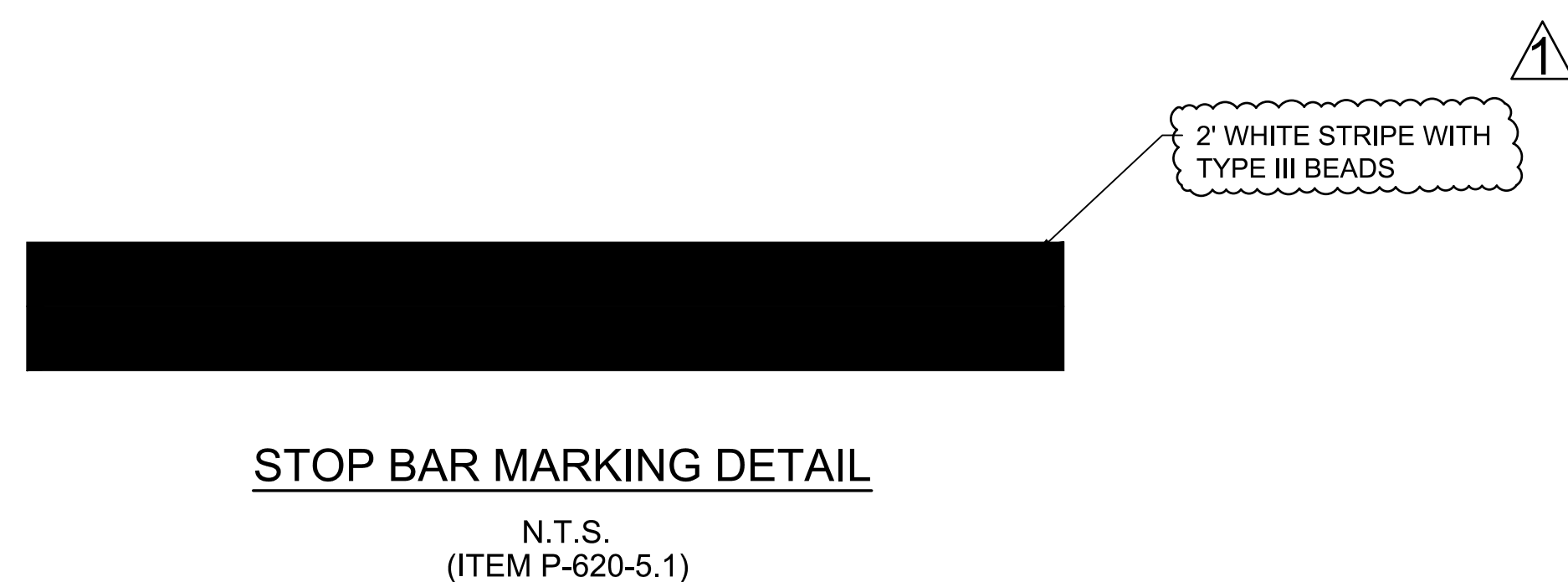
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Drawing Title:  
**LAYOUT PLAN**

Drawing No.:  
**C-010**

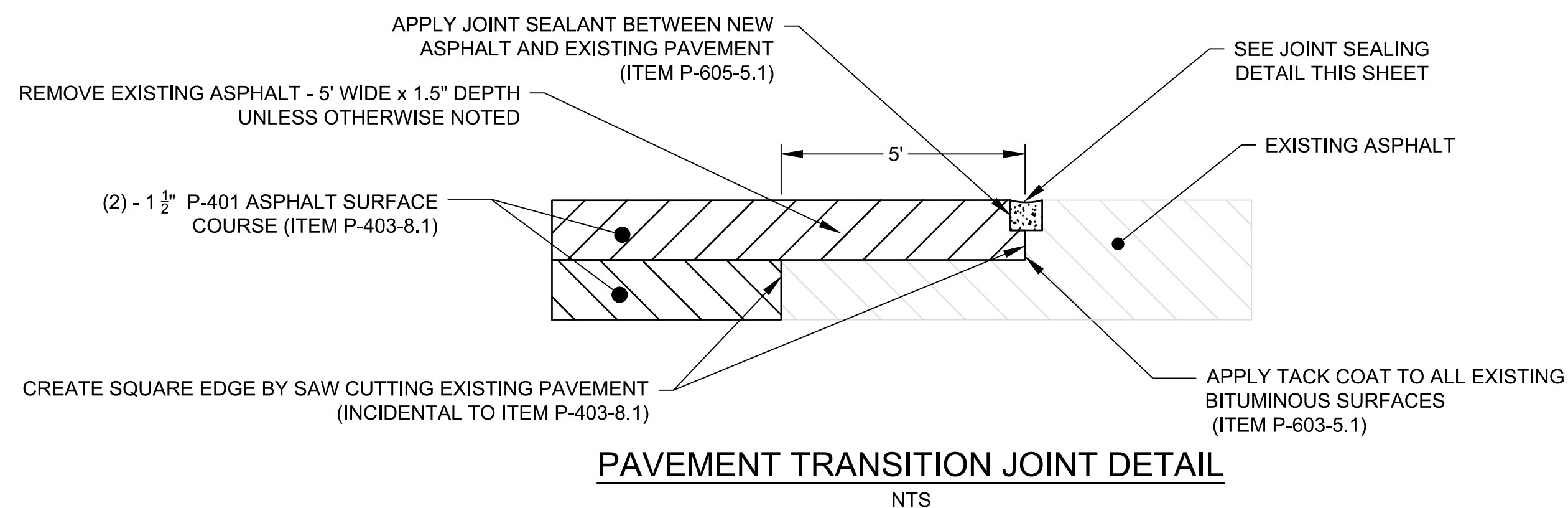




- SIGNS TO CONFORM TO LATEST VERSION OF MUTCD STANDARDS FOR R1-1 STOP SIGN
  - 30" ACROSS FLATS
- COLOR LEGEND:  
BACKGROUND - RED (REFLECTIVE)  
LETTERS WHITE - (REFLECTIVE)

## PERMANENT VEHICLE TRAFFIC STOP SIGN

N.T.S.  
(ITEM X-800-1)



**NOTE:**

1. FACE OF EXISTING PAVEMENT SHALL BE FREE OF DIRT AND DEBRIS PRIOR OF APPLICATION OF TACK COAT OR SEALANT AND MAY REQUIRE WASHING OR USE OF WIRE BRUSH.

**ISSUED FOR BID**

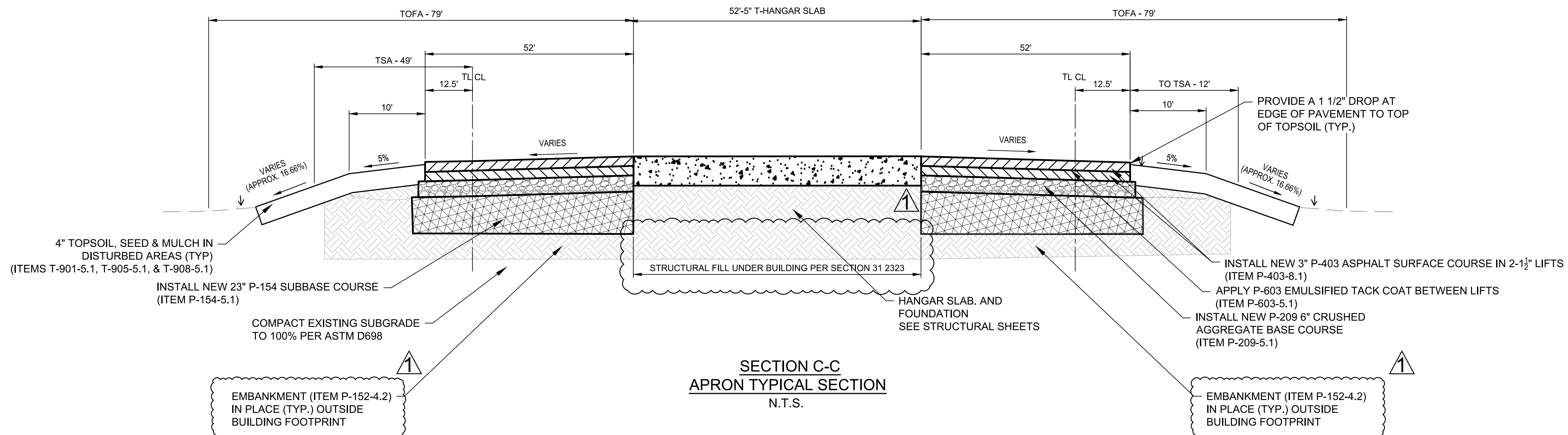
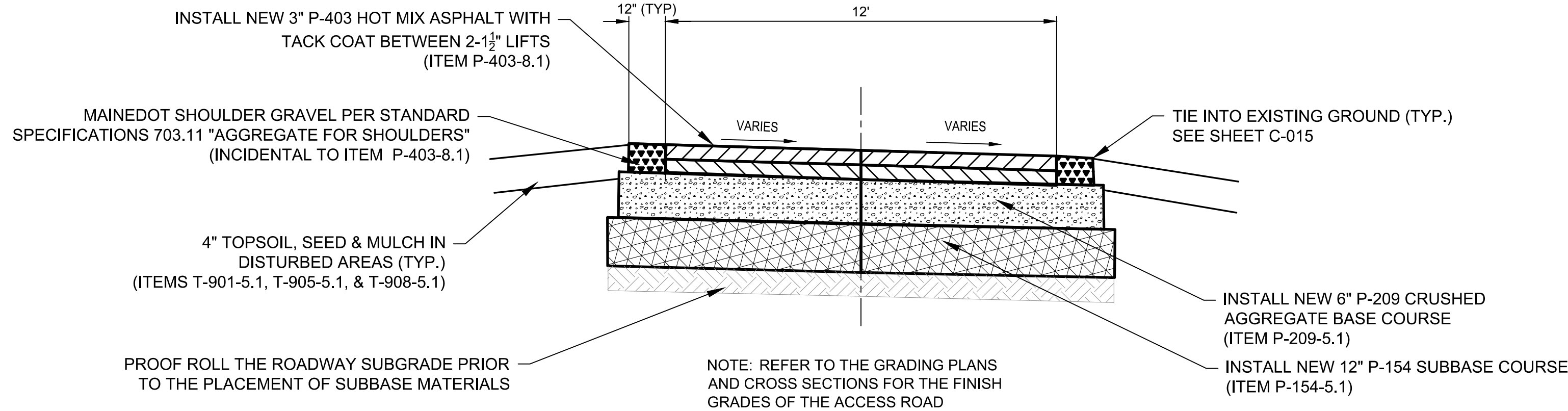
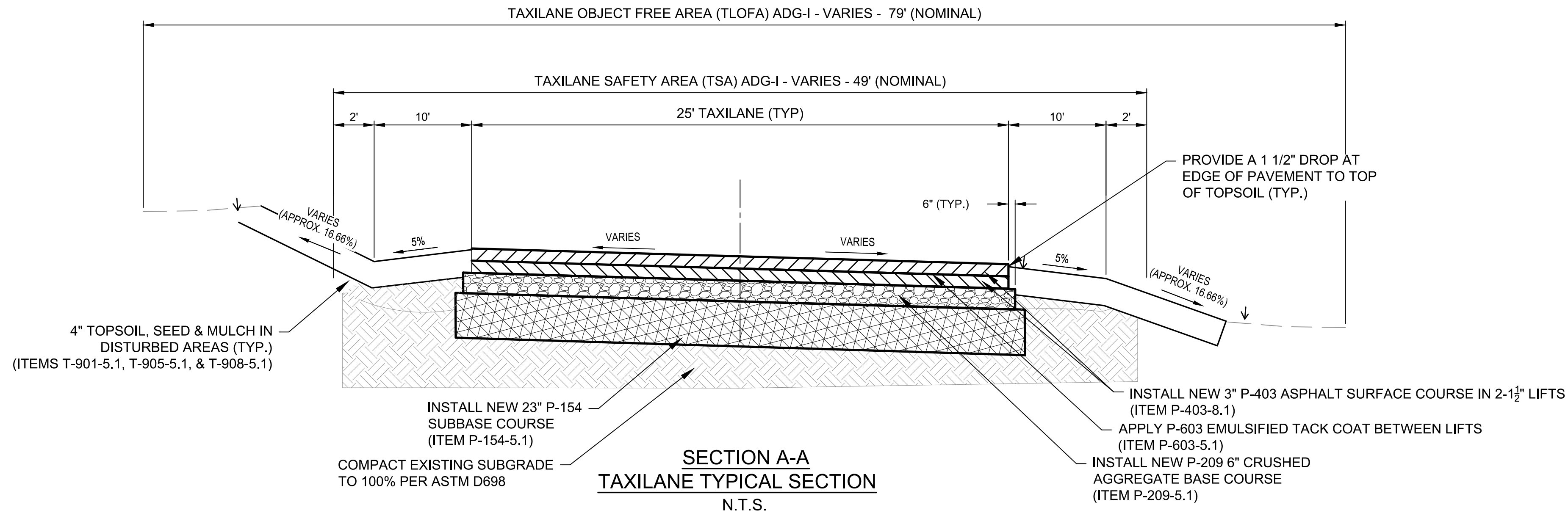
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Drawing Title:  
**LAYOUT  
DETAILS**

Drawing No.:  
**C-011**





Project:

# CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



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t. 207 786 0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

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t. 617.350.7900

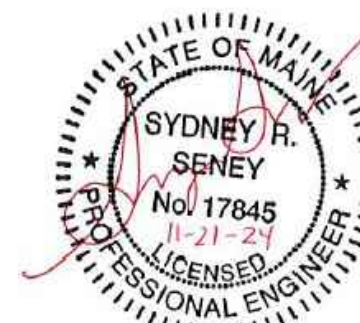
Structural/MEP Engineer:

McFarland Johnson  
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t. 607.723.9421

Civil Engineer:

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Stamp:



## ISSUED FOR BID

| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: NTS

Drawing Title:

## TYPICAL SECTION & PAVEMENT DETAIL

Drawing No.:

# C-012

Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:

  
Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631

 **McFarland Johnson**  
53 Regional Drive  
Concord, NH 03301

 **Fennick  
McCredie  
Architecture**

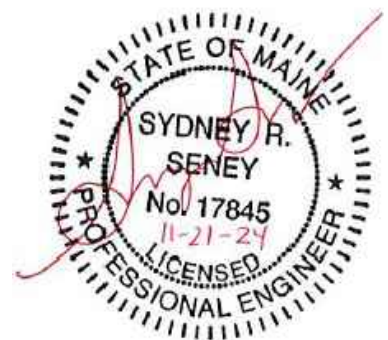
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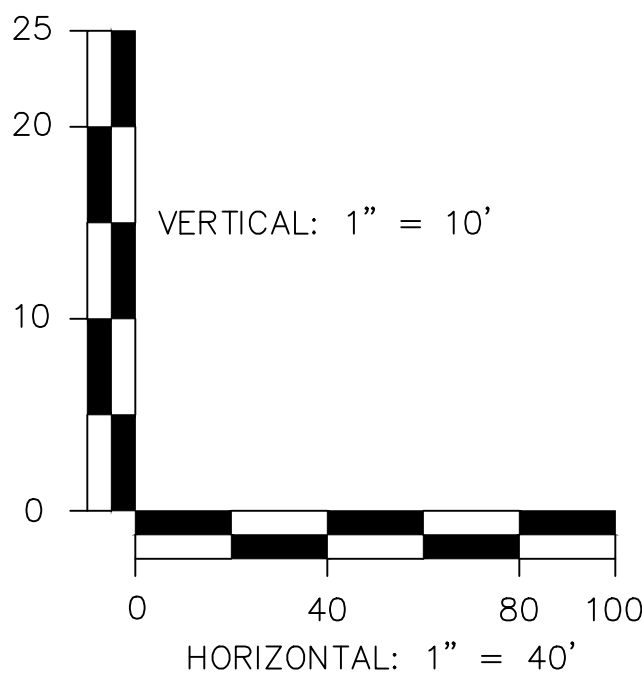
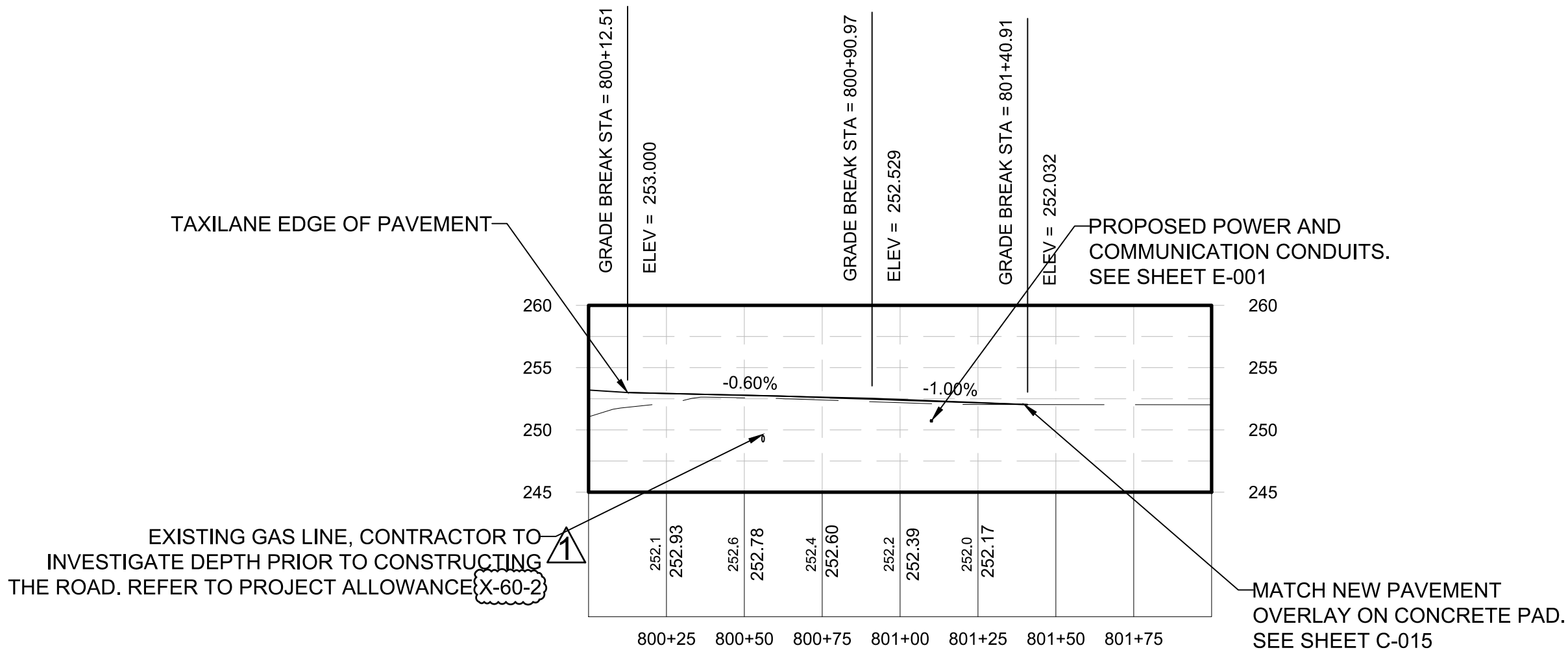
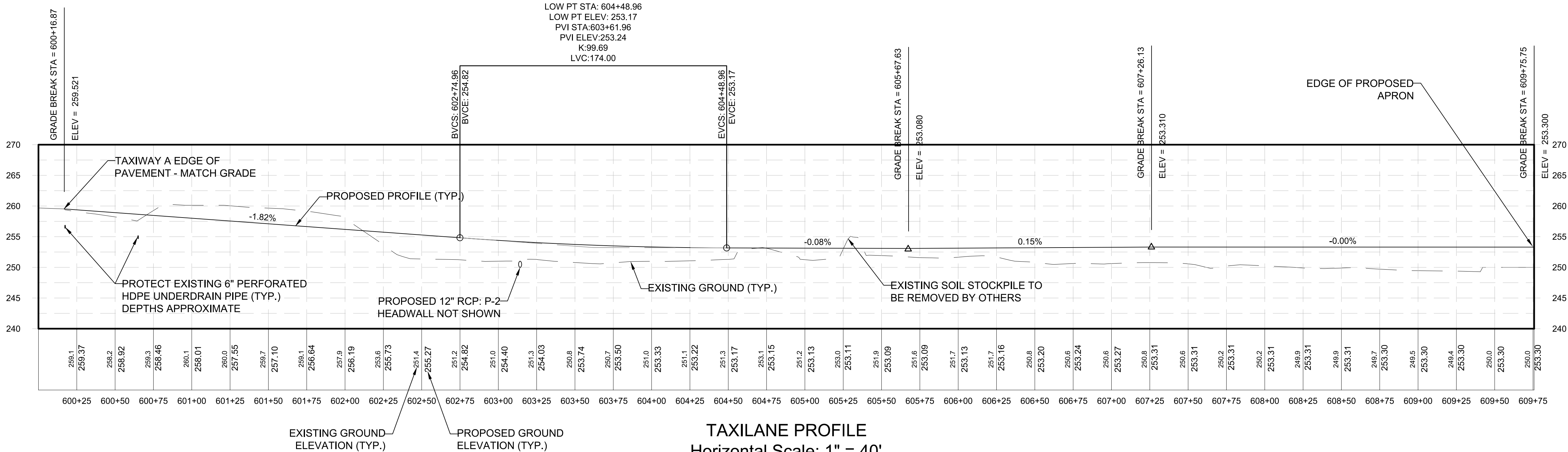
| No. | Date     | Revision      |
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| A   | 12.11.24 | ADDENDUM NO.2 |

|             |                |
|-------------|----------------|
| Job No.:    | 19186.01       |
| Drawn By:   | MRB            |
| Checked By: | JTG            |
| Issue:      | ISSUED FOR BID |
| Date:       | 11/21/2024     |
| Scale:      | AS NOTED       |

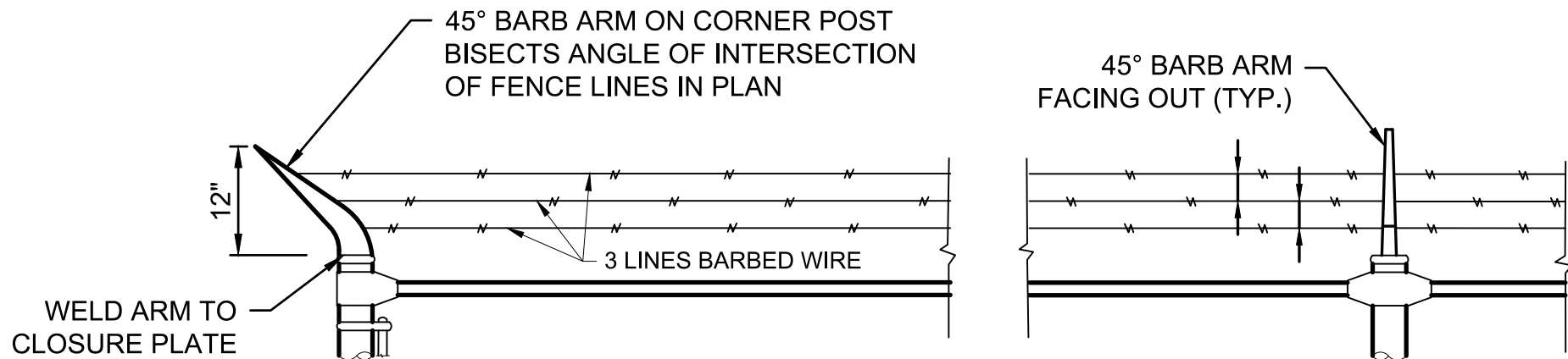
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**PROFILES**

Drawing No.:

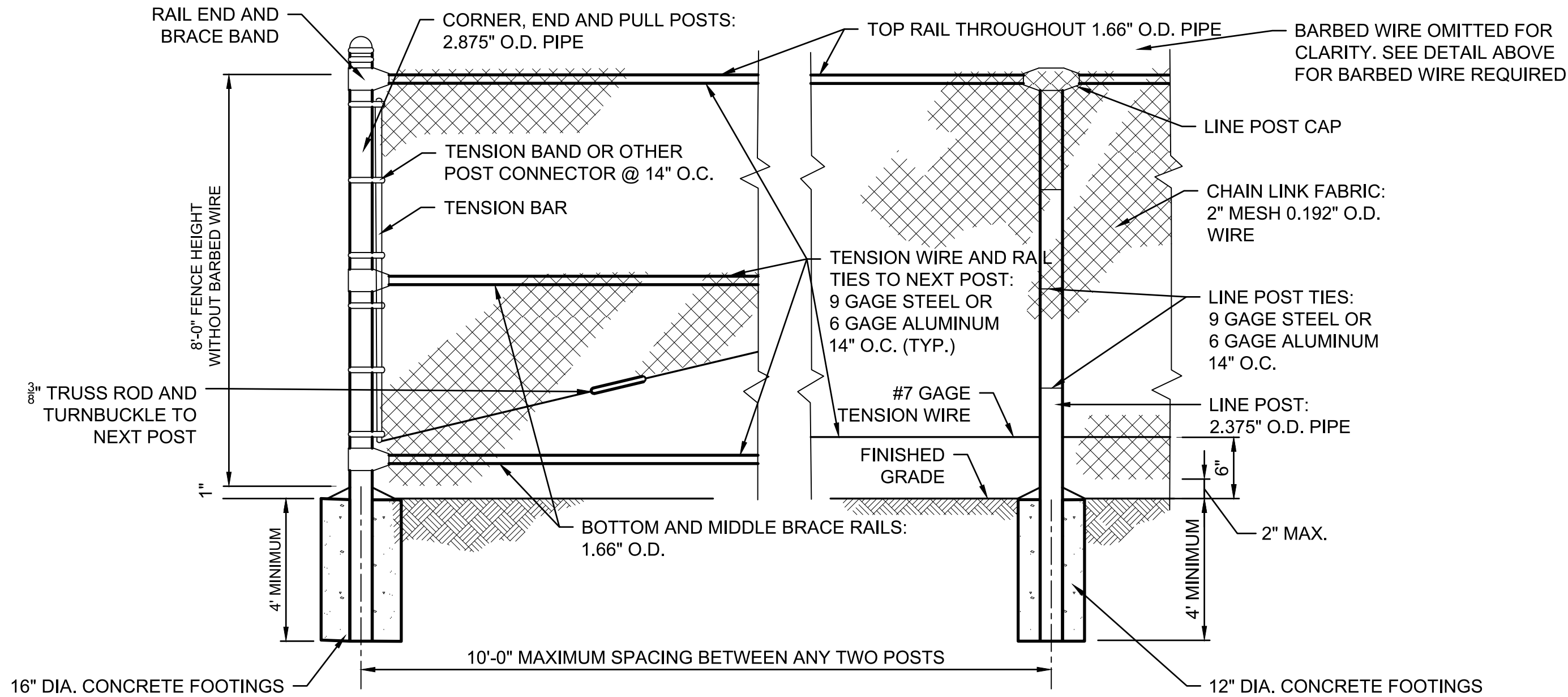
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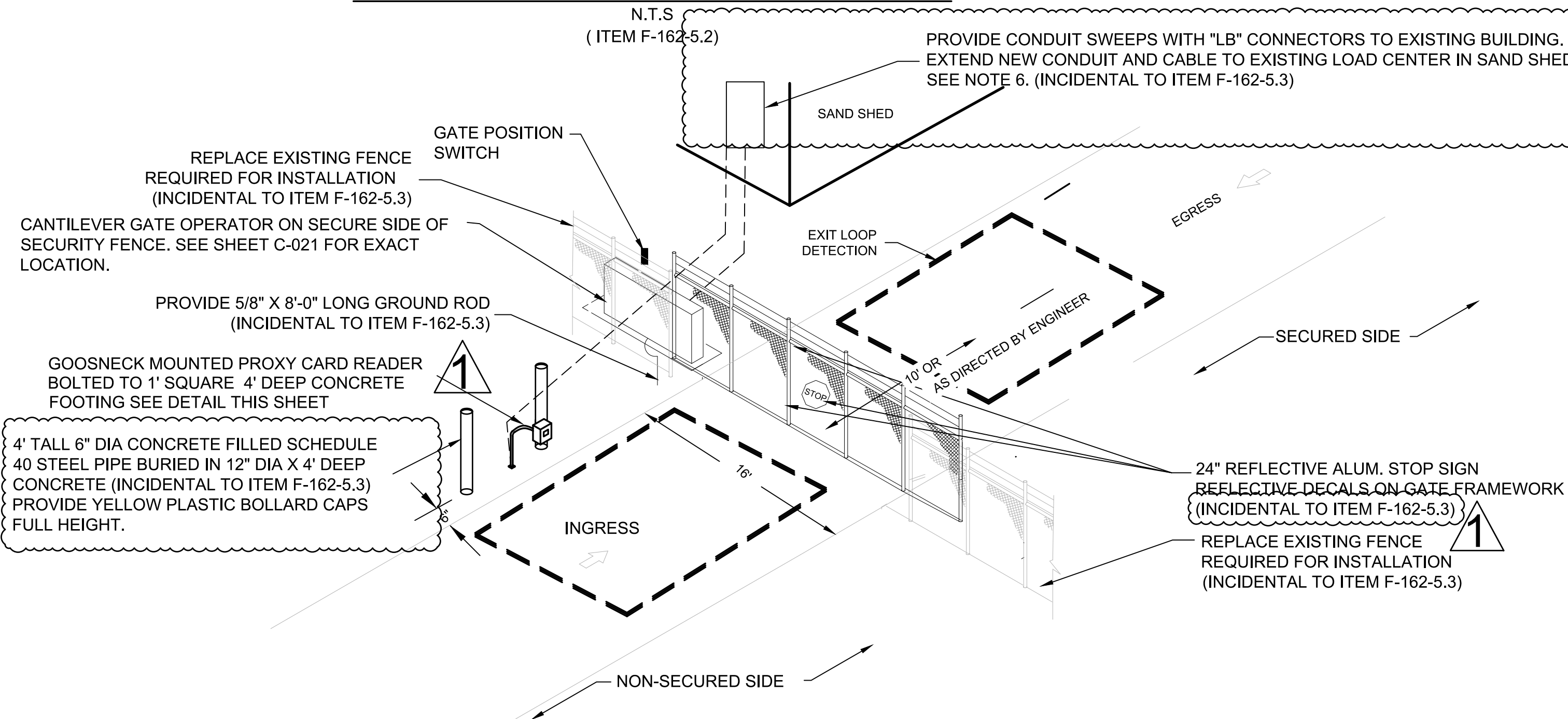
DETAIL WITH BARBWIRE TOP



TERMINAL POST DETAIL

LINE POST DETAIL

8-FT CHAIN LINK FENCE WITH BARBWIRE DETAIL

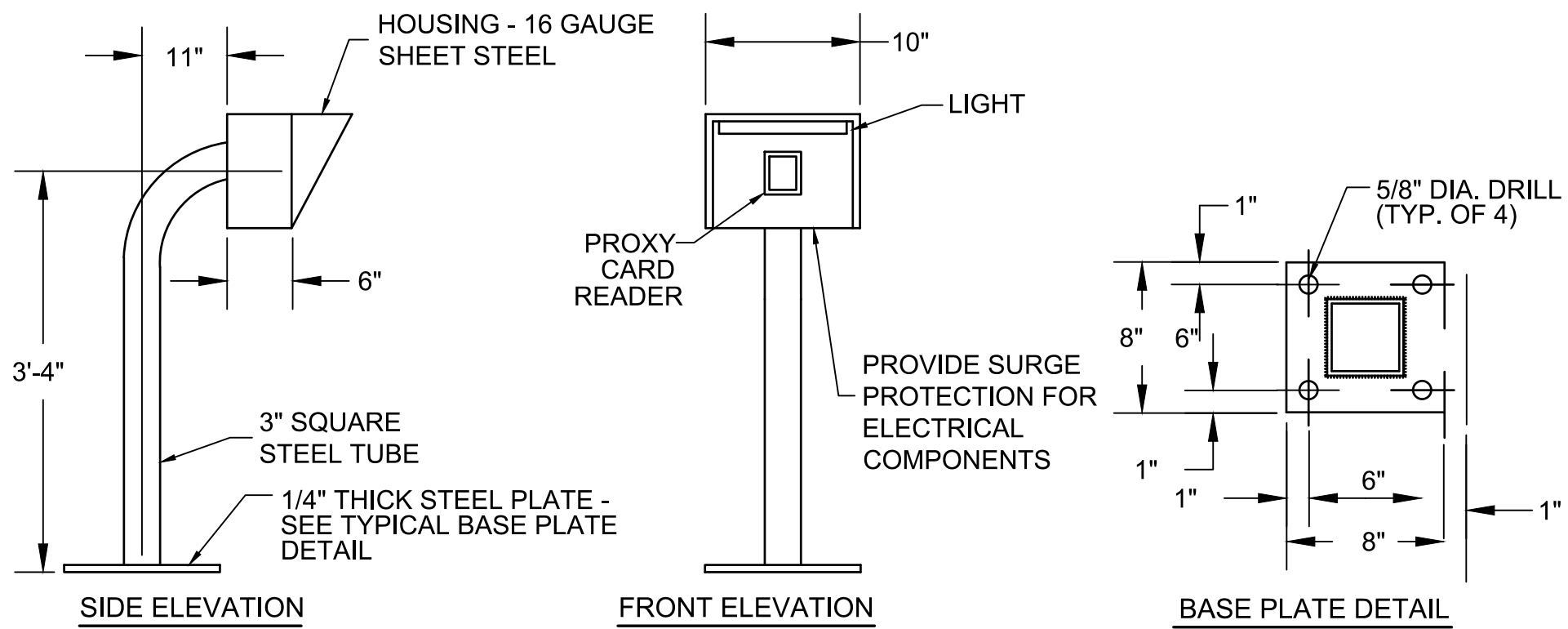


NOTES:

1. ACCESS WILL BE BY PROXY CARD AND EGRESS WILL BE BY EXIT LOOP DETECTION.
2. GATE OPENING IS 16' WIDE. CONTRACTOR SHALL DESIGN LENGTH OF CANTILEVER AS REQUIRED
3. CANTILEVER GATE TO MATCH TYPICAL FENCE SECTION
4. WIRE LOOP DETECTORS TO BE INSTALLED AT INGRESS AND EGRESS. REFER TO DETAIL THIS SHEET
5. ALL WORK IS PART OF ADDITIVE ALTERNATE
6. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL AND COMMUNICATION REQUIREMENTS

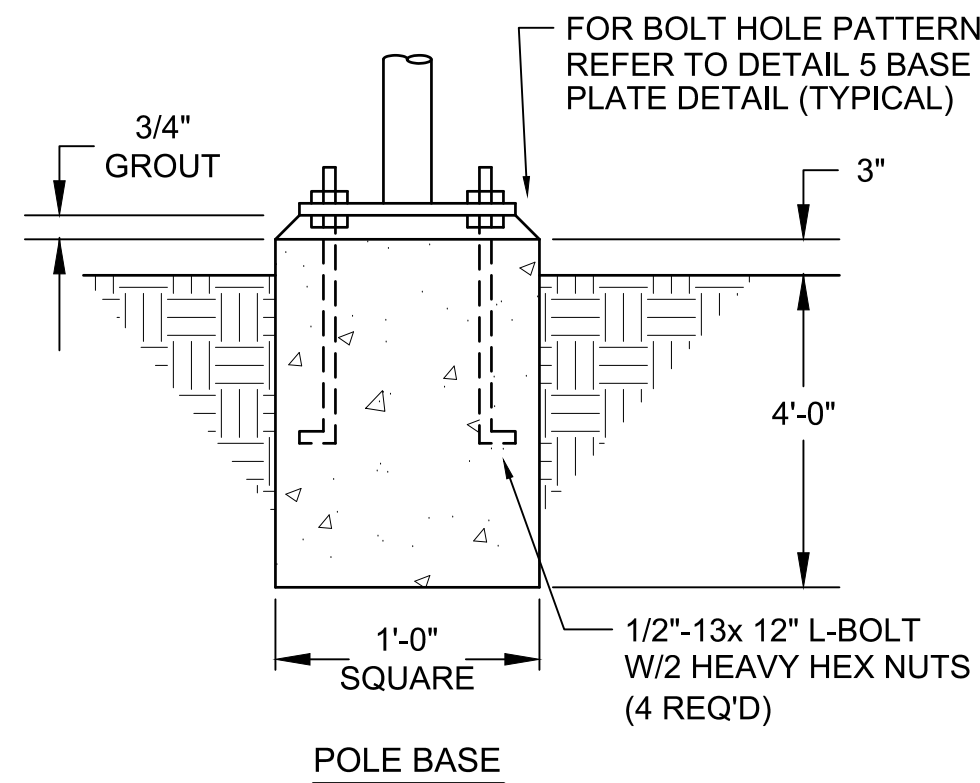
ISOMETRIC OF PROPOSED CANTILEVER SLIDING GATE DETAIL

N.T.S.  
(ITEM F-162-5.3)



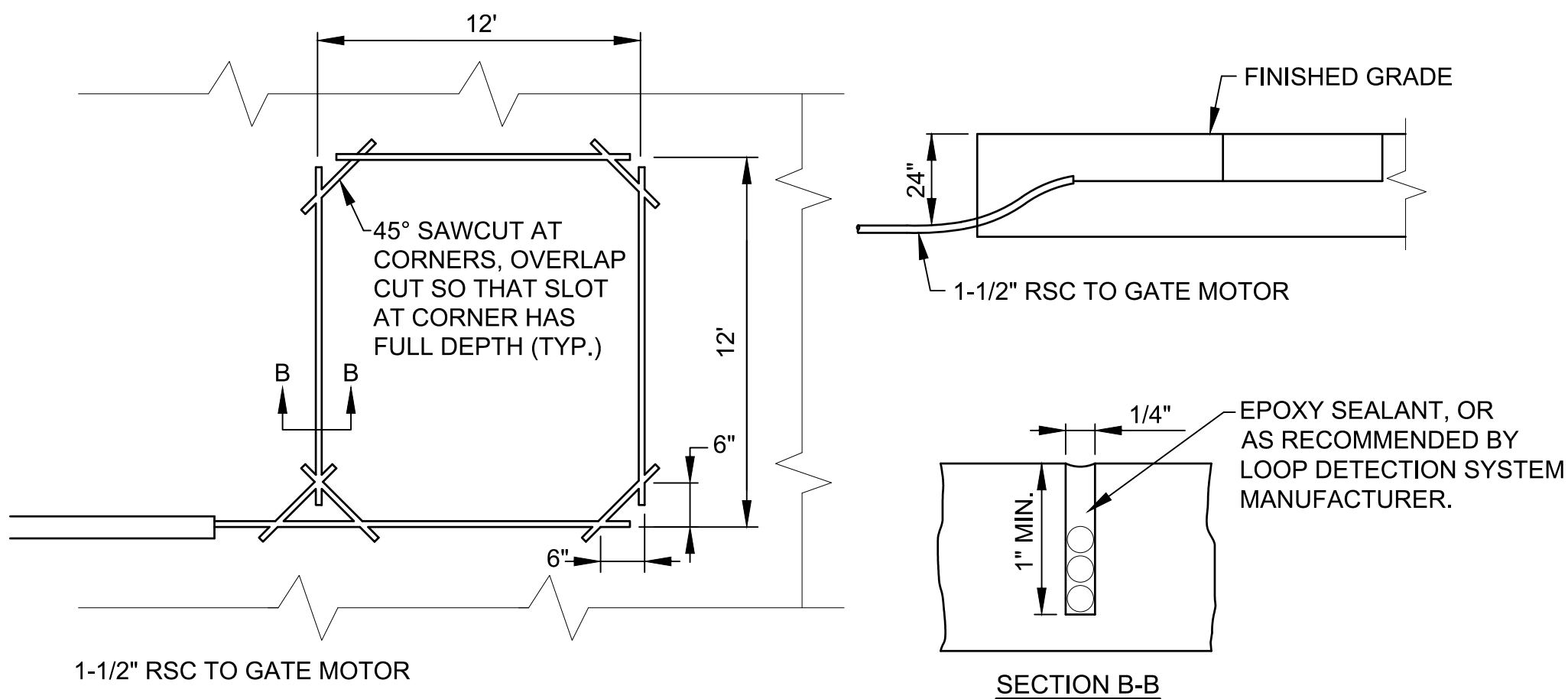
PROXY CARD READER PEDESTAL

N.T.S.  
(INCIDENTAL TO ITEM F-162-5.3)



TYPICAL PEDESTAL FOOTING DETAIL

N.T.S.  
(INCIDENTAL TO ITEM F-162-5.3)



NOTE:

1. USE #14 AWG WIRE PER MANUFACTURERS RECOMMENDATION (3 TURNS)

WIRE LOOP DETECTOR DETAIL

N.T.S.  
(INCIDENTAL TO ITEM F-162-5.3)

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CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

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AUBURN, ME 04210

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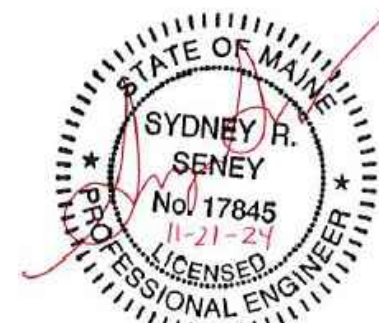
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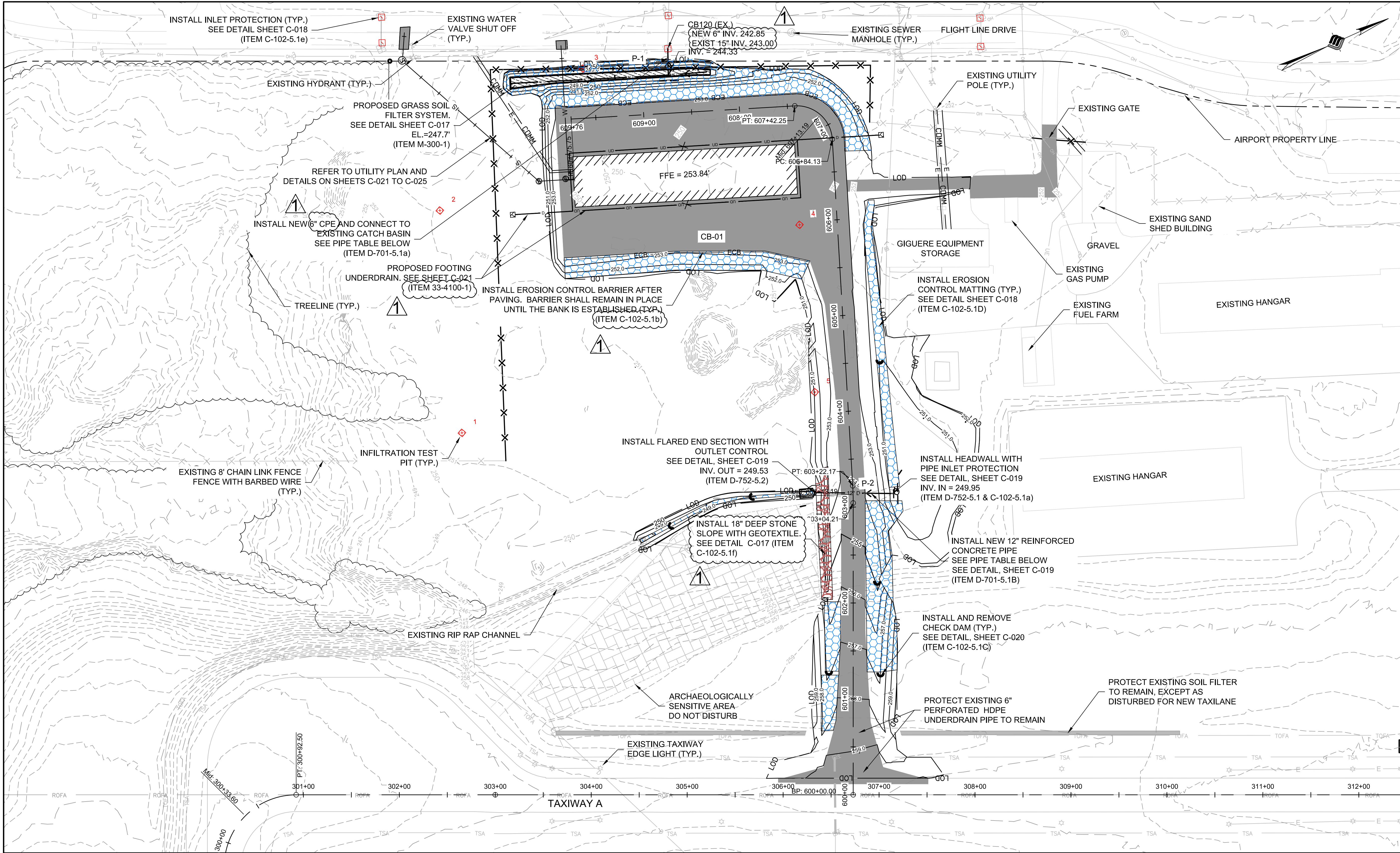
Drawing Title:

FENCE & GATE  
DETAILS

Drawing No.:

C-014





— 435 —

PROPOSED MAJOR CONTOUR

— 434 —

PROPOSED MINOR CONTOUR

— 440 —

EXISTING MAJOR CONTOUR

--- 435 ---

EXISTING MINOR CONTOUR

— LOD —

LIMIT OF DISTURBANCE

— ECB —

EROSION CONTROL BARRIER

— 12" D —

DRAINAGE PIPE

⊠

CATCH BASIN

⊠

INFILTRATION TEST PIT

—

CHECK DAM

⊠

EROSION CONTROL MATTING

⊠

RIP RAP

⊙

SEWER MANHOLE

⊠

PIPE OUTLET PROTECTION

—

PIPE INLET PROTECTION

⊠

INLET PROTECTION

— UD —

6" PERFORATED UNDERDRAIN

— D —

6" SOLID UNDERDRAIN

⊠

FRENCH DRAIN

⊠

INFILTRATION TEST PIT

—

CHECK DAM

⊠

EROSION CONTROL MATTING

⊠

RIP RAP

⊙

SEWER MANHOLE

⊠

PIPE OUTLET PROTECTION

—

PIPE INLET PROTECTION

⊠

INLET PROTECTION

— UD —

6" PERFORATED UNDERDRAIN

— D —

6" SOLID UNDERDRAIN

⊠

FRENCH DRAIN

1

NOTES

1. REFER TO SHEETS C-016 TO C-020 FOR DRAINAGE AND EROSION CONTROL NOTES AND DETAILS.

2. PROPOSED UTILITIES ARE SHOWN FOR REFERENCE ON THIS SHEET. REFER TO SHEET C-021 FOR ALL UTILITY CONNECTIONS AND INSTALLATION NOTES.

3. CORE AND CONNECTION OF 6" CPE TO EX. CB-120 IS INCIDENTAL TO ITEM D-701-5.1a.

PIPE TABLE

| NAME | DESCRIPTION | LENGTH (FT) | SLOPE (%) |
|------|-------------|-------------|-----------|
| P-1  | 6" CPE      | 30.00       | 5.00      |
| P-2  | 12" RCP     | 82.26       | 0.50      |

0

50

120

150

FT

SCALE

KEY PLAN

Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:

Auburn-Lewiston  
Municipal Airport  
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ISSUED FOR BID

No.

Date

Revision

12.11.24

ADDENDUM NO.2

Job No.:

19186.01

Drawn By:

MRB

Checked By:

JTG

Issue:

ISSUED FOR BID

Date:

11/21/2024

Scale:

1" = 50'

Drawing Title:

GRADING,  
DRAINAGE, &  
EROSION  
CONTROL PLAN

Drawing No.:

C-015



EROSION CONTROL SPECIFICATIONS:

1. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH MAINE EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTOR, MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS), AND ANY FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
2. RECOGNIZING THAT IMMEDIATE ATTENTION TO EROSION CONTROL PRACTICES DRAMATICALLY IMPROVES SOIL AND MOISTURE CONSERVATION AND REDUCES NEGATIVE IMPACTS ON WATER QUALITY, THE CONTRACTOR SHALL GIVE HIGH PRIORITY TO THE DAILY AND TIMELY INSTALLATION OF BOTH TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES. IMMEDIATE INSTALLATION OF PRACTICES USUALLY REDUCES LONG TERM COSTS TO THE CONTRACTOR.
3. EROSION CONTROL PRACTICES ARE SHOWN ON THE PLANS WITH RESPECT TO LOCATION AS DETERMINED FROM EXISTING TOPOGRAPHY. CHANGES MAY BE INDICATED IN THE FIELD TO IMPROVE EROSION AND SEDIMENT CONTROL.
4. CONSTRUCTION SHALL PROCEED UNIT BY UNIT TO FACILITATE INSTALLATION OF EROSION CONTROL MEASURES AND THE COMPLETION OF GRADING, SEEDING, AND LANDSCAPING AS SOON AS POSSIBLE WITHIN A UNIT. THIS PROCEDURE SHOULD RESULT IN THE EXPOSURE OF THE SMALLEST PRACTICAL LAND AREA AT ANY ONE TIME.
5. ALL DISTURBED UPLAND AREAS SHALL HAVE TOPSOIL SPREAD (4" MINIMUM) WITHIN TWO WEEKS AND BE LIMED, FERTILIZED, TILLED, SEEDED AND MULCHED. ALL SLOPES 3:1 (1 RISE ON 3 RUN) AND STEEPER SHALL HAVE MULCH HELD IN PLACE WITH BIODEGRADABLE JUTE NETTING OR EROSION CONTROL BLANKET, STAPLED AND STAKED. EACH AREA SHALL BE LIMED, FERTILIZED, PREPARED, SEEDDED AND MULCHED (WITH ANCHORED NETTING OR BLANKET IF REQUIRED) WITHIN 14 DAYS OF FINAL GRADING. WHEN PERMANENT SEEDING CANNOT BE INSTALLED BY SEPTEMBER 15, TEMPORARY SEEDING AND MULCHING OF ALL DISTURBED AREAS SHALL BE INSTALLED IMMEDIATELY AND MAINTAINED IN THAT CONDITION UNTIL PERMANENT PRACTICES CAN BE INSTALLED IN THE FOLLOWING PLANTING SEASON.
6. TEMPORARY STABILIZATION OF DISTURBED UPLAND AREAS (IF REQUIRED):  
SEED BED PREPARATION: TILL FOUR INCHES DEEP MIXING IN FERTILIZER AND GROUND LIMESTONE. APPLY LIMESTONE 2 TONS/ACRE (100#/1,000 SQ. FT.) OR ACCORDING TO SOIL TEST.  
FERTILIZE: UNIFORMLY APPLY NOT LESS THAN 400#/ACRE (14#/1,000 SQ. FT.) OF 10-10-10 OR EQUIVALENT OR AS INDICATED BY SOIL TEST. FORTY PERCENT OF NITROGEN SHOULD BE IN ORGANIC FORM.  
TEMPORARY SEEDING: SPREAD SEED UNIFORMLY. FIRM SOIL BY ROLLING OR PACKING; IF NOT FEASIBLE, THEN RAKE LIGHTLY TO COVER SEEDS.  
MULCHING: MULCH ALL DISTURBED AREAS WITH 2 TONS OF ORGANIC FIBROUS MATERIAL PER ACRE (90-100#/1,000 SQ. FT.). ANCHOR ON ALL SLOPES 3:1 OR STEEPER AND FLATTER SLOPES SUBJECT TO WASH OR WIND BLOWN. USE JUTE (OR OTHER BIODEGRADABLE) NETTING OR BLANKET. STAKING AND STAPLING MAY BE REQUIRED.
7. OVERWINTER STABILIZATION OF DISTURBED UPLAND AREAS:
  - IF CONSTRUCTION OCCURS AFTER NOVEMBER 1ST, ALL DISTURBED AREAS SHOULD BE STABILIZED DAILY IF THE CONSTRUCTION IS ACTIVE. ANY EROSION OR DISCHARGES SHOULD BE REPAIRED IMMEDIATELY.
  - NO MORE THAN 1 ACRE SHOULD BE ACTIVELY WORKED ON AT ANY ONE TIME WITHOUT REGULAR INSPECTION; OR THE EXPOSED AREA SHOULD BE LIMITED TO WHICH CAN BE MULCHED IN ONE DAY. ANY MEASURES NECESSARY TO CONTROL EROSION/SEDIMENTATION SHOULD BE INSTALLED FOR THE CONDITIONS AT THE SITE (SOIL ERODIBILITY, SLOPE, GROUNDWATER, SIZE, WEATHER CONDITIONS, ETC.)
  - FOR OVER-WINTER PROTECTION, A DOUBLE ROW OF SEDIMENT BARRIERS (SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX, ETC.) SHOULD BE PLACED WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE.
  - ALL HAY MULCH SHOULD BE ANCHORED WITH NETTING, ASPHALT EMULSION CHEMICALS, TRACKING OR EROSION CONTROL MIX AFTER NOVEMBER 1ST. THE GROUND SURFACE SHOULD BE INVISIBLE UNDER THE MULCH.
  - LOAM OR SEED IS NOT EFFECTIVE AFTER OCTOBER15. FINISHED AREAS CAN BE MULCHED WITHOUT SEEDING OR WITH DORMANT SEEDING APPLIED AT A 3 TIMES THE SPECIFIED RATE FOR PERMANENT SEEDING. ALL AREAS SEEDED DURING THE WINTER SHOULD BE INSPECTED IN THE SPRING AND REVEGETATED IF THE CATCH IS LESS THAN 75%.
  - ALL VEGETATED AREAS WITH A SLOPE OF 15% OR LESS SHOULD HAVE 90% GRASS COVER BY NOVEMBER 1ST OR SHOULD BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SF, MULCHED WITH HAY AT 75 POUNDS PER 1000 SF, AND ANCHORED WITH NETTING. OR BY NOVEMBER 15 THE AREA SHOULD BE PROTECTED WITH AN EROSION CONTROL BLANKET, EROSION CONTROL MIX, OR HAY AT A RATE OF AT LEAST 150 POUND PER 1000 SF.
  - ALL VEGETATED SLOPES GREATER THAN 15%, SHOULD BE SEEDED AND MULCHED BY SEPTEMBER 1. IF A SLOPE IS NOT STABILIZED BY OCTOBER 15, THE SOIL MAY BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SF AND PROTECTED WITH EROSION CONTROL BLANKETS. IF THE RYE FAILS TO GROW THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 15 THE SLOPE SHOULD BE PROTECTED WITH AN EROSION CONTROL BLANKET, EROSION CONTROL MIX, OR RIPRAP.
  - ALL GRASS LINED DITCHES AND CHANNELS SHOULD BE CONSTRUCTED AND STABILIZED BY SEPTEMBER 1. IF A DITCH OR CHANNEL IS NOT SUFFICIENTLY GRASSED OVER (75% COVER) BY NOVEMBER 15TH, THE DITCH SHOULD BE LINES WITH STONE RIPRAP. THE DITCH WILL NEED TO BE OVER-EXCAVATED TO ACCOMMODATE THE THICKNESS OF THE RIPRAP.
  - SOIL STOCKPILES SHOULD BE MULCHED FOR WINTER PROTECTION WITH HAY AT TWICE THE NORMAL RATE OR WITH A FOUR INCH LAYER OF "EROSION CONTROL MIX". STOCKPILES SHOULD NOT BE LEFT OVER WINTER (EVEN MULCHED) IF WITHIN 100 FEET FROM A PROTECTED RESOURCE.
  - WINTER STABILIZATION QUANTITY IS INCLUDED IN T-901-5.1 & T-908-5.1 QUANTITIES.
- SEED BED PREPARATION: TOPSOIL (SANDY TOPSOIL, TOPSOIL, OR SILT TOPSOIL), FRIABLE, FREE OF TREE ROOTS, WEEDS, STONES MORE THAN 1-1/2 INCHES IN DIAMETER OR LENGTH SHALL BE PLACED OVER ALL DISTURBED AREAS IN A 4" MINIMUM (REFER TO PLANS) THICK LAYER.  
TOPSOIL: TOPSOIL SHALL BE FREE OF HERBICIDES AND TOXIC MATERIALS. TILL THREE TO FIVE INCHES DEEP MIXING IN THE FERTILIZER AND LIME. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TEST AND CURRENT EXTENSION SERVICE RECOMMENDATIONS. IN ABSENCE OF A SOIL TEST, APPLY LIME (A PH OF 5.5-6.0 IS DESIRED) AT A RATE OF 2.5 TONS PER ACRE AND 10-20 ANALYSIS FERTILIZER AT A RATE OF 500# PER ACRE (40% OF NITROGEN TO BE IN AN ORGANIC OR

SLOW-RELEASE FORM).

SEEDING:

| A. MEDOT SEED MIX METHOD #1 - PARK MIXTURE | SPECIFICATION |
|--------------------------------------------|---------------|
| CREEPING RED FESCUE                        | 45% +/- 4%    |
| KENTUCKY BLUEGRASS                         | 25% +/- 4%    |
| CHEWINGS FESCUE                            | 15% +/- 4%    |
| PERENNIAL RYEGRASS                         | 10% +/- 2%    |
| ANNUAL RYEGRASS                            | 5% +/- 2%     |

- SEEDING METHODS: SEEDING SHOULD BE PERFORMED BY THE FOLLOWING METHOD:  
HYDROSEEDING WITH SUBSEQUENT TRACKING.  
TRACKING THE SEEDING WITH SMALL TRACK CONSTRUCTION EQUIPMENT SHOULD BE ORIENTED UP AND DOWN THE SLOPE.  
MULCHING: MULCH ALL DISTURBED AREAS WITH 2 TONS OF HAY OR STRAW PER ACRE (90 - 100#/1,000 SQ. FT.).  
ANCHOR ON ALL SLOPES 3:1 OR STEEPER AND ON FLATTER SLOPES SUBJECT TO WASH (WATERWAYS AND/OR WINDBLOWN) USING JUTE (OR OTHER BIODEGRADABLE) NETTING OR EROSION CONTROL BLANKET, STAKING, AND STAPLING.  
MAINTENANCE: INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEED IMMEDIATELY. CONDUCT A FOLLOW-UP SURVEY AND REPLACE FAILED PLANTS WHERE NECESSARY. IF VEGETATIVE COVER IS INADEQUATE TO PREVENT EROSION, OVERSEED AND FERTILIZE IN ACCORDANCE WITH SOIL TEST RESULTS. IF A STAND HAS LESS THAN 40% COVER, REEVALUATE CHOICE OF PLANT MATERIALS AND QUANTITIES OF LIME AND FERTILIZER. RE-ESTABLISH THE STAND FOLLOWING SEEDBED PREPARATION AND SEEDING RECOMMENDATIONS, OMITTING LIME AND FERTILIZER IN THE ABSENCE OF SOIL TEST RESULTS. IF THE SEASON PREVENTS RESEOWING, MULCH OR JUTE NETTING IS AN EFFECTIVE TEMPORARY COVER. SEEDED AREAS SHOULD BE FERTILIZED DURING THE SECOND GROWING SEASON. LIME AND FERTILIZE THEREAFTER AT PERIODIC INTERVALS, AS NEEDED.
8. TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED.
9. MAINTENANCE: DURING THE CONSTRUCTION PERIOD AND UNTIL SUCH TIME AS THE LONG TERM VEGETATION IS ESTABLISHED TO A 70% VEGETATIVE STAND.  
A. DISTURBED AREAS WILL BE FERTILIZED AND RESEEDED.  
B. CATCH BASINS AND FILTER BAGS WILL BE CHECKED AND CLEANED AS NECESSARY.  
C. DRAINAGE AND GRASS TREATMENT SWALES SHALL BE CHECKED FREQUENTLY AND CLEANED AS REQUIRED.  
D. THE SILT FENCES WILL BE CHECKED ON A REGULAR BASIS AND REPAIRED AS NECESSARY TO CORRECT ANY DAMAGE, DETERIORATION, AND SHORT-CIRCUITING.
10. REFER TO "GRADING PLANS" FOR THIS PROJECT PRIOR TO ANY SITE DISTURBANCE.
11. INSPECTIONS: THE CONTRACTOR SHALL INSPECT ON A REGULAR BASIS ALL EROSION CONTROL PRACTICES AS WELL AS THE MAINTENANCE OF THE EROSION CONTROL COMPONENTS. REFER TO CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. EROSION CONTROL PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
12. THE MAXIMUM AMOUNT OF AREA TO BE DISTURBED AND UNSTABILIZED SHALL BE 5 ACRES AT ANY ONE TIME.
13. THE MAXIMUM AMOUNT OF TIME ANY AREA MAY BE DISTURBED WITHOUT STABILIZATION SHALL BE 14 DAYS.
14. FERTILIZER SHALL NOT BE APPLIED TO THE SOIL FILTER OR AREAS THAT DISCHARGE TO THE SOIL FILTER.

- EROSION CONTROL INSPECTION AND MAINTENANCE NOTES:
1. THE CONTRACTOR IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION.
2. CONSTRUCTION INSPECTIONS SHALL BE PERFORMED AT LEAST ONCE A WEEK AND BEFORE AND AFTER EACH SIGNIFICANT RAINFALL. A SIGNIFICANT RAINFALL EVENT IS MORE THAN ½" OF RAINFALL IN A 24-HOUR PERIOD.
3. IF ANY CORRECTIVE ACTION IS REQUIRED, IS SHALL BEGIN BY THE END OF THE NEXT WORKDAY AND SHALL BE COMPLETED WITHIN SEVEN DAYS OR BEFORE THE NEXT STORM EVENT, WHICHEVER COMES FIRST.
4. THE CONTRACTOR SHALL DOCUMENT AND MAINTAIN RECORD OF FORMS DURING CONSTRUCTION. DOCUMENTATION OF CORRECTIVE ACTIONS DURING CONSTRUCTION SHALL BE MAINTAINED WITH THE PROPER INSPECTION FORMS AND FOR A MINIMUM OF THREE YEARS AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.
5. ALL CONSTRUCTION INSPECTIONS SHALL BE CONDUCTED BY SOMEONE WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING STANDARDS AND CONDITIONS IN THE PERMIT.
6. THE SCOPE OF CONSTRUCTION INSPECTIONS SHALL INCLUDE DISTURBED AND IMPERVIOUS AREAS, MATERIAL STORAGE AREAS, AND VEHICLE ACCESS POINTS IN ADDITION TO ANY EROSION AND SEDIMENT CONTROL MEASURES.

SITE WORK CONSTRUCTION SEQUENCE

1. PLACE EROSION CONTROL SEDIMENT BARRIER AT ALL LOCATIONS INDICATED ON PLAN OR AT OTHER LOCATIONS AS DETERMINED BY ENGINEER AND PLACE STABILIZED CONSTRUCTION ENTRANCE. INSTALL OTHER TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES AS EARTHWORK PROCEEDS.

| TABLE 1 - TEMPORARY UPLAND STABILIZATION<br>PLANT SELECTION AND SEEDING RATES<br>(INCIDENTAL TO T-901-5.1 & T-908-5.1) |                        |                 |                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIES                                                                                                                | PER ACRE               | PER 1000 SQ.FT. | REMARKS                                                                                                                                                                                                                                                   |
| WINTER RYE                                                                                                             | 120 LBS.               | 3 LBS.          | BEST FOR FALL SEEDING. SEED AUGUST 15 TO OCTOBER 15 FOR BEST COVER. SEED TO DEPTH OF ONE TO 1 1/2 INCHES.                                                                                                                                                 |
| OATS                                                                                                                   | 2 1/2 BU<br>OR 80 LBS. | 2 LBS.          | BEST FOR SPRING SEEDINGS. SEED BETWEEN APRIL 1 TO JULY 1 OR AUGUST 15 TO SEPTEMBER 15. SEED TO DEPTH OF ONE INCH.                                                                                                                                         |
| ANNUAL RYE                                                                                                             | 40 LBS.                | 1 LB.           | GROWS QUICKLY. BUT IS OF SHORT GRASS DURATION USE WHERE APPEARANCES ARE IMPORTANT. COVER SEED WITH NO MORE THAN 1/4 INCH OF SOIL. WITH MULCH, SEEDING MAY BE DONE THROUGHOUT GROWING SEASON. SEED BETWEEN APRIL 1 AND JUNE 1 OR AUGUST 15 & SEPTEMBER 15. |
| FOXTAIL MILLET                                                                                                         | 30 LBS.                | 0.7 LB.         | MAY 1 TO JUNE 30. SEED TO DEPTH OF 1/2 TO 3/4 INCH.                                                                                                                                                                                                       |

2. EXCAVATE NECESSARY AREAS AS SHOWN ON PLANS. CONTRACTOR SHALL LEGALLY DISPOSE OF ALL SURPLUS UNCLASSIFIED EXCAVATION AT AN APPROVED LOCATION NOTED IN THE SPECIFICATIONS.
3. REMOVE EXISTING PAVEMENT AND SUBBASE AS REQUIRED.
4. INSTALL BUILDING
5. INSTALL UTILITIES.
6. INSTALL NEW BASE.
7. PAVE NEW AREAS.
8. GRADE AREA AS SHOWN ON PLANS AND LOAM, FERTILIZE AND SEED AREAS TO ESTABLISH VEGETATION.
9. INSPECT ALL DISTURBED AREAS ON A DAILY BASIS. FOLLOWING THIS DAILY INSPECTION, INSTALL AS REQUIRED ANY AND ALL TEMPORARY DRAINAGE, EROSION, AND SEDIMENT CONTROL PRACTICES AS INDICATED, I.E., DIVERSION CHANNELS, BERMS, DRAINS, DITCHES, STONE DIKES, SILT FENCES, SEED AND MULCH OR OTHER PRACTICES AS RECOMMENDED AND SPECIFIED IN THE "MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES".
10. CLEAN AND RESTORE SILT DESTINATION SITES. REMOVE OTHER EROSION CONTROL PRACTICES ON A TIMELY BASIS AS PERMANENT MEASURES TAKE HOLD. SPOT FERTILIZE, SEED, AND MULCH AS REQUIRED.
11. INSPECT AND MAINTAIN GRADING, EROSION CONTROL AND SEDIMENT CONTROL PRACTICES WEEKLY AND IMMEDIATELY AFTER ALL SUBSTANTIAL STORMS.

GRASS SOIL FILTER CONSTRUCTION OVERSIGHT NOTES:

1. AUBURN-LEWISTON AIRPORT AUTHORITY WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE STORMWATER STRUCTURE'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL THE STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE CITY IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OF SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.
2. CONSTRUCTION SEQUENCE: THE GRASSED SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATIVE COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
3. COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND STONE BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST TWO (2) LIFTS OF NINE (9)-INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
4. CONSTRUCTION OVERSIGHT: INSPECTION BY THE PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
  - AFTER THE GRAVEL DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
  - AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
  - AFTER 1 YEAR TO INSPECT THE HEALTH OF THE VEGETATION AND MAKE CORRECTIONS
5. MATERIAL TESTING: ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.
6. SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF THE FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
  - SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE GRAVEL BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE (3) DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE FOR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
  - PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996a) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY A HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE A 10% DRY WEIGHT OF ORGANIC MATTER.
  - PERFORM PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF THE MAXIMUM DRY DENSITY BASED ON ASTM D698.
7. LOT GRADING: INSPECTIONS BY A PROFESSIONAL ENGINEER WILL CONSIST OF A VISIT TO THE SITE PRIOR TO CONSTRUCTION (PRE-CONSTRUCTION MEETING) TO CONSULT THE EARTHWORK CONTRACTOR AND A POST CONSTRUCTION MEETING (FINAL INSPECTION) TO CONFIRM GRADING ON THE LOT TO ENSURE RUNOFF IS DIRECTED ACCORDING TO PLANS AND TO OVERSEE THE RE-STABILIZATION OF THE LOT INTO A VEGETATIVE COVER.
8. DEWATERING: A DEWATERING PLAN IS NEEDED TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION

MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE COLLECTED WATER NEEDS TREATMENT AND A DISCHARGE POINT THAT WILL NOT CAUSE DOWNGRAIENT EROSION AND OFFSITE SEDIMENTATION OR WITHIN A RESOURCE.

EROSION CONTROL MIX:

EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

COMPOSITION  
EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:

- THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100% DRY WEIGHT BASIS.
- PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70% MAXIMUM OF 85% PASSING A 0.75" SCREEN.
- THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
- LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
- SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.

THE PH SHOULD FALL BETWEEN 5.0 AND 8.0.

EROSION CONTROL MIX BERMS SEDIMENT BARRIER INSTALLATION:  
THE BARRIER MUST BE PLACED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BARRIER THROUGH THE GRASS BLADES OR PLANT STEMS.  
ON SLOPES LESS THAN 5% OR AT THE BOTTOM OF STEEPER SLOPES (2:1) UP TO 20' LONG, THE BARRIER MUST BE A MINIMUM OF 12" HIGH, AS MEASURED ON THE UPHILL SIDE OF THE BARRIER, AND A MINIMUM OF TWO FEET WIDE. ON LONGER OR STEEPER SLOPES, THE BARRIER SHOULD BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.  
FROZEN GROUND, OUTCROPS OF BEDROCK AND VERY ROOTED FORESTED AREAS ARE LOCATIONS WHERE BERMS OF EROSION CONTROL MIX ARE MOST PRACTICAL AND EFFECTIVE. OTHER BMPS SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT AREA MORE THAN 50' FROM TOP TO BOTTOM (I.E. A LARGE UP GRADIENT CONTRIBUTING WATERSHED).

OVERWINTER EROSION CONTROL MIX INSTALLATION

- CAN BE INSTALLED ON FROZEN GROUND, FORESTED AREAS, AND ON CUT AND FILL SLOPES.
- A THICKNESS OF 2 INCHES ON 3:1 SLOPES OR LESS SHALL BE APPLIED, AN ADDITIONAL ½ INCH PER 20 FEET OF SLOPE OR UP TO 4 INCHES FOR A 100 FOOT SLOPE.
- ON SLOPES GREATER THAN 3:1, 4 INCHES OR MORE OF MATERIAL IS RECOMMENDED; AND IF SLOPES ARE GREATER THAN 60 FEET LONG, 5 INCHES ARE NEEDED.
- EROSION CONTROL MIX IS NOT RECOMMENDED ON SLOPES GREATER THAN 1:1.
- THE MIX MUST BE DISTRIBUTED EVENLY WITH A HYDRAULIC BUCKET, PNEUMATIC BLOWER, OR BY HAND.

OTHER REINFORCEMENT BMP'S (I.E. RIPRAP) SHOULD BE USED ON SLOPES WITH GROUNDWATER SEEPAGE, WITHIN DRAINAGE CHANNELS AND THEIR OUTLETS, OR IN GULLIES.

Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
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53 Regional Drive  
Concord, NH 03301



Team:

Architect:

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Structural/MEP Engineer:

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Civil Engineer:

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t. 607.723.9421

Stamp:



ISSUED FOR BID

| No. | Date     | Revision      |
|-----|----------|---------------|
| A   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01  
Drawn By: MRB  
Checked By: JTG  
Issue: ISSUED FOR BID  
Date: 11/21/2024  
Scale: NTS

Drawing Title:  
DRAINAGE & EC  
NOTES &  
DETAILS  
(SHEET 1 OF 5)

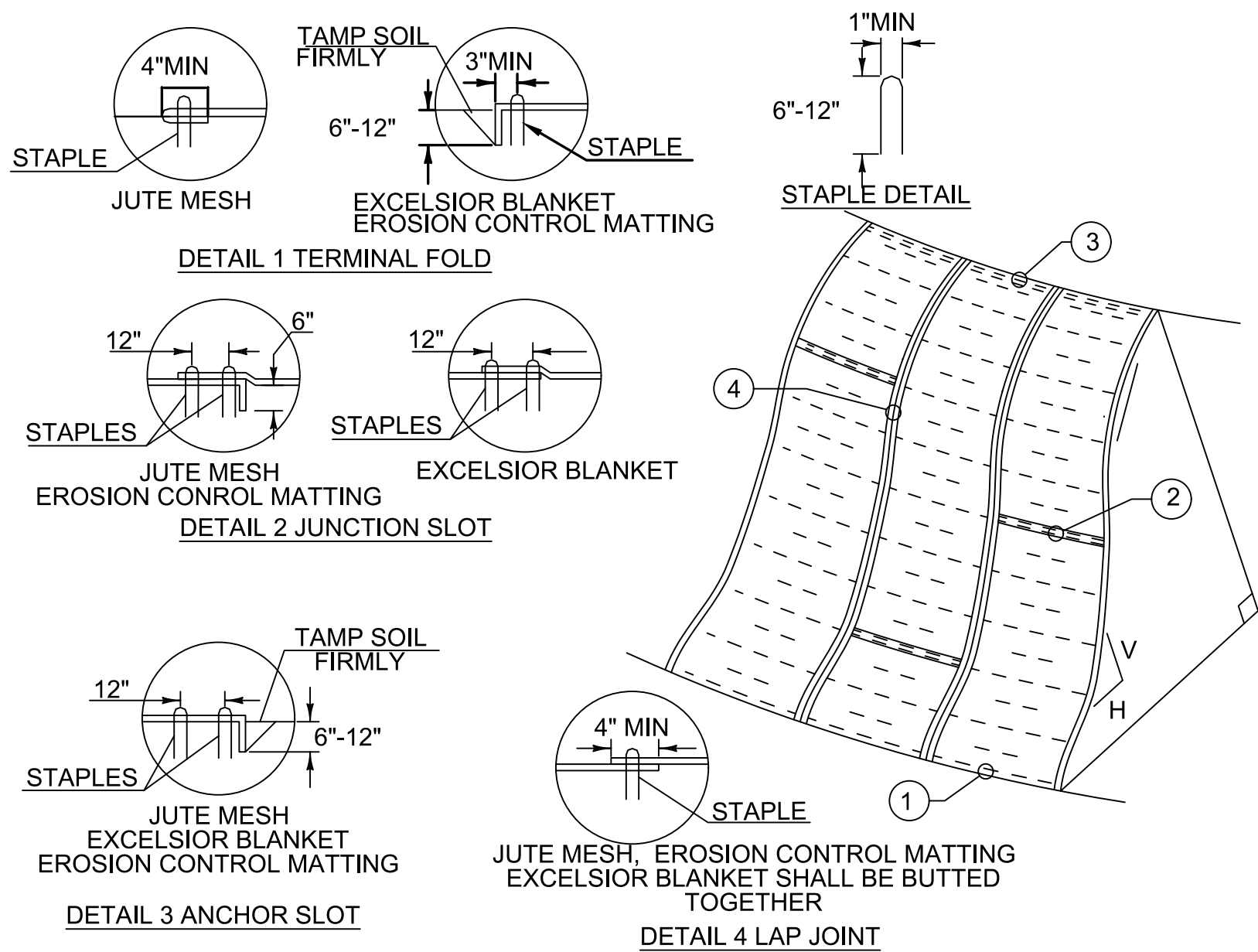
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C-016







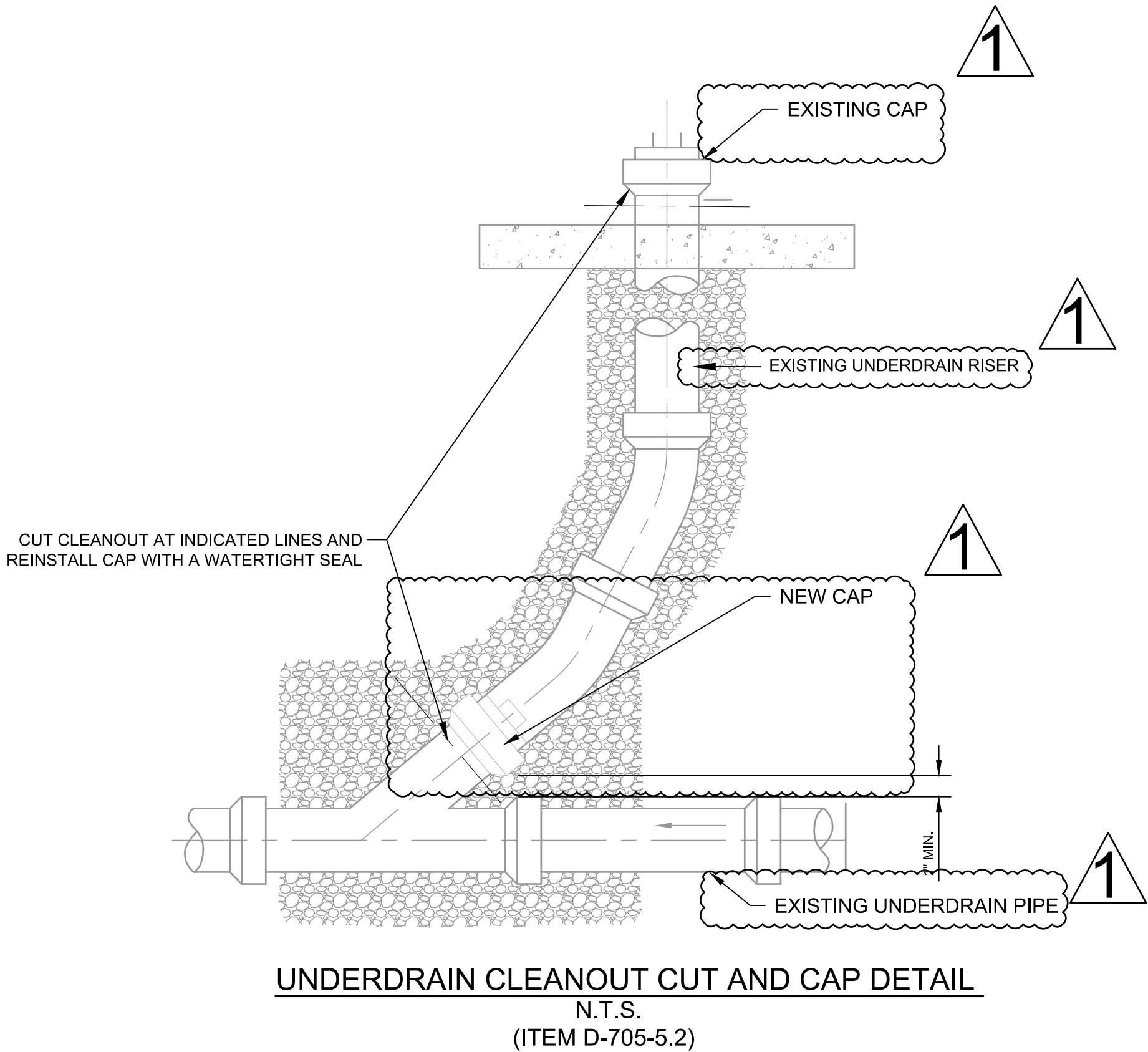


CONSTRUCTION SPECIFICATION

1. APPLY TO SLOPES GREATER THAN 4H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.
6. ONLY NATURAL FIBER MATTING SHALL BE USED.

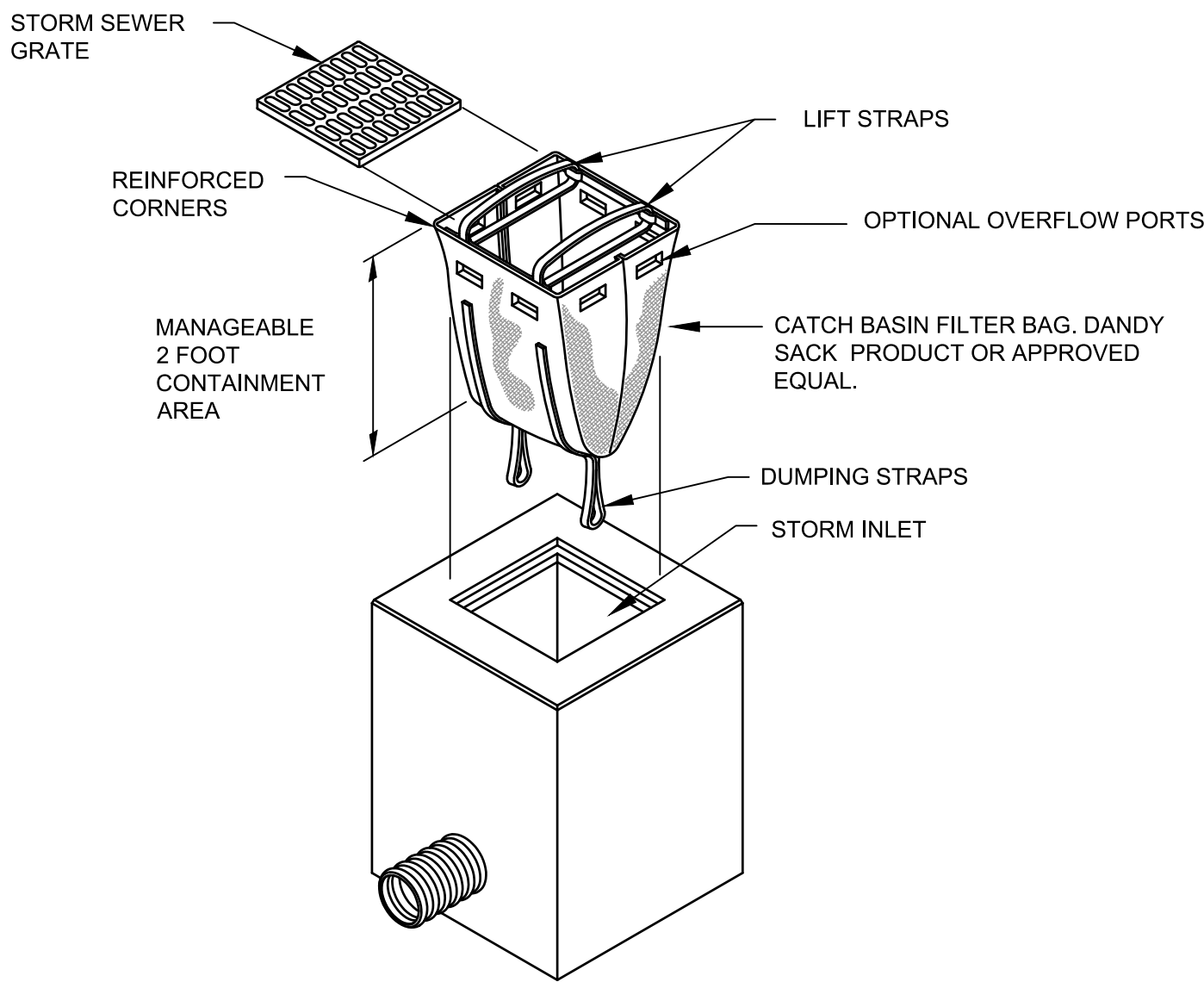
EROSION CONTROL MATTING-SIDE SLOPE

N.T.S.  
(BASE BID ITEM C-102-5.1D)



GENERAL DRAINAGE NOTES:

1. ALL EXCAVATION IS INCIDENTAL TO EACH PAY ITEM.



NOTES:

1. CONTRACTOR TO FIELD VERIFY SHAPE OF OPENING PRIOR TO ORDERING. SQUARE SHAPE IS SHOWN FOR REFERENCE.

INLET PROTECTION - CATCH BASIN FILTER BAG

N.T.S.  
(ITEM C-102-5.1e)

Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631



McFarland Johnson

53 Regional Drive  
Concord, NH 03301



Fennick  
McCredie  
Architecture

Team:

Architect:

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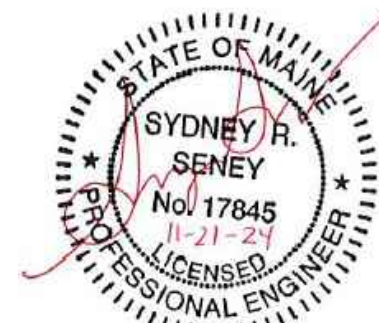
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Civil Engineer:

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Stamp:



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| No. | Date     | Revision      |
|-----|----------|---------------|
| A   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: NTS

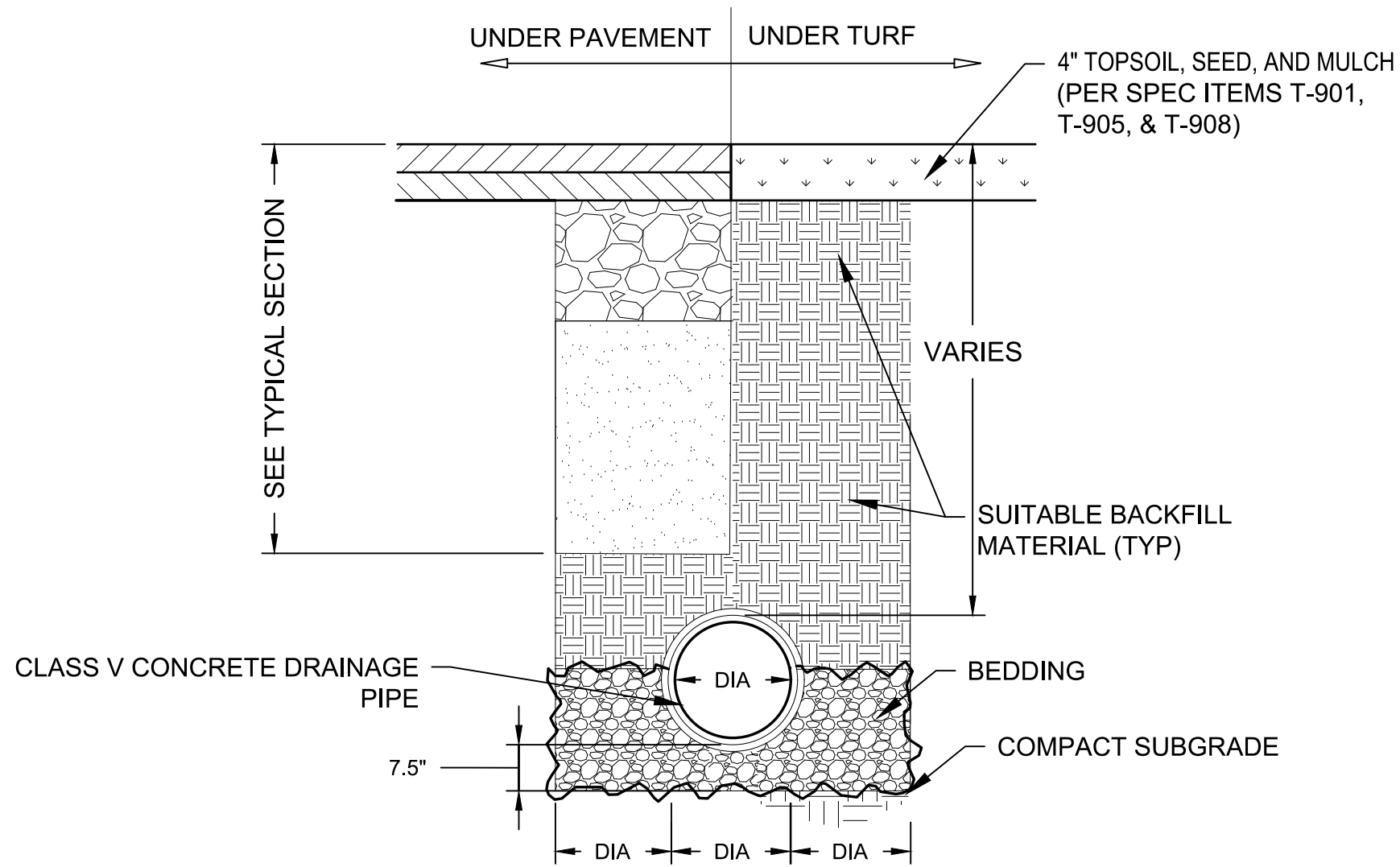
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DRAINAGE & EC  
NOTES &  
DETAILS  
(SHEET 3 OF 5)

Drawing No.:

C-018





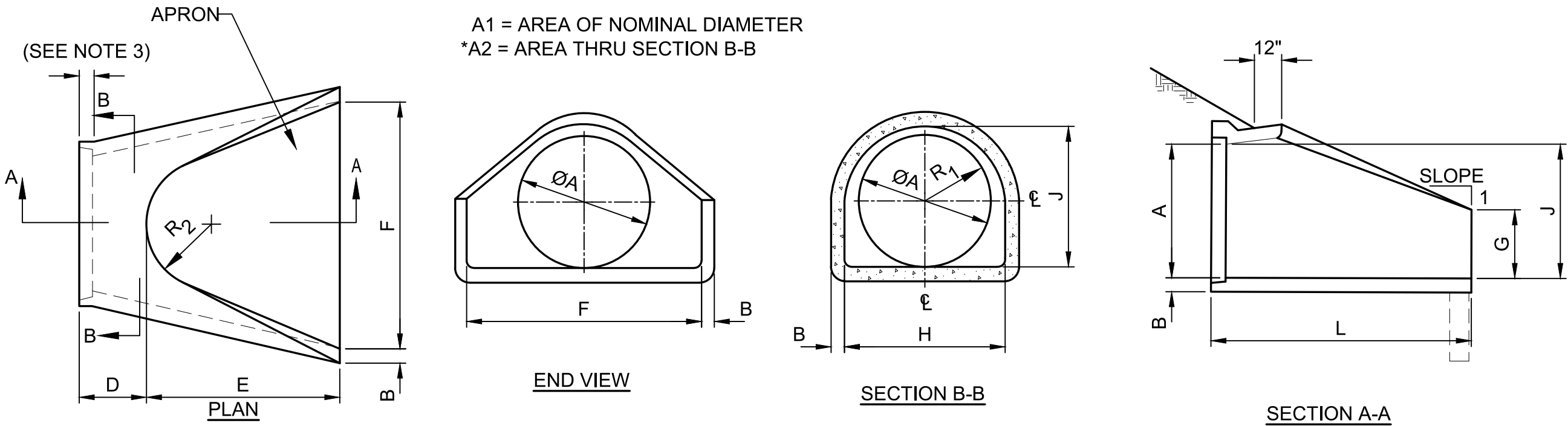
NOTES:

- BEDDING SHALL BE MAINEDOT MATERIAL ITEM 703.11.
- CONTRACTOR SHALL SHORE TRENCH SIDES AS REQUIRED.
- CONTRACTOR SHALL DEWATER TRENCH EXCAVATION AS REQUIRED USING MAINEDEP B.M.P.
- CONTRACTOR SHALL COMPACT THE EXCAVATED SUBGRADE TO 95% OF ASTM D-698 UNDER TURF AND 100% OF ASTM D-698 UNDER PAVEMENT AND WITHIN 10' OF ALL EDGES OF PAVEMENT EVEN IN TURF.

**CLASS V REINFORCED CONCRETE DRAINAGE PIPE TRENCH DETAIL**

N.T.S.  
(BASE BID ITEM D-701-5.1B)

| BASIC DIMENSIONS |    |            |                    |     |     |    |                    |     |       |                    |                |                         |                      |
|------------------|----|------------|--------------------|-----|-----|----|--------------------|-----|-------|--------------------|----------------|-------------------------|----------------------|
| A                | B  | C          | D                  | E   | F   | G  | H                  | J   | SLOPE | R <sub>1</sub>     | R <sub>2</sub> | RATIO $\frac{A_2}{A_1}$ | L                    |
| 12"              | 2" | SEE NOTE 3 | 48 $\frac{3}{4}$ " | 24" | 24" | 4" | 19 $\frac{3}{4}$ " | 13" | 2.7:1 | 10 $\frac{1}{2}$ " | 9"             | 1.92                    | 6'-0 $\frac{3}{8}$ " |

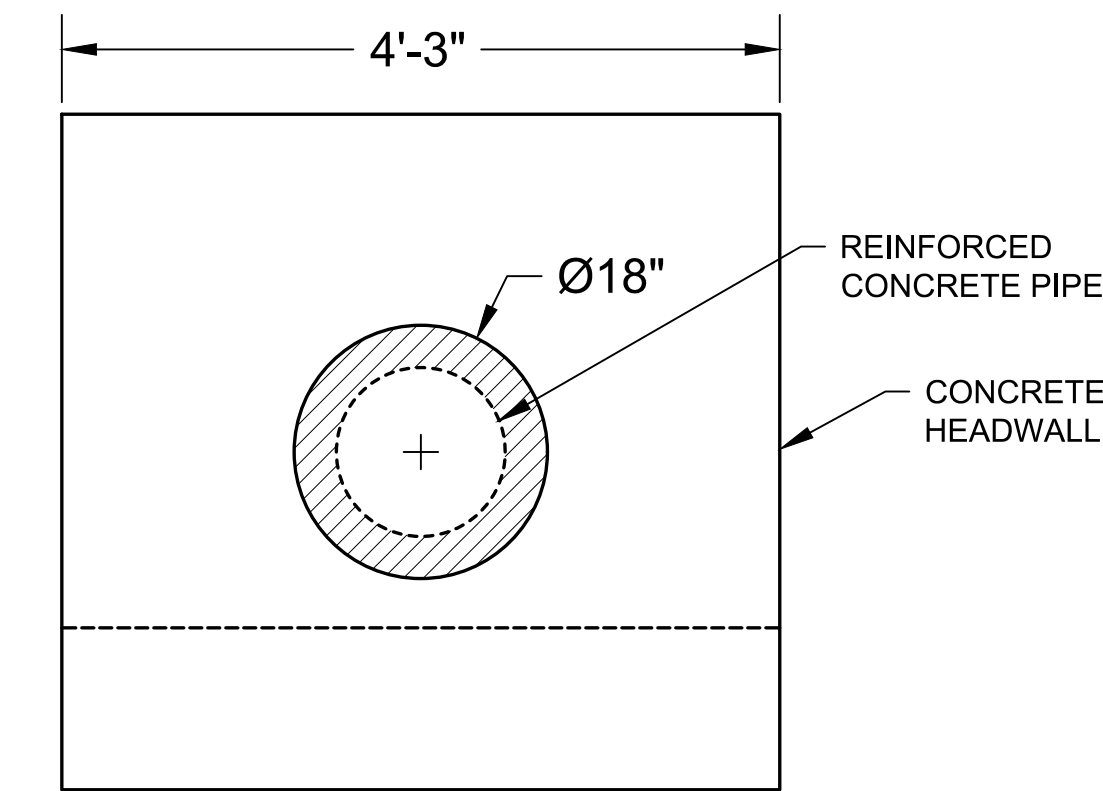


NOTES:

- THE GENERAL SPECIFICATION FOR REINFORCED CONCRETE PIPE, CLASS V, SHALL APPLY EXCEPT AS MODIFIED BELOW.
- JOINTS SHALL BE THE SAME AS REQUIRED FOR REINFORCED CONCRETE PIPE.
- THE DIMENSIONS INDICATED IN THE TABLE ENTITLED 'BASIC DIMENSIONS' ARE APPROXIMATE. REFER TO INDIVIDUAL PRODUCERS' APPROVED SHOP DRAWINGS FOR THE ACTUAL DIMENSIONS.
- PLAN AND SECTION A-A INDICATES GROOVE TYPE JOINT ONLY. OTHER TYPES OF JOINTS (TONGUE, BELL, SPIGOT) SHALL BE FURNISHED AS REQUIRED.

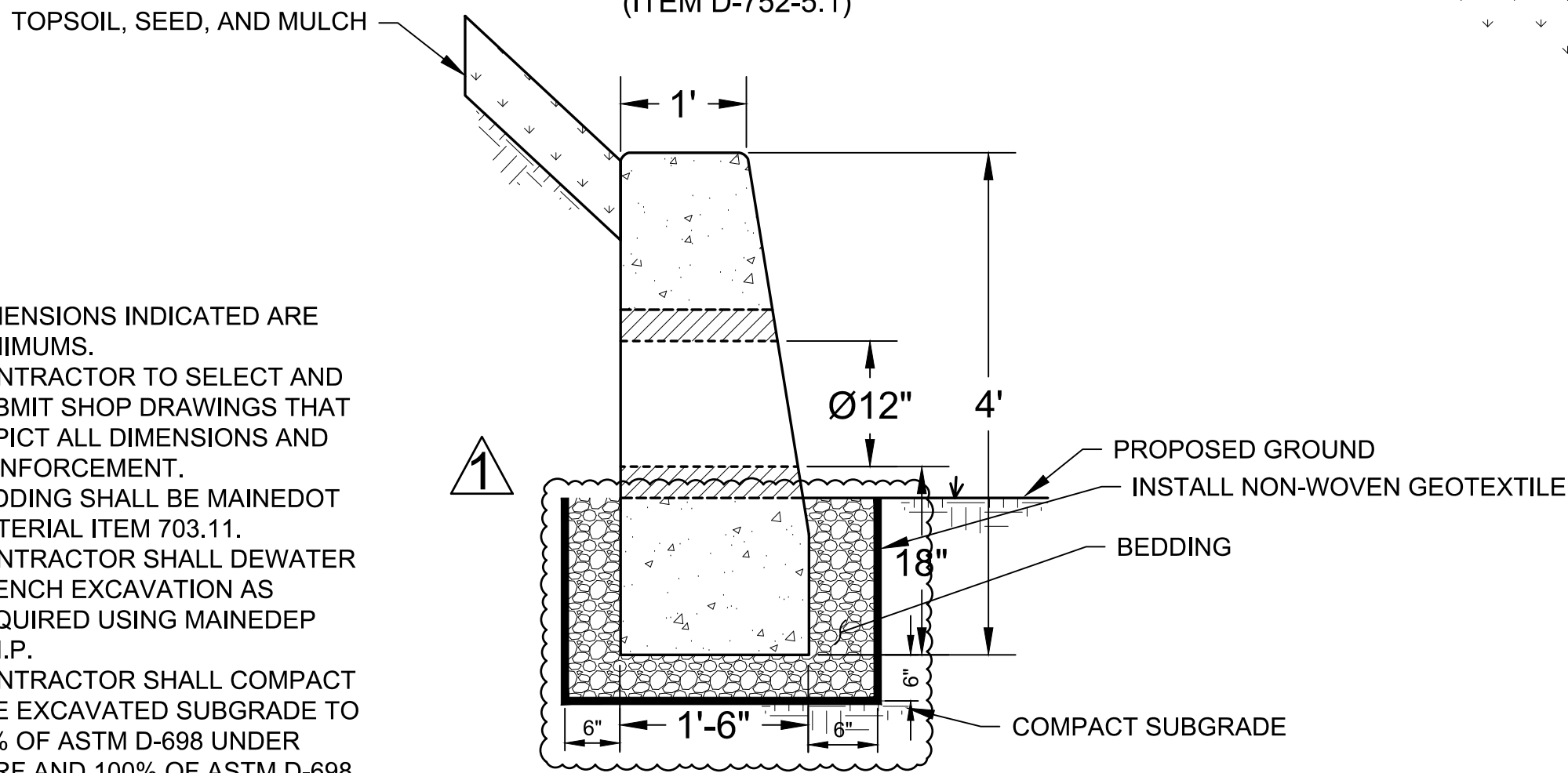
**CLASS V REINFORCED CONCRETE DRAINAGE PIPE FLARED END SECTION DETAIL**

N.T.S.  
(BASE BID ITEM D-752-5.2)



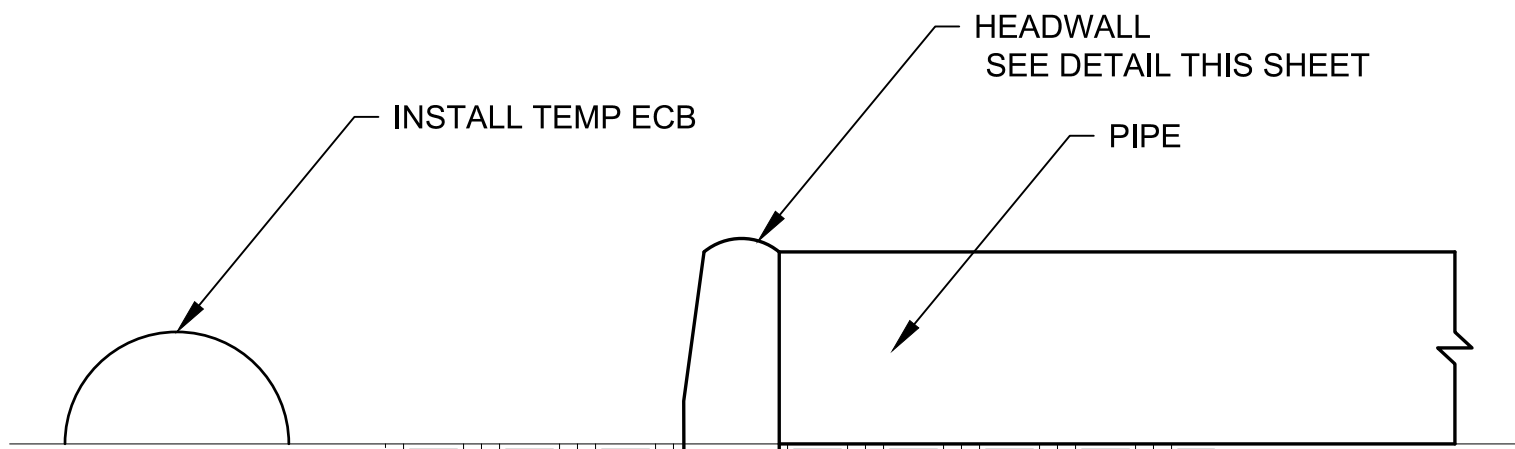
**HEADWALL DETAIL FRONT VIEW**

(ITEM D-752-5.1)



**HEADWALL DETAIL PROFILE VIEW**

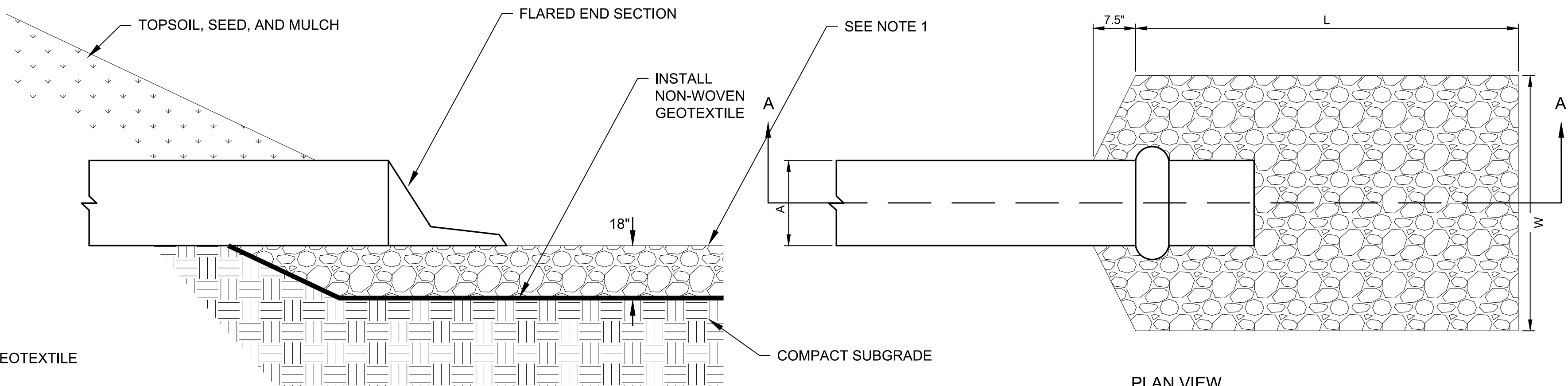
(ITEM D-752-5.1)



**TEMPORARY PIPE INLET CONTROL**

N.T.S.  
(BASE BID ITEM C-102)

| PIPE OUTLET CONTROL |               |        |
|---------------------|---------------|--------|
| A                   | PIPE DIAMETER | 12.0 " |
| W                   | WIDTH         | 5'     |
| L                   | LENGTH        | 14'    |



**PIPE OUTLET CONTROL**

N.T.S.  
(INCIDENTAL TO ITEM D-752-5.2)

NOTES:

- DIMENSIONS INDICATED ARE MINIMUMS.
- CONTRACTOR TO SELECT AND SUBMIT SHOP DRAWINGS THAT DEPICT ALL DIMENSIONS AND REINFORCEMENT.
- BEDDING SHALL BE MAINEDOT MATERIAL ITEM 703.11.
- CONTRACTOR SHALL DEWATER TRENCH EXCAVATION AS REQUIRED USING MAINEDEP B.M.P.
- CONTRACTOR SHALL COMPACT THE EXCAVATED SUBGRADE TO 95% OF ASTM D-698 UNDER TURF AND 100% OF ASTM D-698 UNDER PAVEMENT AND WITHIN 10' OF ALL EDGES OF PAVEMENT EVEN IN TURF.

Project:

**CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE**

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

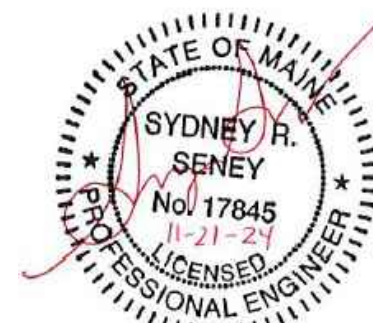
Structural/MEP Engineer:

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Civil Engineer:

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Stamp:



**ISSUED FOR BID**

| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: NTS

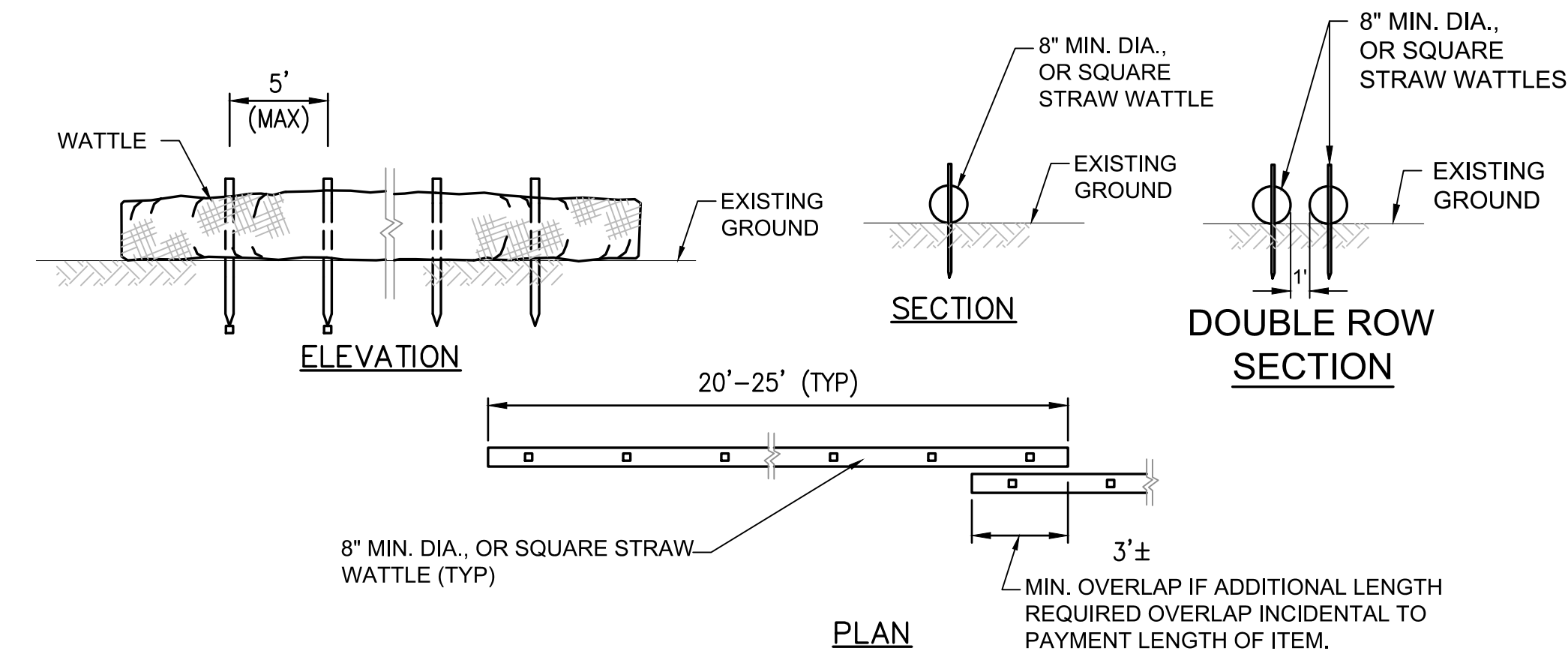
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**DRAINAGE & EC  
NOTES &  
DETAILS  
(SHEET 4 OF 5)**

Drawing No.:

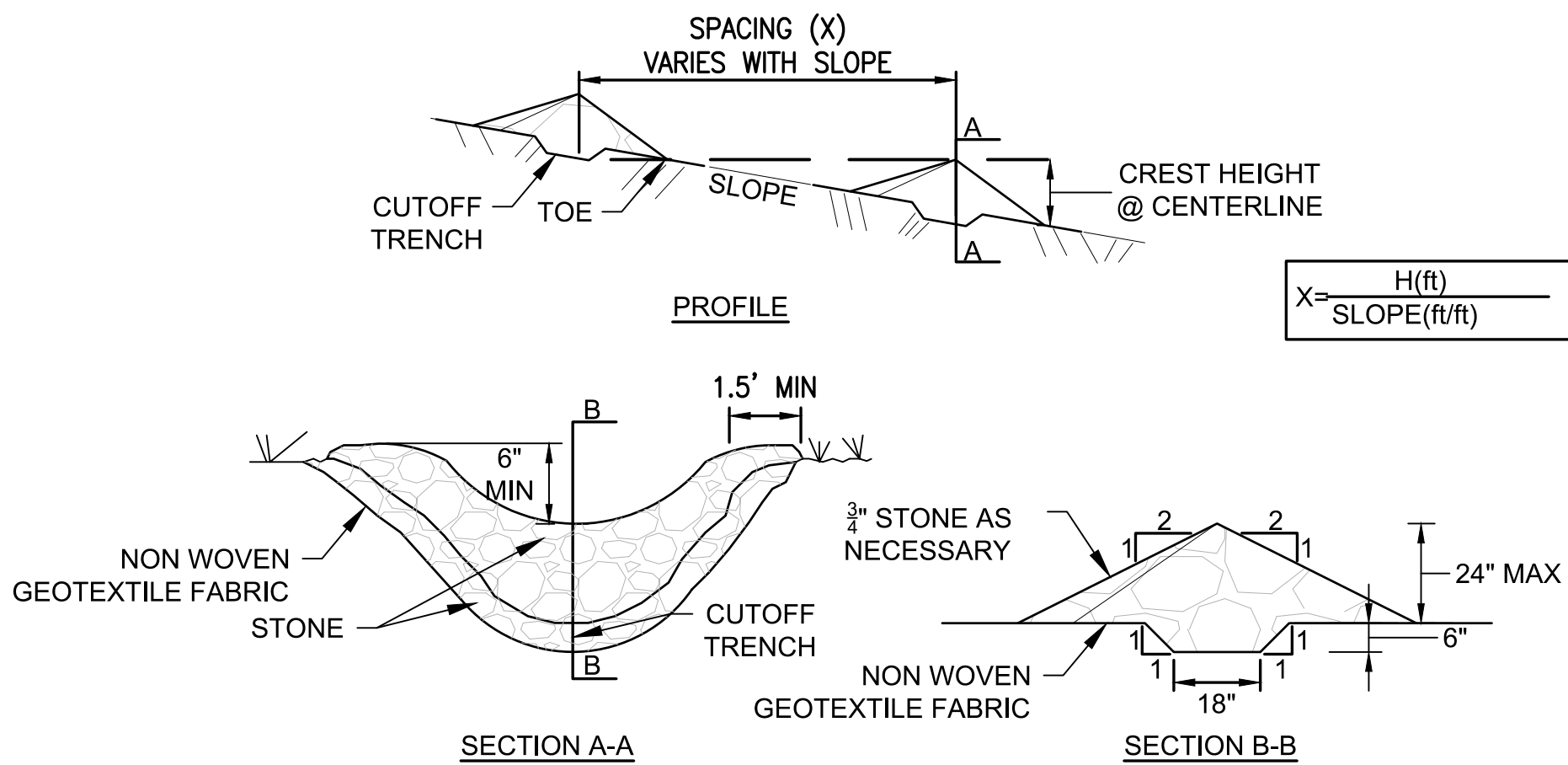
**C-019**





**EROSION CONTROL BARRIER DETAIL**

N.T.S.  
(ITEM C-102-5.1b)

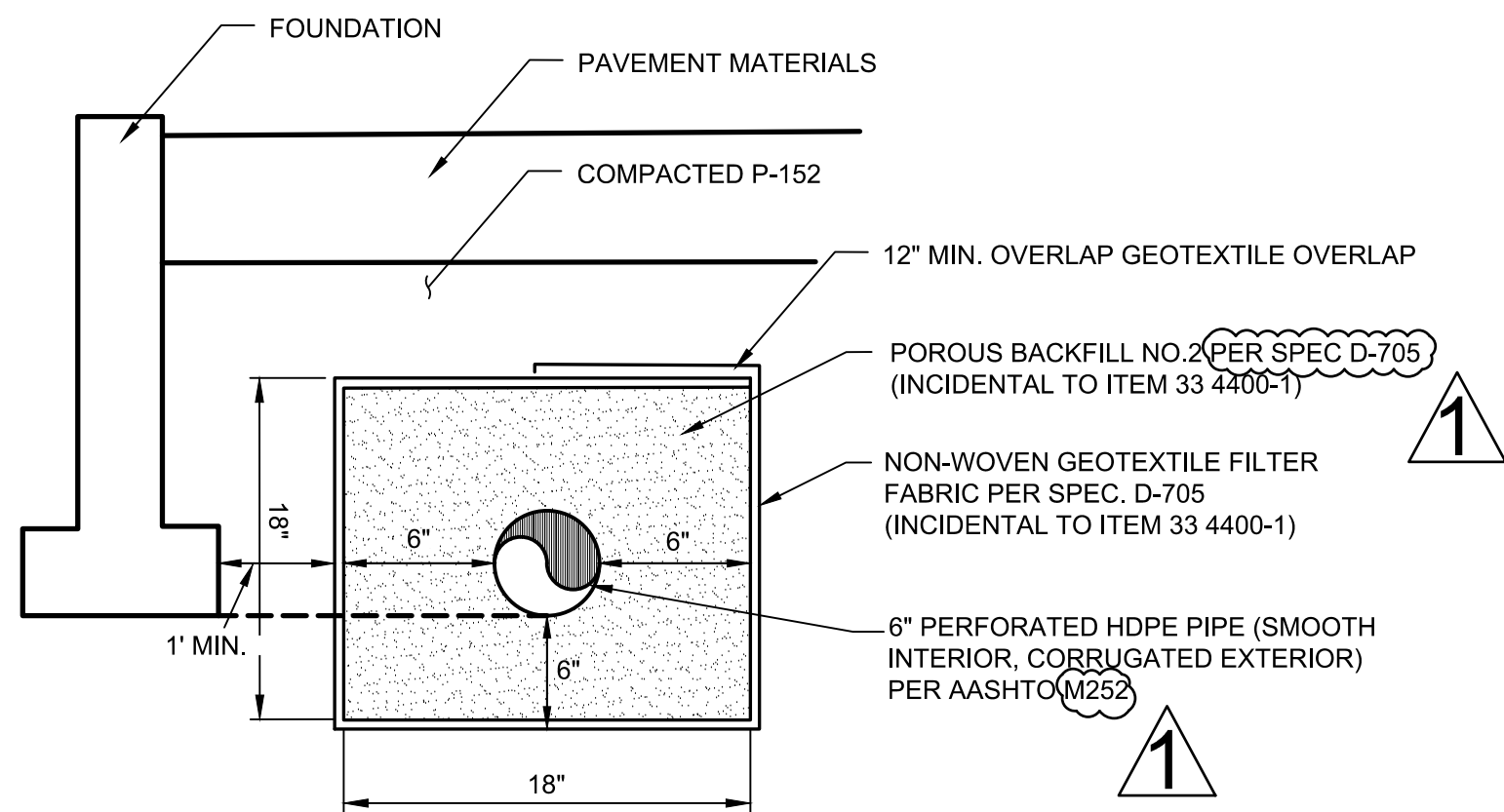


**NOTES:**

- CHECK DAM WILL BE MADE FROM EROSION SEDIMENTATION BARRIERS SUCH AS WADDLES, EROSION CONTROL MIX BERM, STONE, ETC.
- STONE WILL BE PLACED ON A NON WOVEN GEOTEXTILE FABRIC FOUNDATION.
- CHECK DAMS SHALL BE SPACED SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
- 3/4" FILTERING STONE MAY BE ADDED TO THE FACE OF THE CHECK DAM AS NECESSARY.
- EXTEND THE CHECK DAM A MINIMUM OF 1.5; BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
- PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
- ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OF BLOCKAGE FROM DISPLACED STONE.
- MAXIMUM DRAINAGE AREA 2 ACRES.
- CONTRACTOR TO DETERMINE SPACING BASED ON GIVEN EQUATION.

**CHECK DAM**

N.T.S.  
(ITEM C-102-5.1c)

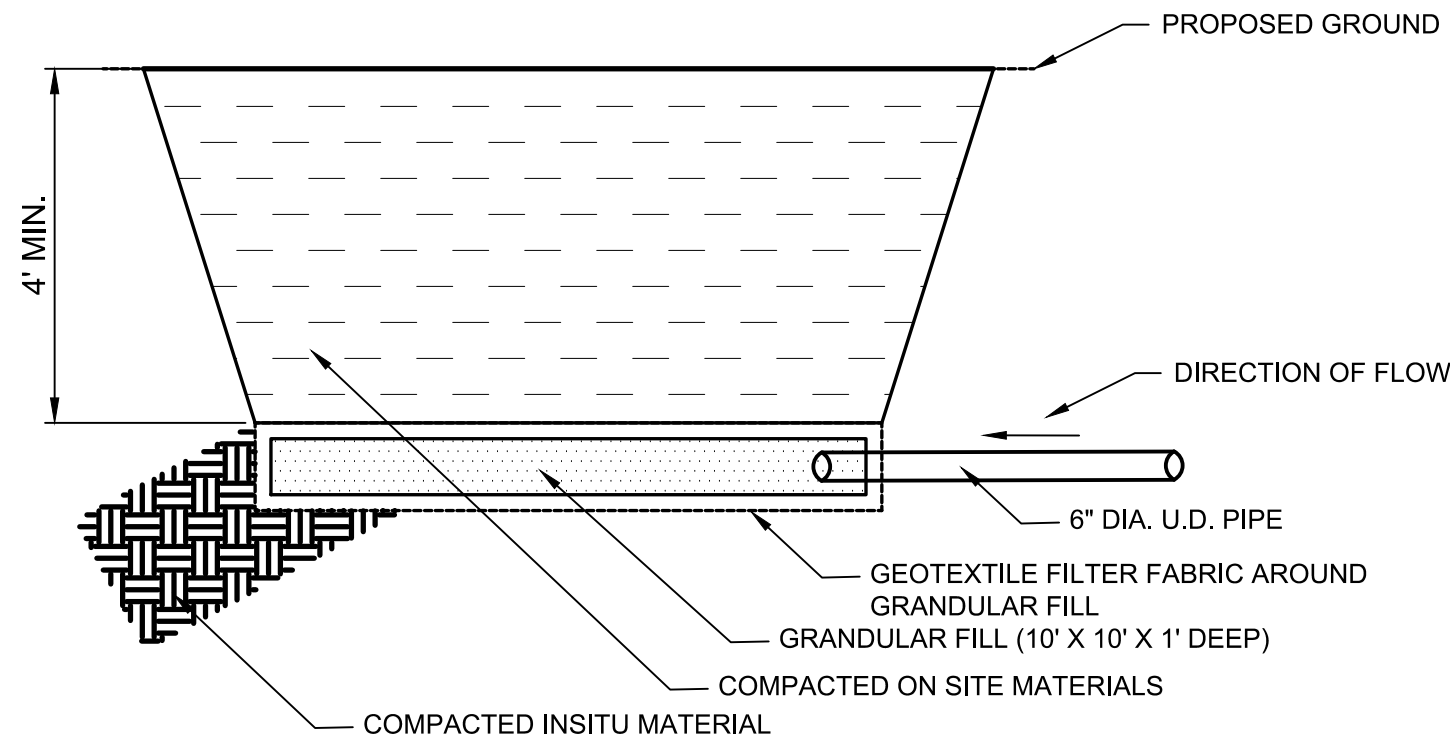


**NOTES:**

- ALL COSTS ASSOCIATED WITH UNDERDRAIN INSTALLATION SHALL BE INCIDENTAL TO ITEM 33 4400-1.

**UNDERDRAIN DETAIL**

N.T.S.  
(ITEM 33 4100-1)



**FRENCH DRAIN DETAIL**

N.T.S.  
(INCIDENTAL TO ITEM 33 4100-1)

Project:

**CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE**

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
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McFarland Johnson

53 Regional Drive  
Concord, NH 03301



Fennick  
McCredie  
Architecture

Team:

Architect:

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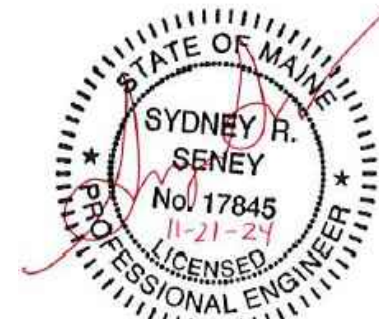
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Civil Engineer:

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Stamp:



**ISSUED FOR BID**

| No. | Date     | Revision      |
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| 1   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: NTS

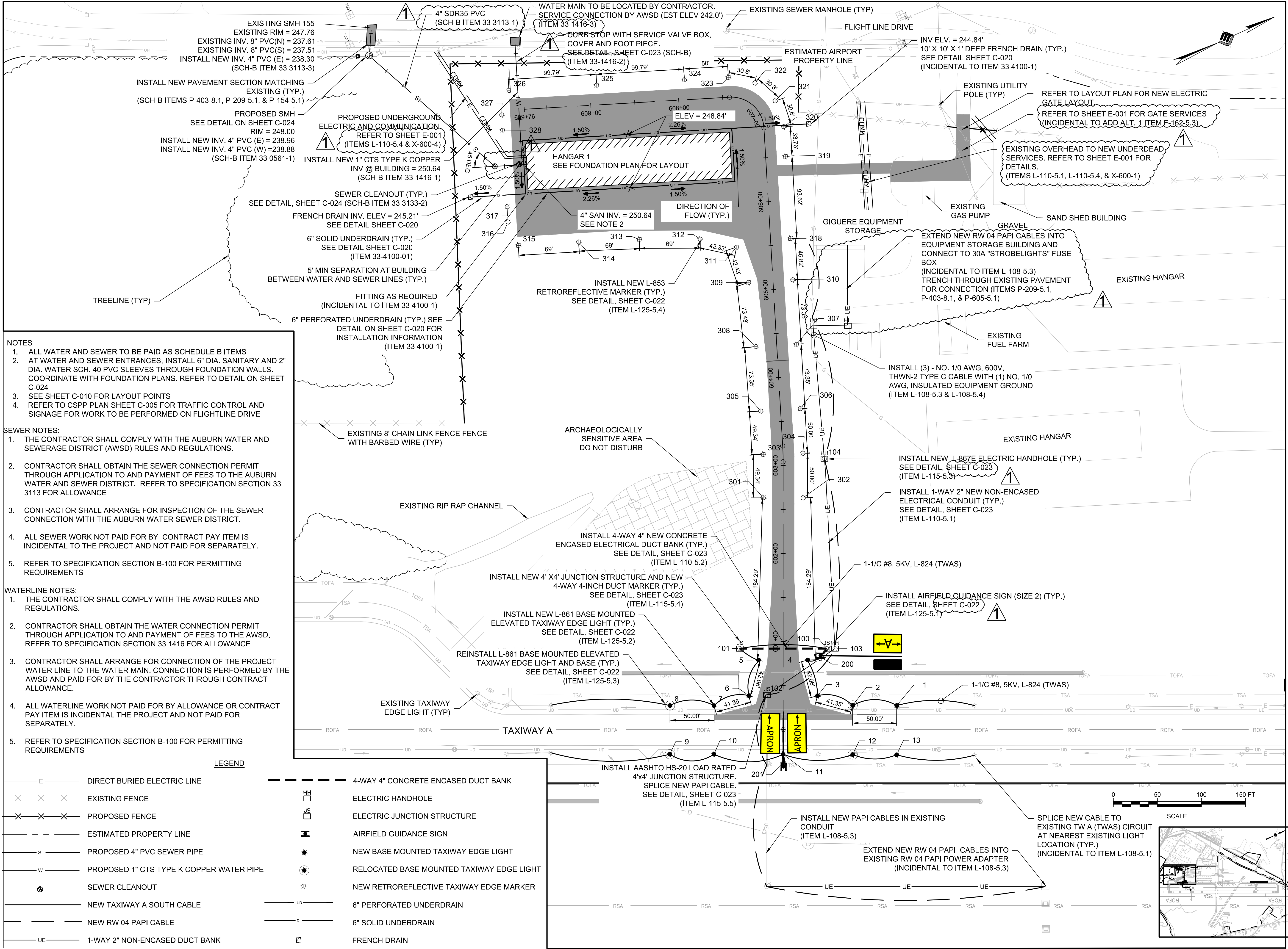
Drawing Title:

**DRAINAGE & EC  
NOTES &  
DETAILS  
(SHEET 5 OF 5)**

Drawing No.:

**C-020**





Project:

CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:

Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
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| A   | 12.11.24 | ADDENDUM NO.2 |

Job No.: 19186.01  
Drawn By: MRB  
Checked By: JTG  
Issue: ISSUED FOR BID  
Date: 11/21/2024  
Scale: 1" = 50'

Drawing Title:  
BUILDING  
UTILITY &  
AIRFIELD  
ELECTRIC PLAN  
Drawing No.:  
C-021











| LIGHT FIXTURE SCHEDULE |           |            |          |                                        |
|------------------------|-----------|------------|----------|----------------------------------------|
| POINT                  | NORTHING  | EASTING    | LIGHT ID | DESCRIPTION                            |
| 1                      | 441567.74 | 2920773.79 | TWAS72   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 2                      | 441522.26 | 2920752.92 | TWAS73   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 3                      | 441490.52 | 2920726.41 | TWAS74   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 4                      | 441497.15 | 2920684.88 | TWAS75   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 5                      | 441446.32 | 2920661.75 | TWAS76   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 6                      | 441419.76 | 2920694.21 | TWAS77   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 7                      | 441378.78 | 2920687.93 | TWAS78   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 8                      | 441333.38 | 2920667.17 | TWAS79   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 9                      | 441310.35 | 2920717.39 | TWAS80   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 10                     | 441355.91 | 2920738.19 | TWAS81   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 11                     | 441427.39 | 2920770.83 | TWAS82   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 12                     | 441499.13 | 2920803.75 | TWAS83   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |
| 13                     | 441544.50 | 2920824.68 | TWAS84   | L-861T BASE MOUNTED TAXIWAY EDGE LIGHT |

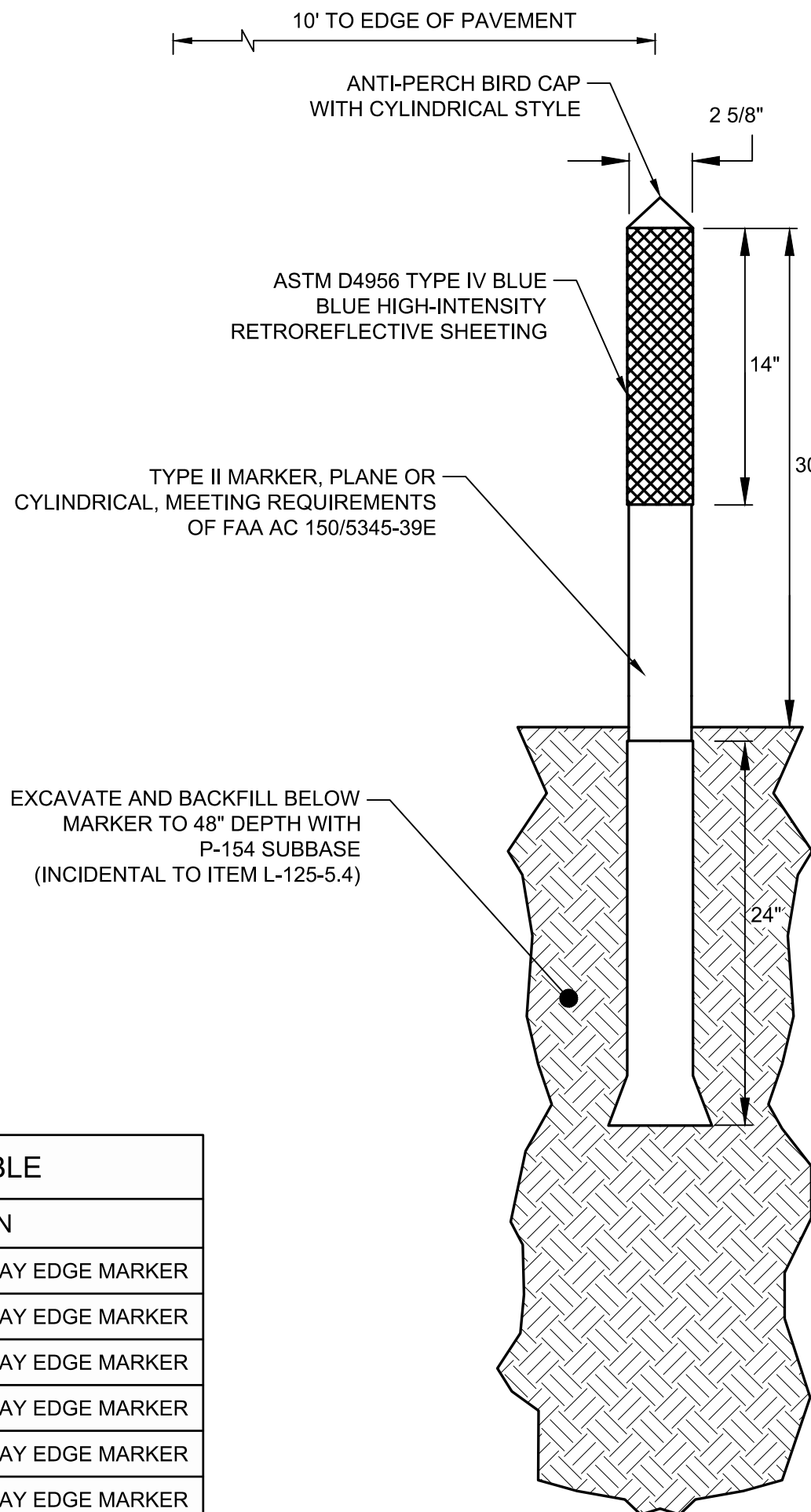
| ELECTRICAL STRUCTURES POINT TABLE |           |            |              |                                   |
|-----------------------------------|-----------|------------|--------------|-----------------------------------|
| POINT                             | NORTHING  | EASTING    | STRUCTURE ID | DESCRIPTION                       |
| 100                               | 441522.08 | 2920681.98 | JS1          | 4'X4' ELECTRIC JUNCTION STRUCTURE |
| 101                               | 441432.33 | 2920641.05 | JS2          | 4'X4' ELECTRIC JUNCTION STRUCTURE |
| 102                               | 441437.71 | 2920701.35 | JS3          | 4'X4' ELECTRIC JUNCTION STRUCTURE |
| 103                               | 441530.65 | 2920686.02 | HH1          | 24" L-867E HANDHOLE               |
| 104                               | 441609.10 | 2920484.56 | HH2          | 24" L-867E HANDHOLE               |

| RETROREFLECTIVE MARKERS POINT TABLE |           |            |                                           |
|-------------------------------------|-----------|------------|-------------------------------------------|
| POINT                               | NORTHING  | EASTING    | DESCRIPTION                               |
| 301                                 | 441527.54 | 2920496.32 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 302                                 | 441568.60 | 2920515.00 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 303                                 | 441547.98 | 2920451.41 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 304                                 | 441589.46 | 2920468.83 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 305                                 | 441565.74 | 2920405.38 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 306                                 | 441607.70 | 2920421.57 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 307                                 | 441634.13 | 2920353.15 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 308                                 | 441591.09 | 2920336.54 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 309                                 | 441613.87 | 2920266.74 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 310                                 | 441660.53 | 2920284.72 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 311                                 | 441617.98 | 2920224.51 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 312                                 | 441584.03 | 2920199.23 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 313                                 | 441521.05 | 2920170.85 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 314                                 | 441457.12 | 2920144.89 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 315                                 | 441393.05 | 2920120.19 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 316                                 | 441393.45 | 2920091.05 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |

| RETROREFLECTIVE MARKERS POINT TABLE |           |            |                                           |
|-------------------------------------|-----------|------------|-------------------------------------------|
| POINT                               | NORTHING  | EASTING    | DESCRIPTION                               |
| 317                                 | 441399.69 | 2920074.87 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 318                                 | 441677.39 | 2920241.03 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 319                                 | 441711.09 | 2920153.69 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 320                                 | 441723.24 | 2920122.19 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 321                                 | 441726.52 | 2920091.54 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 322                                 | 441714.04 | 2920063.39 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 323                                 | 441689.16 | 2920045.24 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 324                                 | 441642.51 | 2920027.24 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 325                                 | 441549.41 | 2919991.32 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 326                                 | 441456.29 | 2919955.42 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 327                                 | 441437.31 | 2919977.37 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |
| 328                                 | 441431.07 | 2919993.54 | L-853 RETROREFLECTIVE TAXIWAY EDGE MARKER |

| PROPOSED AIRFIELD GUIDANCE SIGN SCHEDULE |     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |      |       |         |           |            |
|------------------------------------------|-----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------|---------|-----------|------------|
| POINT                                    | ID  | LEGEND                                                                              |                                                                                     | PANEL TYPE                                                                          |                                                                                     | SIZE | STYLE | MODULES | NORTHING  | EASTING    |
|                                          |     | FRONT                                                                               | BACK                                                                                | FRONT                                                                               | BACK                                                                                |      |       |         |           |            |
| 200                                      | S33 |  |  |  |  | 2    | 2     | 2       | 441508.33 | 2920684.46 |
| 201                                      | S34 |  |  |  |  | 2    | 2     | 3       | 441423.88 | 2920779.77 |

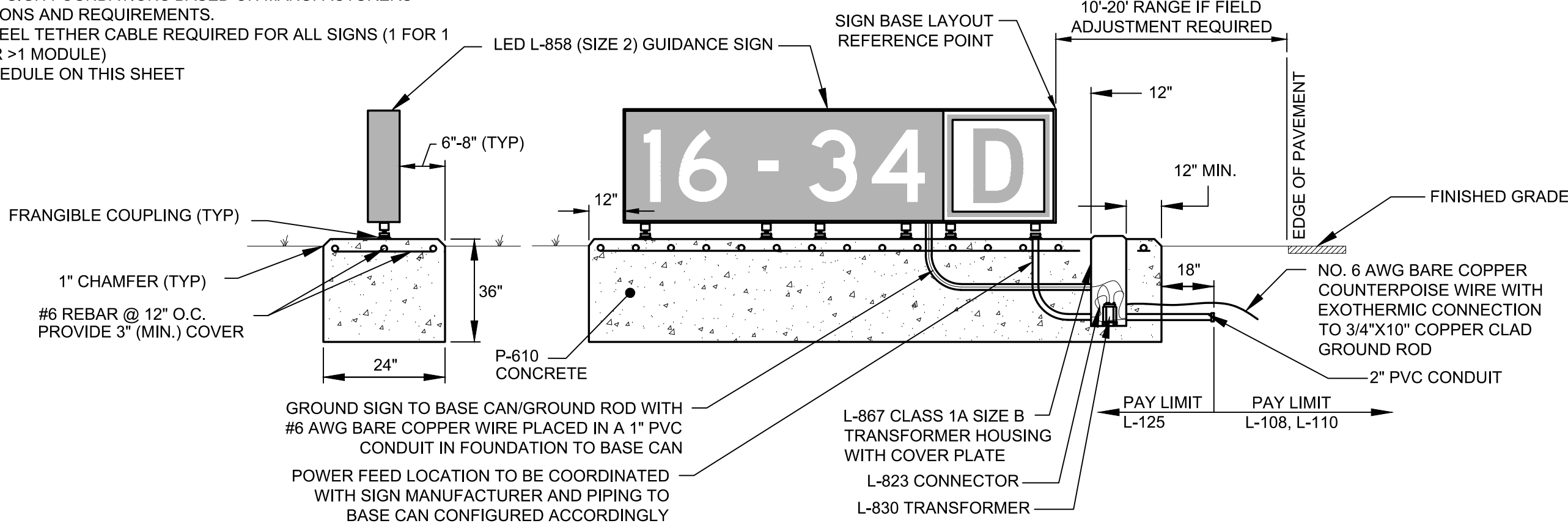
| KEY |           |                                  |
|-----|-----------|----------------------------------|
| L   | LOCATION  | YELLOW LETTERS, BLACK BACKGROUND |
| Y   | DIRECTION | BLACK LETTERS, YELLOW BACKGROUND |
| M   | MANDATORY | WHITE LETTERS, RED BACKGROUND    |
| B   | BLANK     | BLACK BACKGROUND                 |



## RETROREFLECTIVE TAXILANE EDGE MARKER

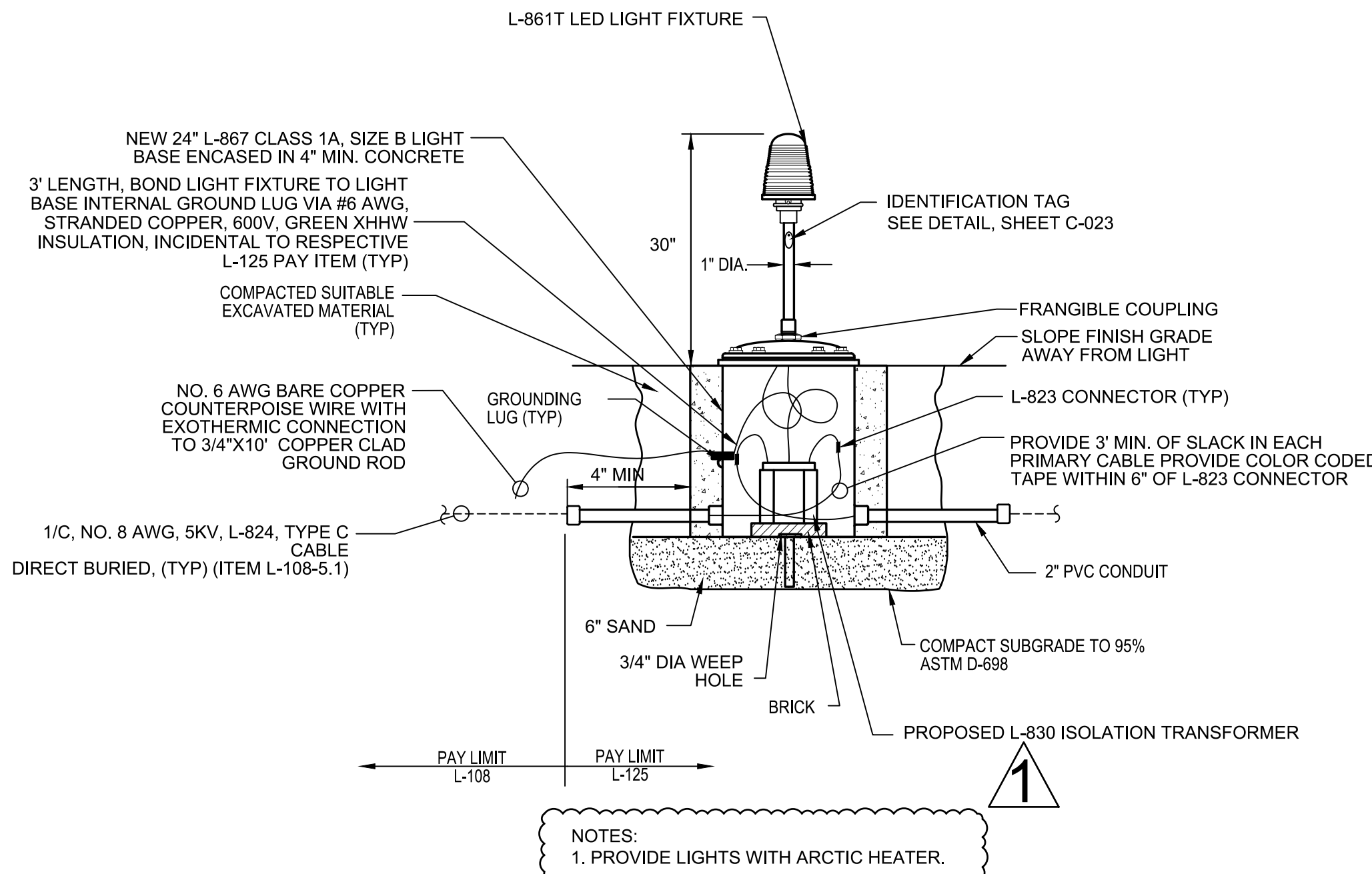
N.T.S.  
(ITEM L-125-5.4)

- NOTES:
1. SIGNS AND SIGN BASES ARE TO BE SET LEVEL AND TRUE. ADJUST GRADE ELEVATIONS AROUND THE SIGN BASE TO BE FLUSH WITH THE SIGN BASE WITH A MAX 3% SLOPE.
  2. CONTRACTOR SHALL VERIFY L-830 TRANSFORMER REQUIREMENTS FOR ALL CIRCUITS AND AIRFIELD GUIDANCE SIGN FROM MANUFACTURER SPECIFICATIONS. OVER 145" IN LENGTH SHALL BE CONSTRUCTED IN TWO SECTIONS, WITH A 3" MIN. TO 12" MAX. CLEAR DISTANCE BETWEEN SIGNS.
  4. PROVIDE 0.375" THICK STEEL COVER PLATE INCLUDING BOLTS AND GASKET.
  5. USE HEAT SHRINK ON LINE SIDE OF PRIMARY CONNECTOR KITS ONLY. C
  6. SECONDARY L-823 CONNECTIONS ARE TO BE TAPED ONLY
  7. FURNISH SIGN SHALL BE LED ILLUMINATED WITH EXTERNAL ON/OFF SWITCH
  7. CONTRACTOR SHALL COORDINATE SIGN BASE LAYOUT FOR SIGN SIZE, ELECTRICAL FEED, & GROUND CONDUITS DURING THE SUBMITTAL PROCESS. SEE LAYOUT FOR SIGN SIZE APPROVED PRIOR TO FABRICATION OF SIGN FOUNDATIONS BASED ON MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.
  8. STAINLESS STEEL TETHER CABLE REQUIRED FOR ALL SIGNS (1 FOR 1 MODULE & 2 FOR >1 MODULE)
  9. SEE SIGN SCHEDULE ON THIS SHEET



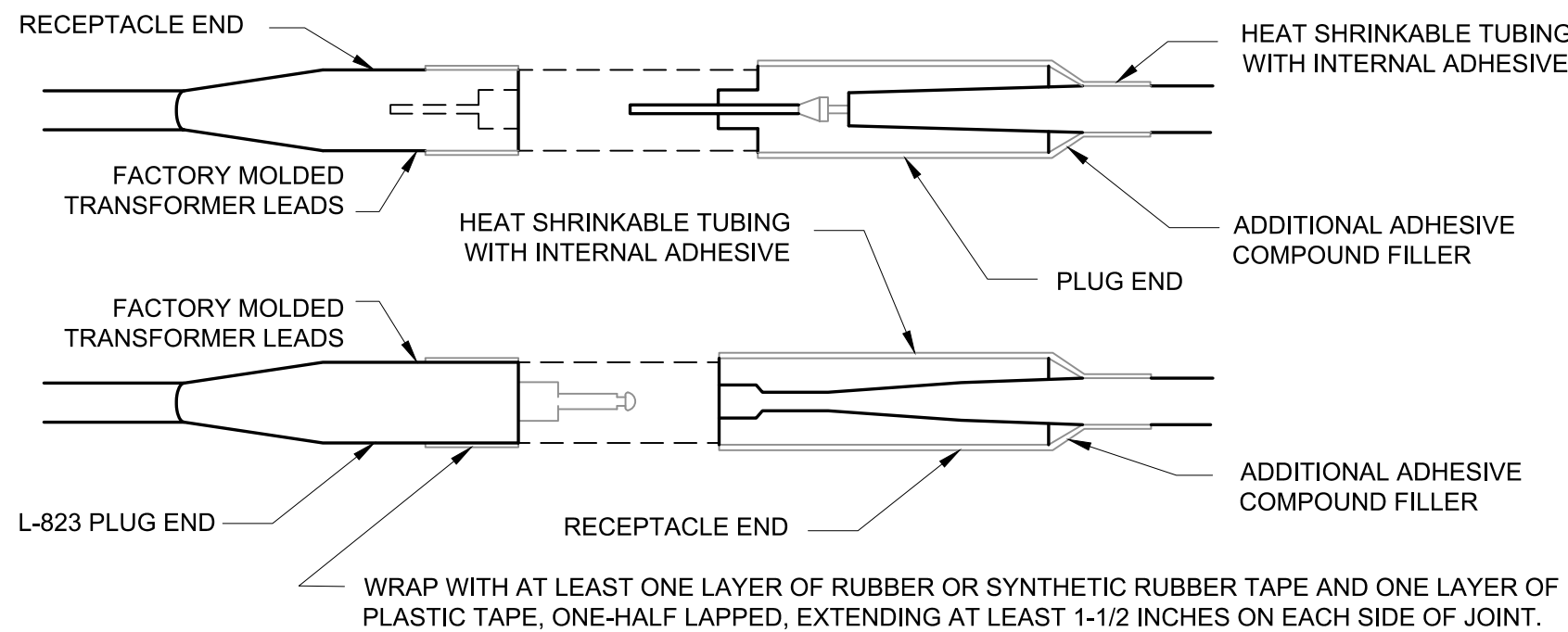
### AIRFIELD GUIDANCE SIGN DETAIL

N.T.S.  
(ITEM L-125-5.1)



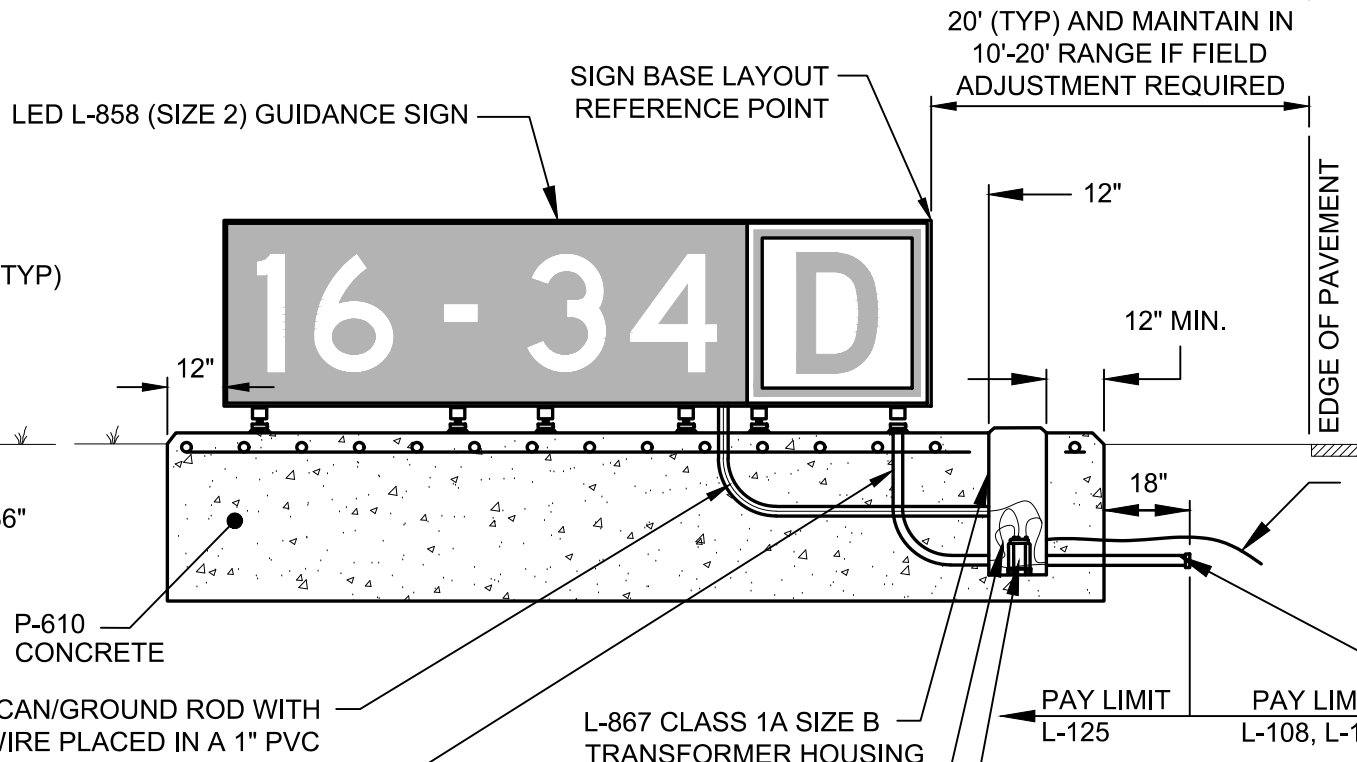
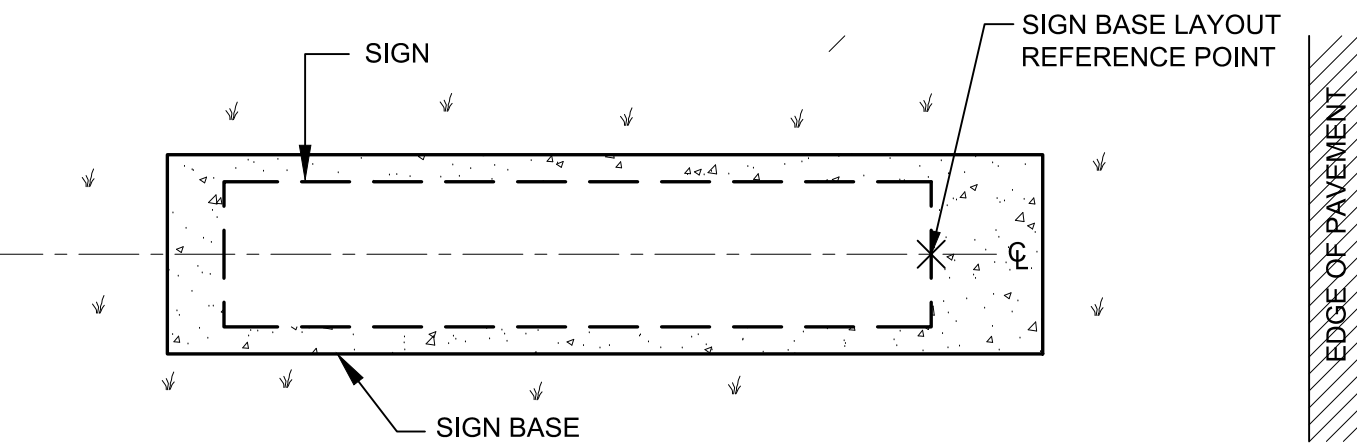
### BASE MOUNTED ELEVATED EDGE LIGHT IN TURF DETAIL

N.T.S.  
(ITEMS L-125-5.2 AND L-125-5.3)



## L-823 CONNECTIONS

N.T.S.  
INCIDENTAL TO L-108-5.1



### AIRFIELD GUIDANCE SIGN DETAIL

N.T.S.  
(ITEM L-125-5.1)

Project:

# CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE  
AUBURN, ME 04210

Client:



**Auburn-Lewiston  
Municipal Airport**  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631



**McFarland Johnson**  
53 Regional Drive  
Concord, NH 03301



**Fennick  
McCredie  
Architecture**

Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

**Structural/MEP Engineer:**

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:

**ISSUED FOR BID**

| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

|             |          |
|-------------|----------|
| Job No.:    | 19186.01 |
| Drawn By:   | MRB      |
| Checked By: | JTG      |
| Issue:      | ISSUED   |
| Date:       | 11/21/20 |
| Scale:      | NTS      |

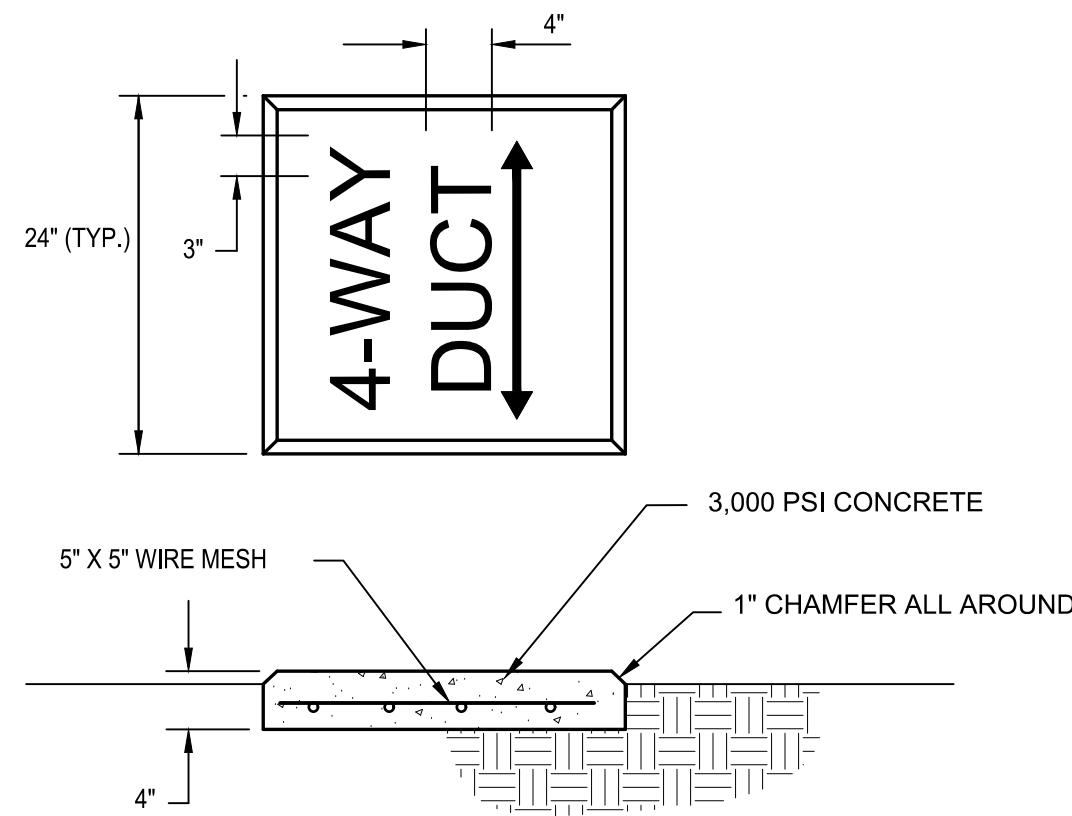
Drawing Title:

# AIRFIELD ELECTRICAL DETAILS (1 OF 2)

Drawing No.:

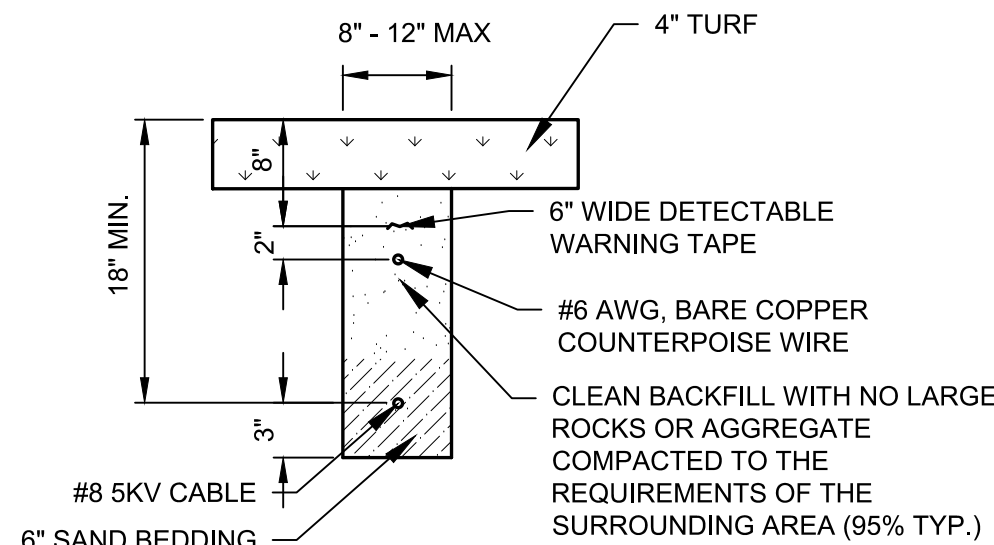
C-022





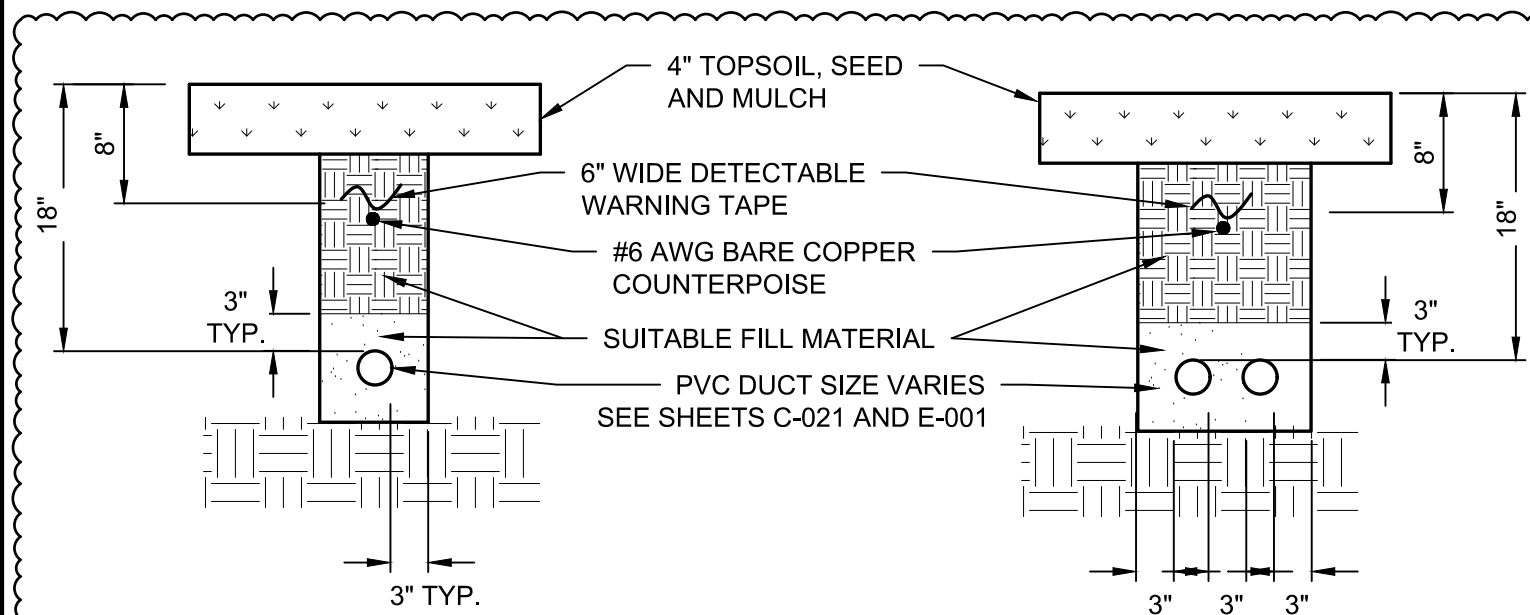
- NOTES:
1. MARKER LEGEND TO BE IMPRINTED A MIN. 1/4" DEEP IN A WORKMANLIKE MANNER. NO FREE SCRIPT.
  2. DUCT MARKERS SHALL BE PLACED AT EACH END OF DUCT BANK LOCATED HALF-WAY BETWEEN EDGE OF PAVEMENT AND ELECTRICAL MANHOLE.
  3. NUMBER OF DUCTS VARY.

**DUCT MARKER DETAIL**  
NOT TO SCALE  
(INCIDENTAL TO ITEM L-110-5.2)



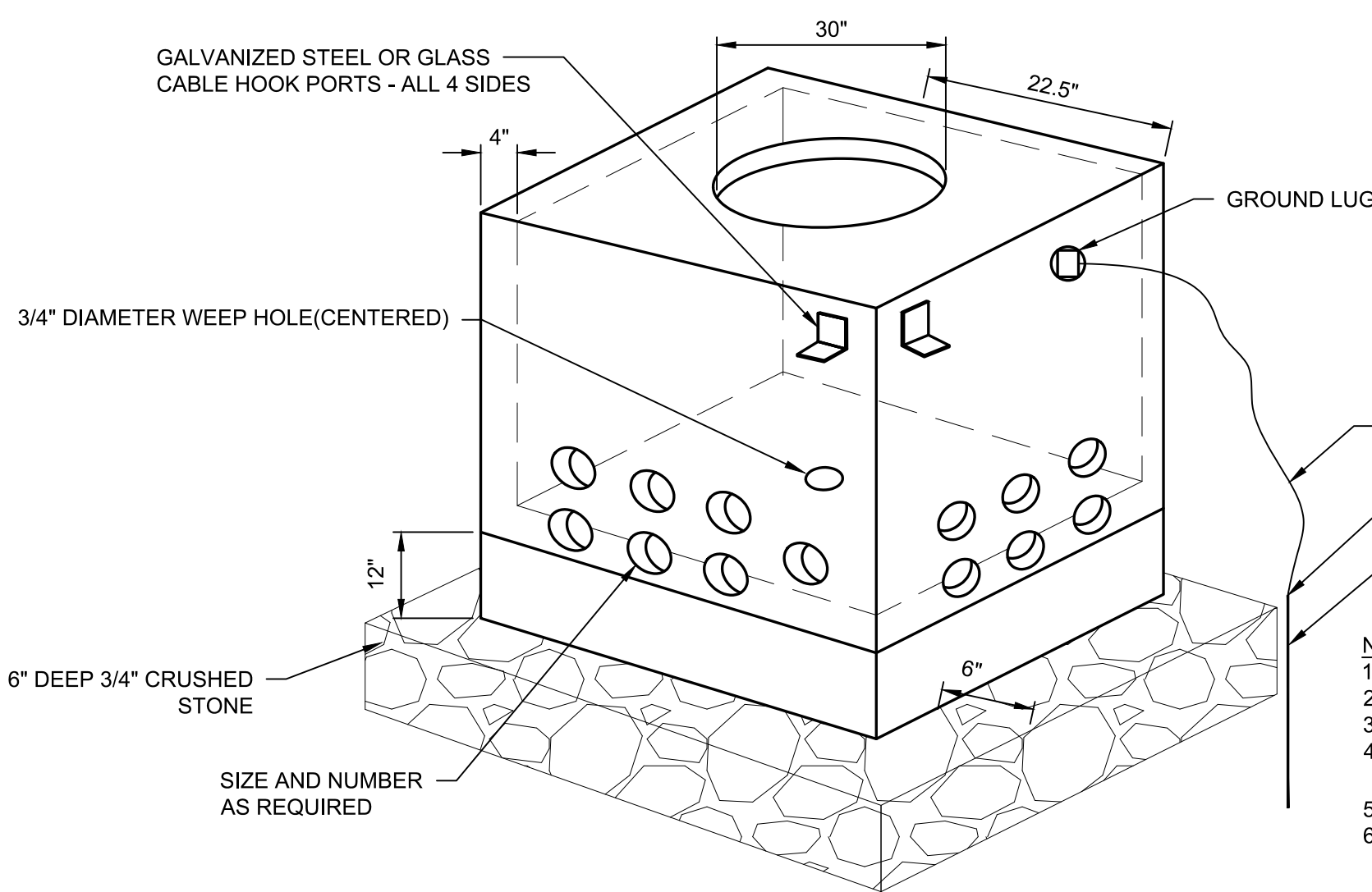
**DIRECT BURY DETAIL**  
N.T.S.  
(ITEMS L-108-5.1 AND L-108-5.2)

- NOTES:
1. #6 BARE COUNTERPOISE WITH 3/4" X 10" GROUND ROD INSTALLED AT MAXIMUM 500' SPACING. INSTALL GROUND RODS TO TERMINATE THE COUNTERPOISE AT BOTH ENDS OF DUCT.
  2. TOP OF GROUND ROD SHALL BE INSTALLED 8" BELOW GRADE AND ATTACHED TO THE COUNTERPOISE WITH AN EXOTHERMIC WELDED CONNECTION.

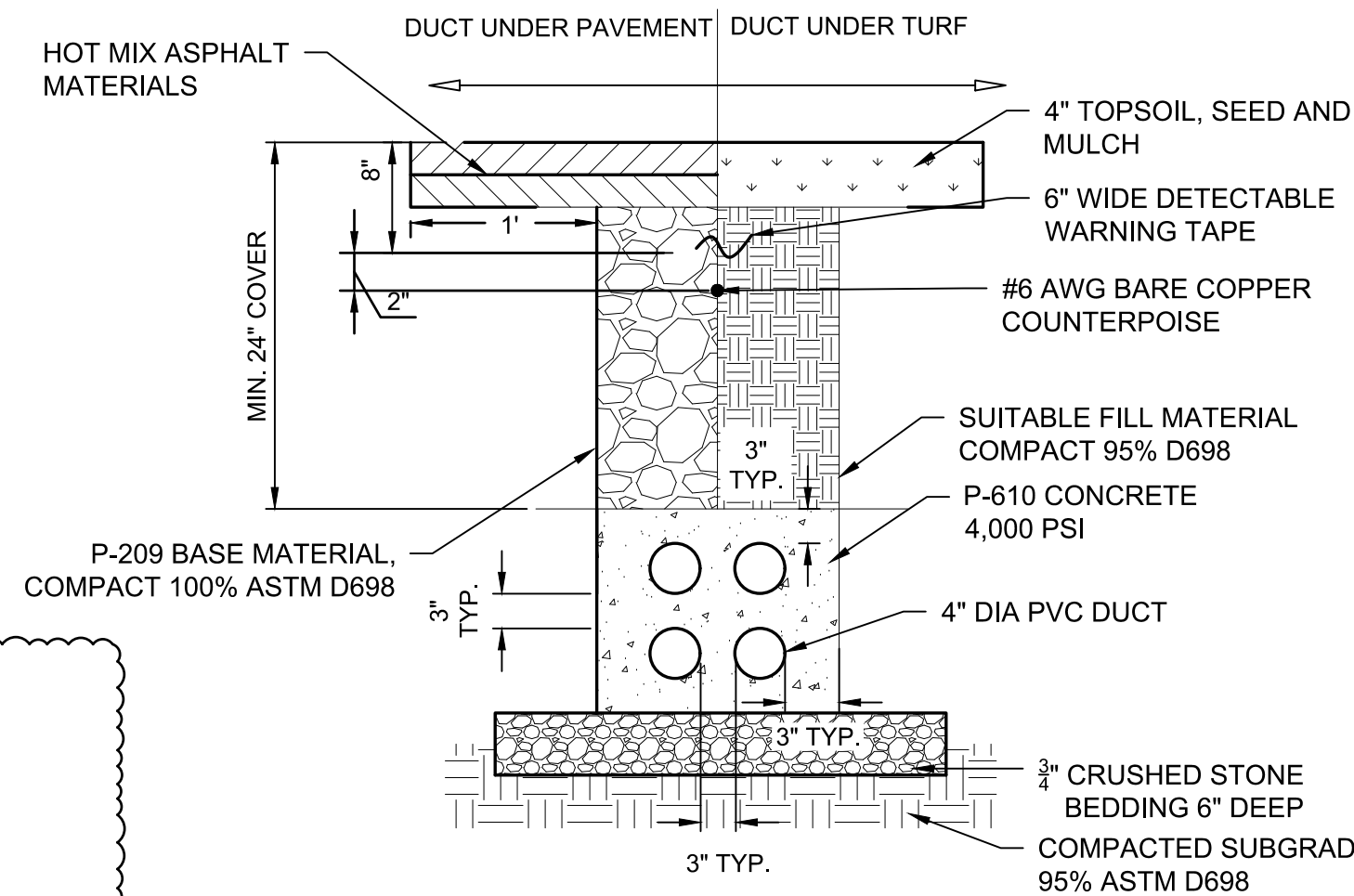


- NOTES:
1. #6 BARE COUNTERPOISE WITH 3/4" X 10" GROUND ROD INSTALLED AT MAXIMUM 500' SPACING. INSTALL GROUND RODS TO TERMINATE THE COUNTERPOISE AT BOTH ENDS OF DUCT.
  2. TOP OF GROUND ROD SHALL BE INSTALLED 8" BELOW GRADE AND ATTACHED TO THE COUNTERPOISE WITH AN EXOTHERMIC WELDED CONNECTION.
  3. WIDTH OF TRENCH VARIES DEPENDING ON NUMBER OF CONDUITS. TRENCH WIDTH SHALL ACCOMMODATE CONDUITS SPACED AT MIN. 6" O.C. WITH 4" CLEARANCE BETWEEN OUTSIDE CONDUITS AND TRENCH WALL.
  4. COST OF TRENCHING, BACKFILL, AND RESTORATION TO BE INCLUDED IN CONDUIT BID ITEMS.

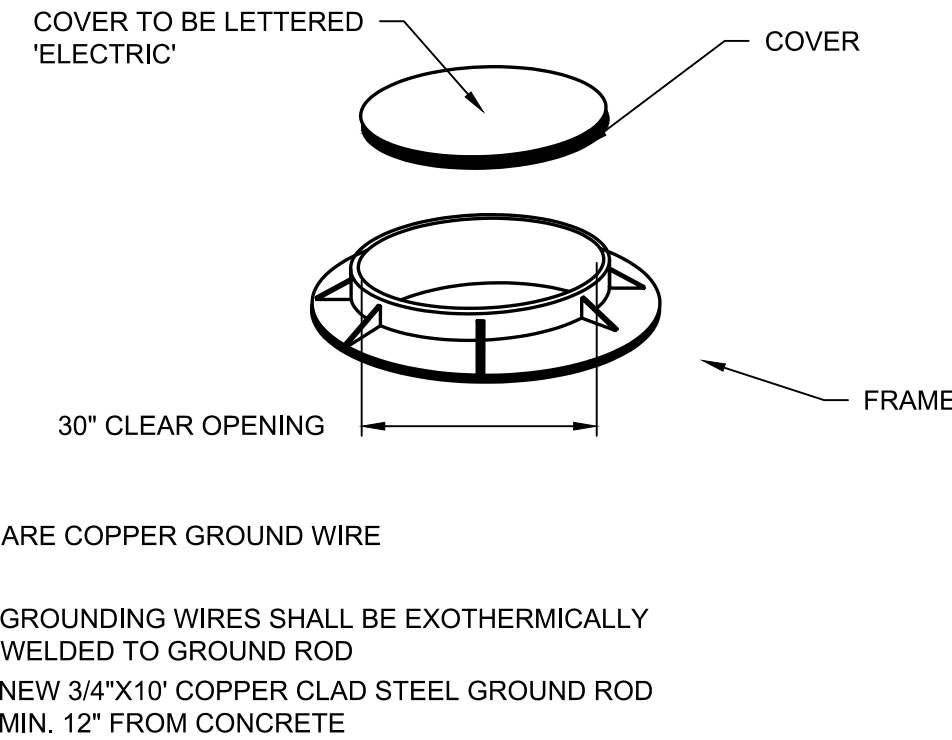
**(2" OR 1") 1-WAY NON-ENCASED CONDUIT  
& (2") 4-WAY NON ENCASED CONDUIT**  
N.T.S.  
(ITEM L-110-5.1 & L-110-5.4)



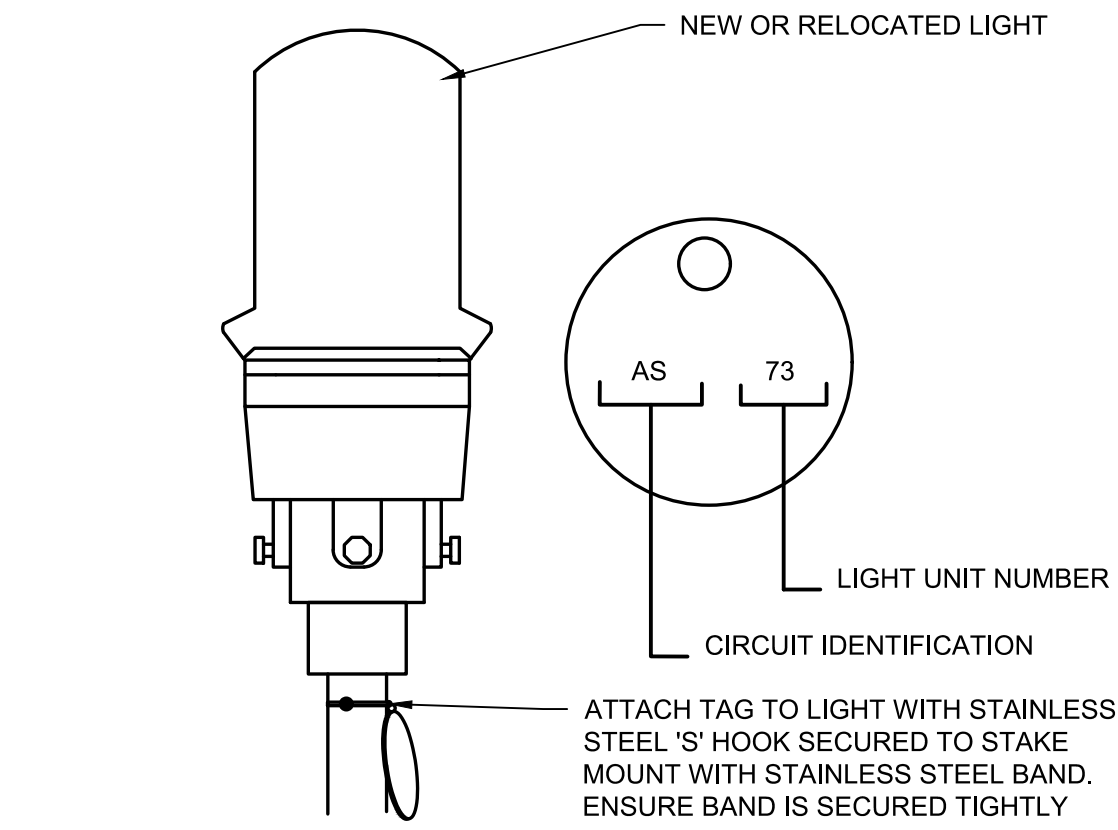
**ELECTRICAL JUNCTION STRUCTURE 4' X 4'**  
N.T.S.  
(ITEM L-115-5.4 & L-115-5.5)



**4-WAY X 4" CONCRETE ENCASED DUCT BANK**  
N.T.S.  
(ITEM L-110-5.2)

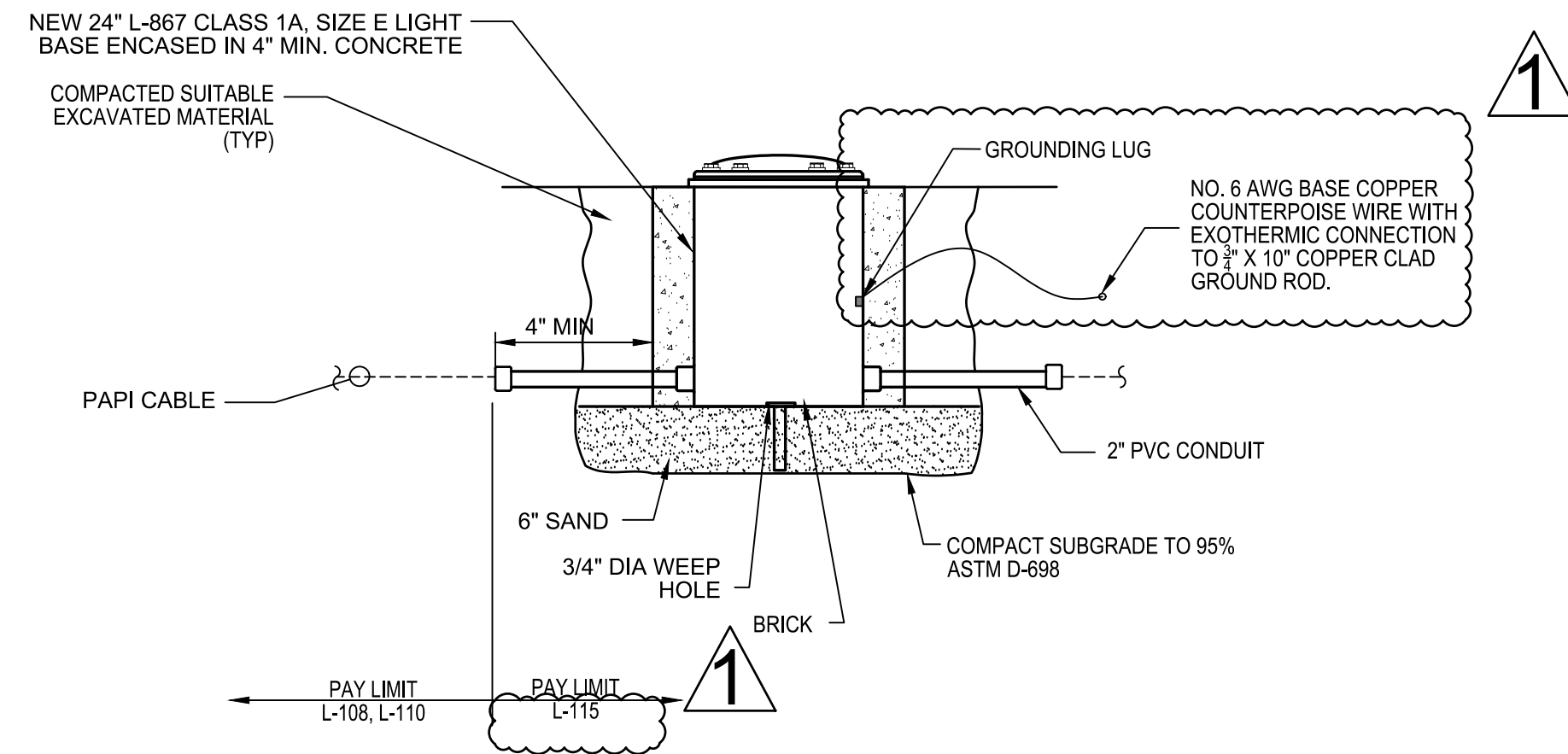


- NOTES:
1. CONCRETE SHALL BE 4,000 PSI.
  2. CAST IRON MANHOLE COVER SHALL READ "ELECTRIC"
  3. STONE BASE SHALL BE COMPACTED 95% MAX DENSITY, PER ASTM D-698
  4. HANDHOLE COVERS AND FRAMES SHALL BE SET FLUSH WITH FINISH GRADE. ADJUST TO GRADE WITH A MINIMUM OF TWO (2) AND A MAXIMUM OF FIVE (5) COURSES OF CLAY BRICK.
  5. NEW 3/4" x 10" COPPER CLAD STEEL GROUND ROD SHALL BE PLACED 12" FROM HANDHOLE.
  6. ALL PREFABRICATED REINFORCED CONCRETE STRUCTURES AND FRAME AND GRATES SHALL BE DESIGNED AND CONSTRUCTED TO SUPPORT A 32,000 LB, HS-20 LOADED DUAL WHEEL LOAD. THE CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS AND MANUFACTURER CERTIFICATIONS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. SHOP DRAWINGS FOR LOADING SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN MAINE
  7. SEE PLAN FOR LOCATION OF JUNCTION STRUCTURE IN PAVEMENT. NEW STRUCTURE SHALL BE CONNECTED TO EXISTING DUCTS. CONTRACTOR SHALL LOCATE THE EXISTING DUCTS DEPTH AND DUCT CONFIGURATION TO SIZE THE STRUCTURE BEFORE ORDERING THE STRUCTURE

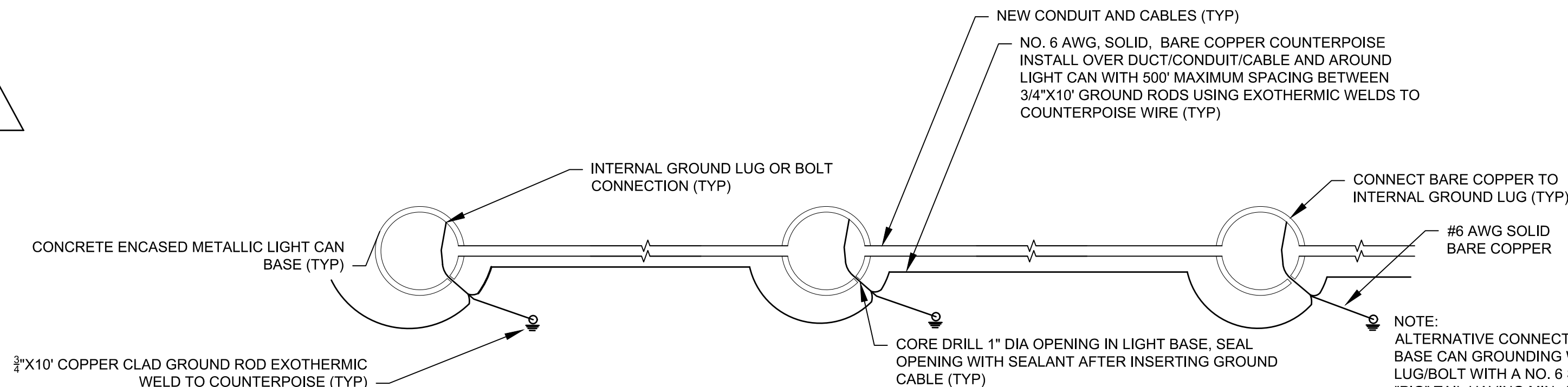


- NOTE:
1. EACH LIGHT SHALL BE TAGGED WITH THE IDENTIFICATION NUMBER AS SHOWN ON THIS SHEET
  2. THE TAG SHALL BE 2" DIA. DISK OF NON-CORROSIVE BASED METAL WITH NUMBERS PERMANENTLY STAMPED OR ETCHED.
  3. TAGS SHALL BE SECURELY ATTACHED TO THE LIGHT/SIGN UNIT BY SET SCREW OR WIRE BAND.

**IDENTIFICATION TAG DETAIL**  
N.T.S.  
(INCIDENTAL TO ITEM L-125-5.2, L-125-5.3)



**ELECTRIC HANDHOLE DETAIL**  
N.T.S.  
(ITEM L-115-5.3)



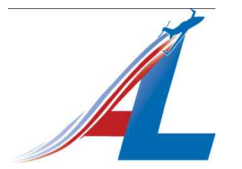
**EQUIPOTENTIAL COUNTERPOISE INSTALLATION AND LIGHT BASE GROUNDING**  
DETAIL  
N.T.S.  
(INCIDENTAL TO ITEM L-108-5.2)

Project:

## CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



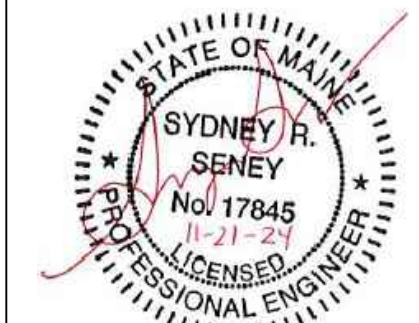
Team:

Architect:  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

Structural/MEP Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



## ISSUED FOR BID

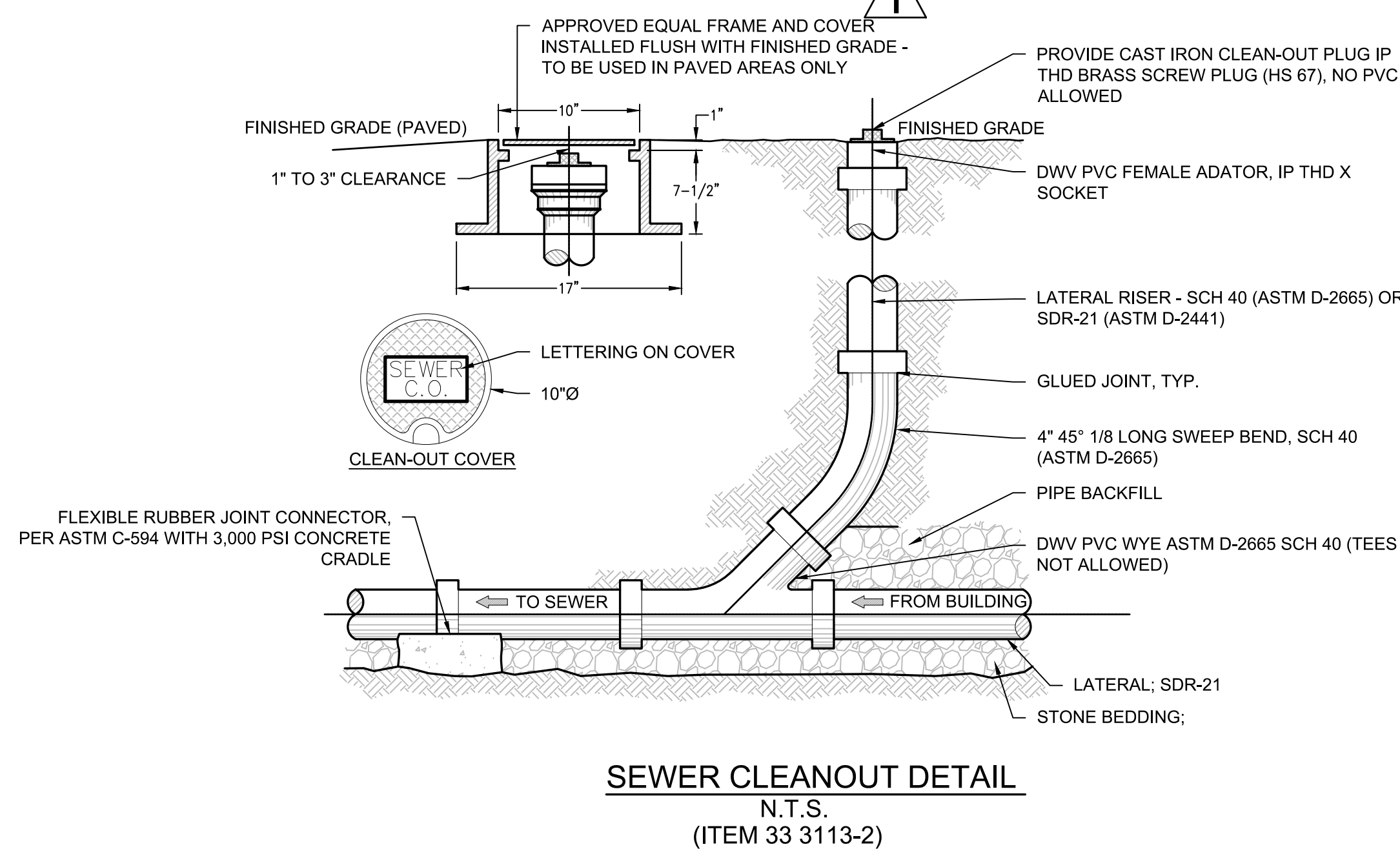
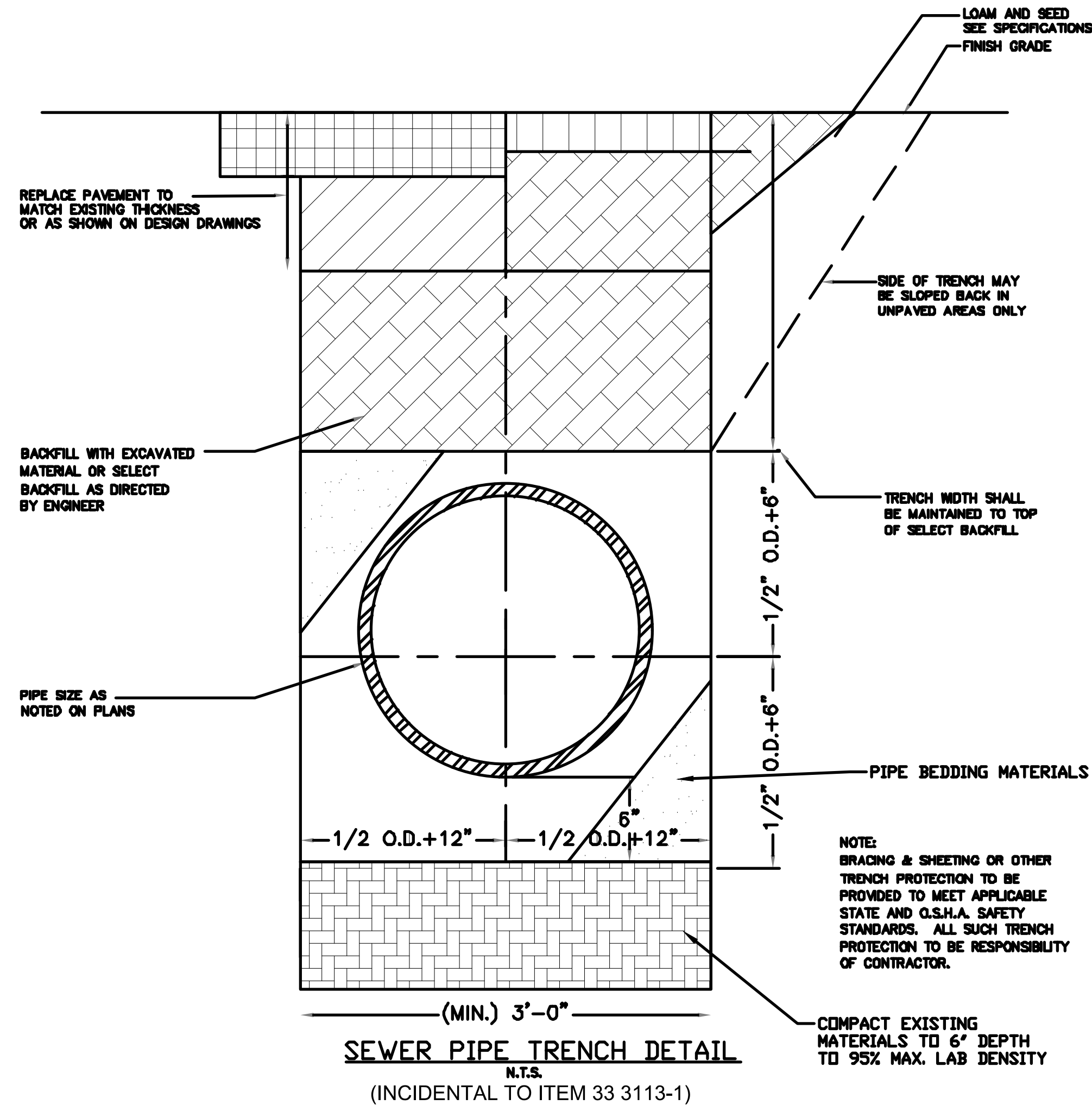
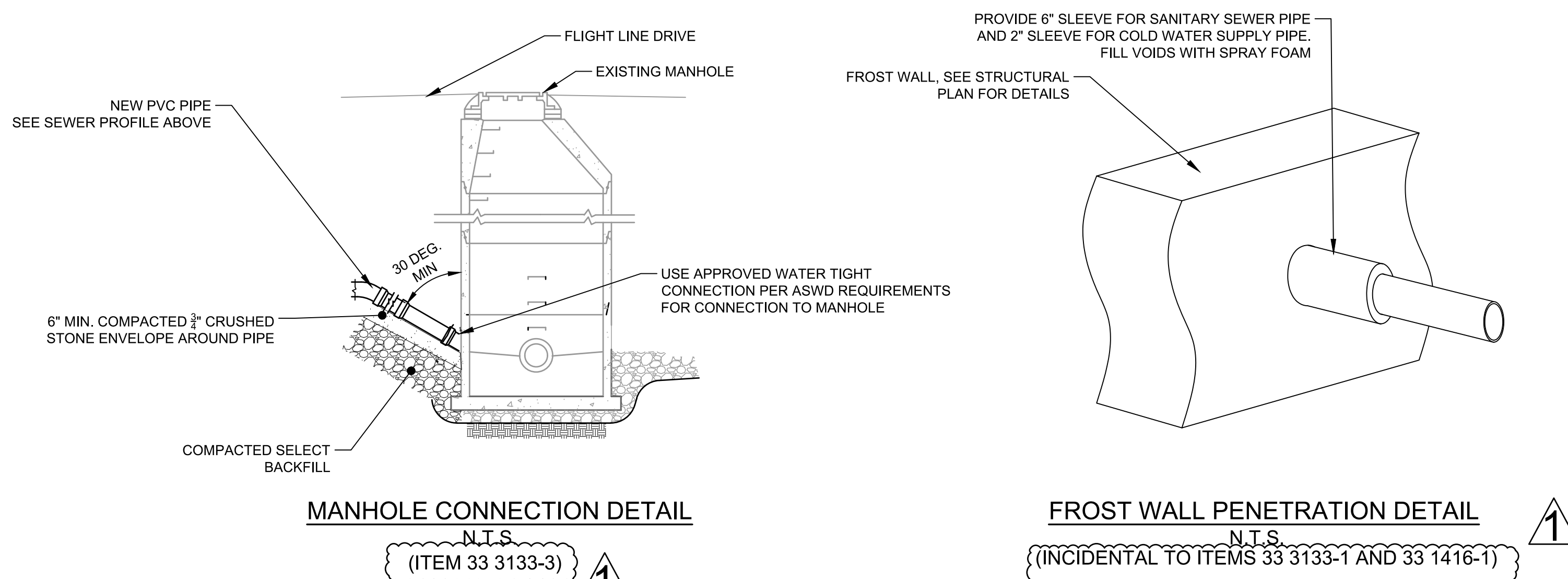
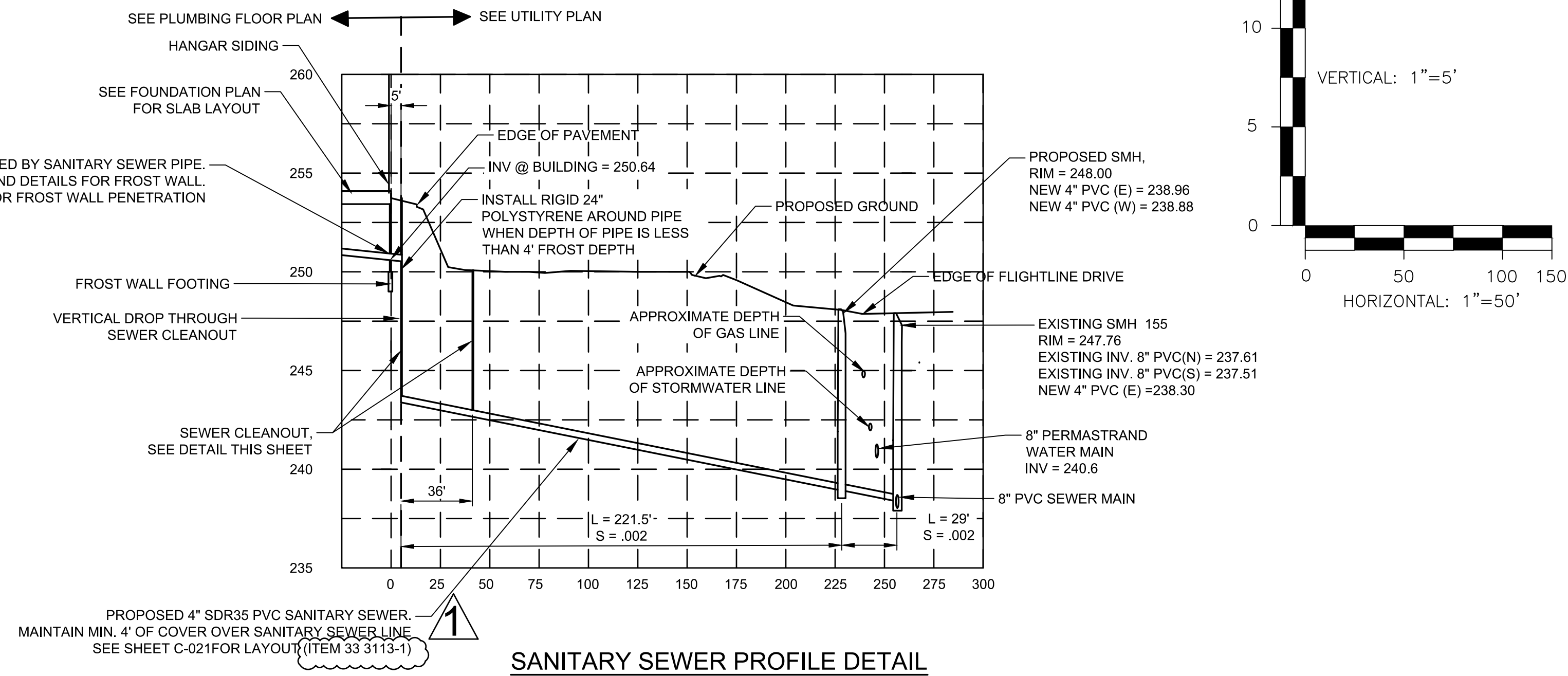
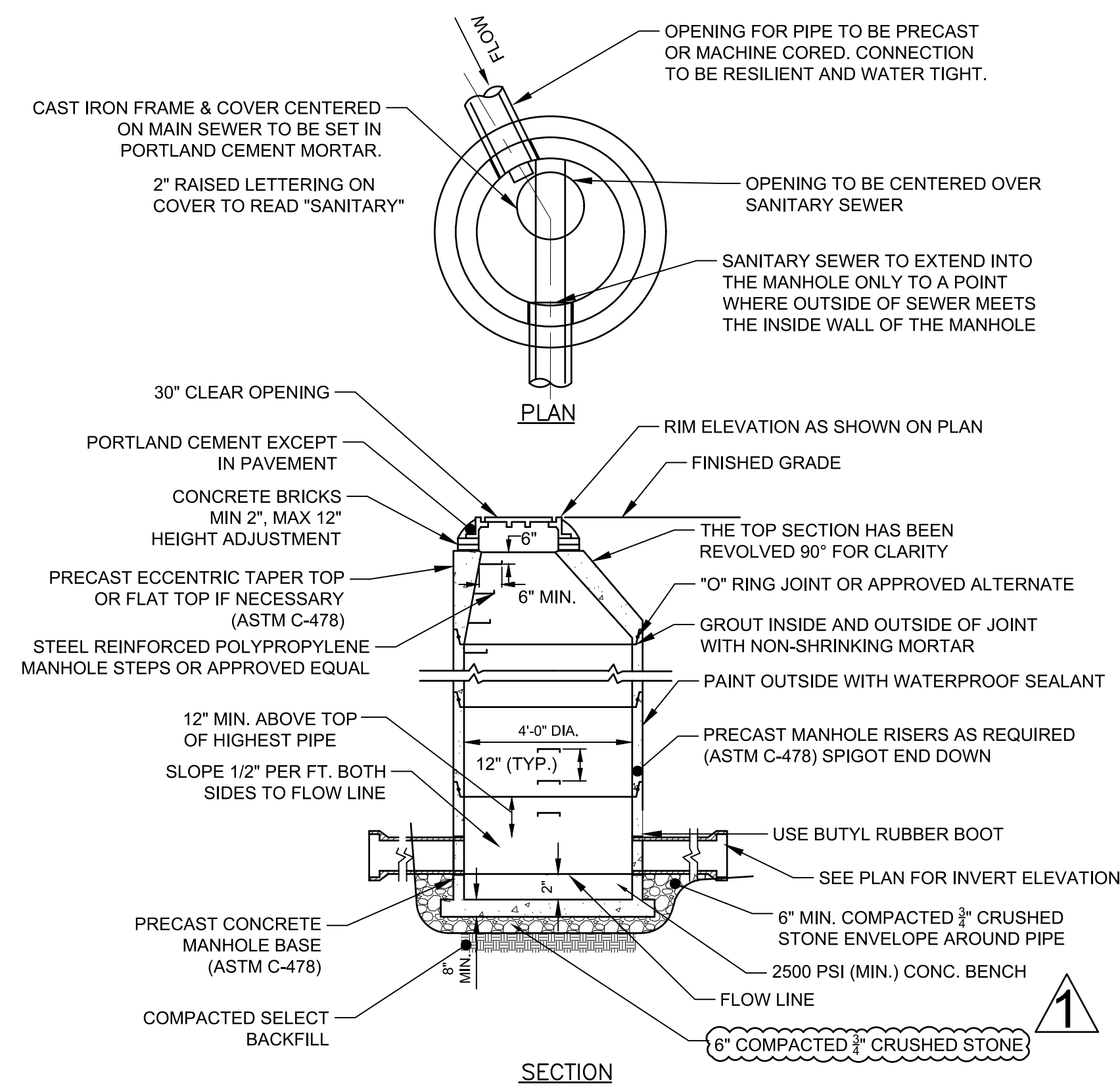
| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

|             |                |
|-------------|----------------|
| Job No.:    | 19186.01       |
| Drawn By:   | MRB            |
| Checked By: | JTG            |
| Issue:      | ISSUED FOR BID |
| Date:       | 11/21/2024     |
| Scale:      | NTS            |

Drawing Title:  
**AIRFIELD  
ELECTRICAL  
DETAILS  
(2 OF 2)**

Drawing No.:  
**C-023**





NOTES:

1. IT IS RECOMMENDED THAT ALL SOLVENT WELD JOINTS BE MADE AS FOLLOWS:
  - CLEAN DRY HUBS AND SPOTS
  - PRIMER APPLIED TO PARTS BEING CONNECTED
  - PVC SOLVENT WELD CEMENT APPLIED DIRECTLY OVER PRIMER
  - PVC TYPE I IS COMPATIBLE FOR SOLVENT WELDING TO SDR-21 OR ANY OTHER PVC TYPE I PIPE MADE TO "STEEL PIPE" OUTSIDE DIMENSIONS
2. FILL SHALL BE PLACED IN 6" LIFTS AND TAMPED AFTER EACH LIFT.

Project:

## CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

|         |
|---------|
| Client: |
|---------|



**Auburn-Lewiston  
Municipal Airport**  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

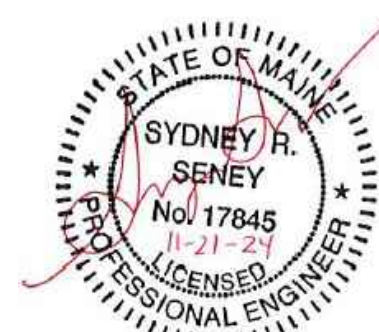
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



**ISSUED FOR BID**

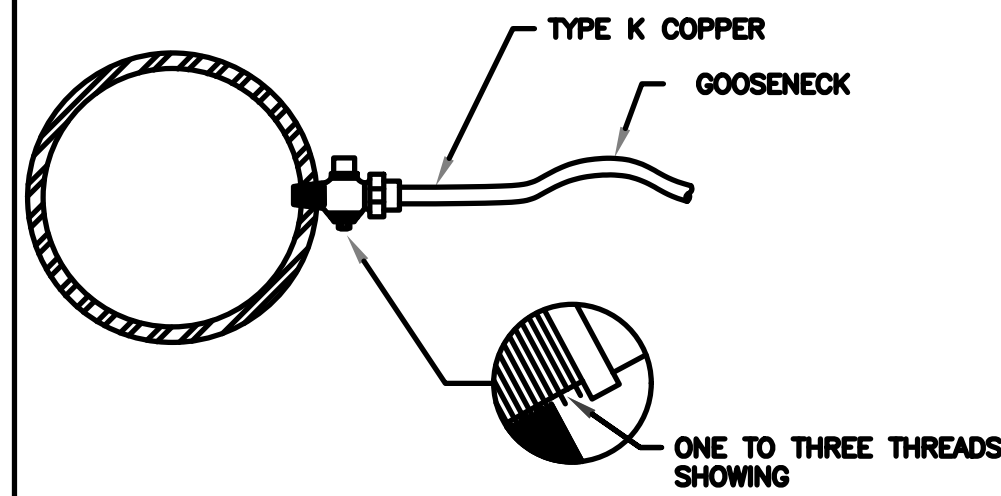
| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

|             |          |
|-------------|----------|
| Job No.:    | 19186.01 |
| Drawn By:   | MRB      |
| Checked By: | JTG      |
| Issue:      | ISSUED   |
| Date:       | 11/21/20 |
| Scale:      | NTS      |

Drawing Title:  
**SEWER UTILITY  
DETAILS**

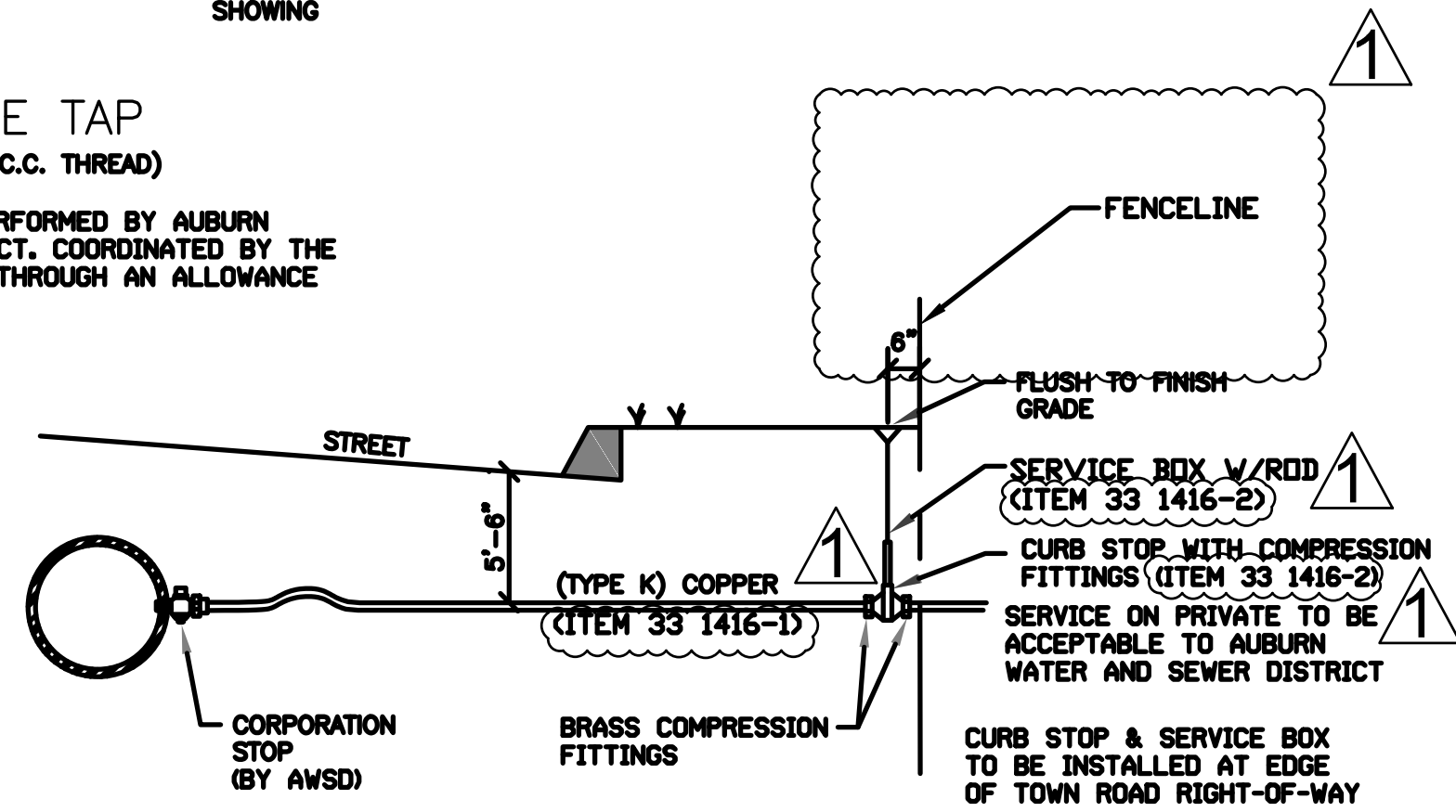
Drawing No.:  
**C-024**



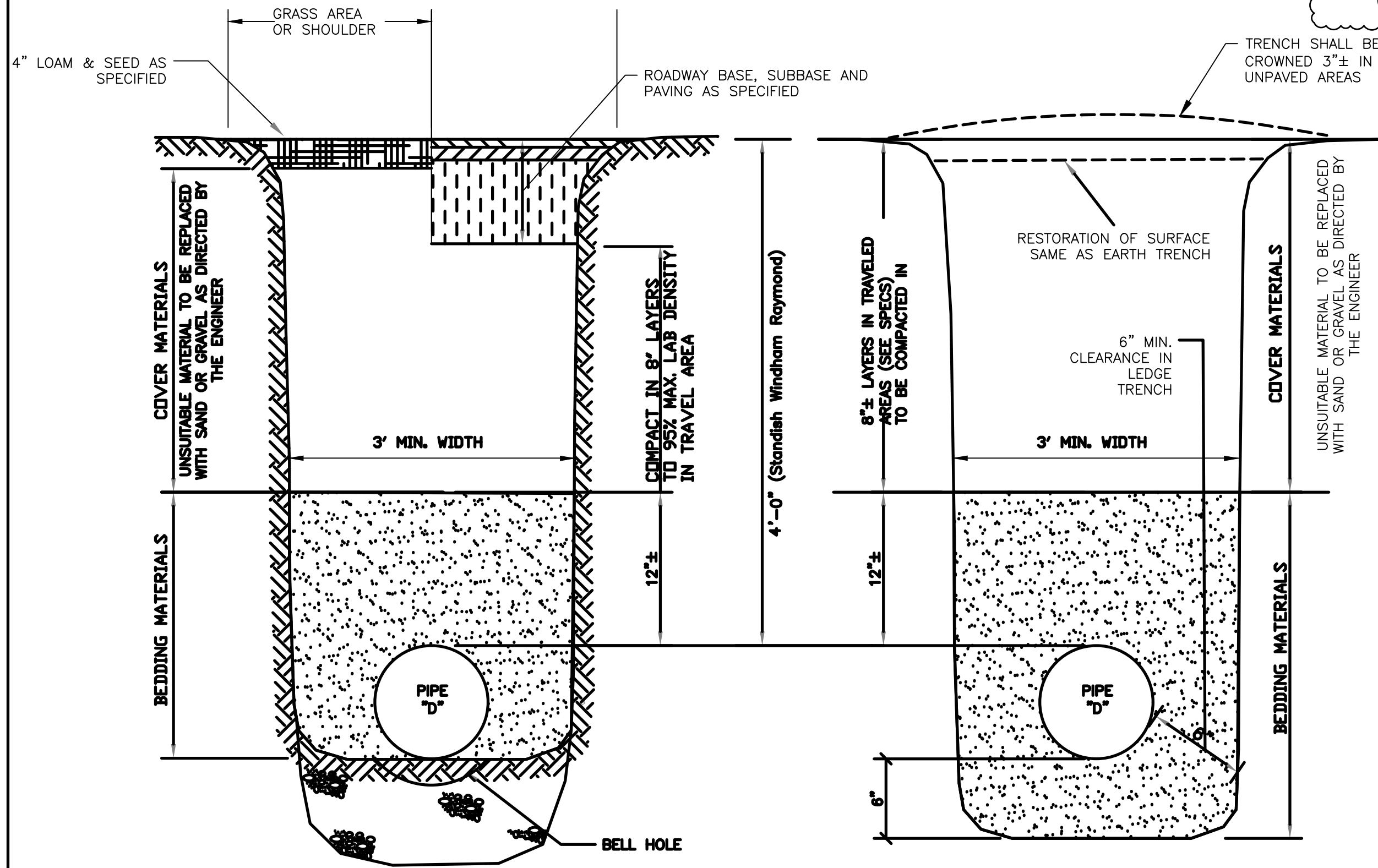


SERVICE TAP  
(3/4" AND 1" C.C. THREAD)

1 SERVICE TAP TO BE PERFORMED BY AUBURN WATER & SEWER DISTRICT, COORDINATED BY THE CONTRACTOR AND PAID THROUGH AN ALLOWANCE (ITEM 33 1416-3)



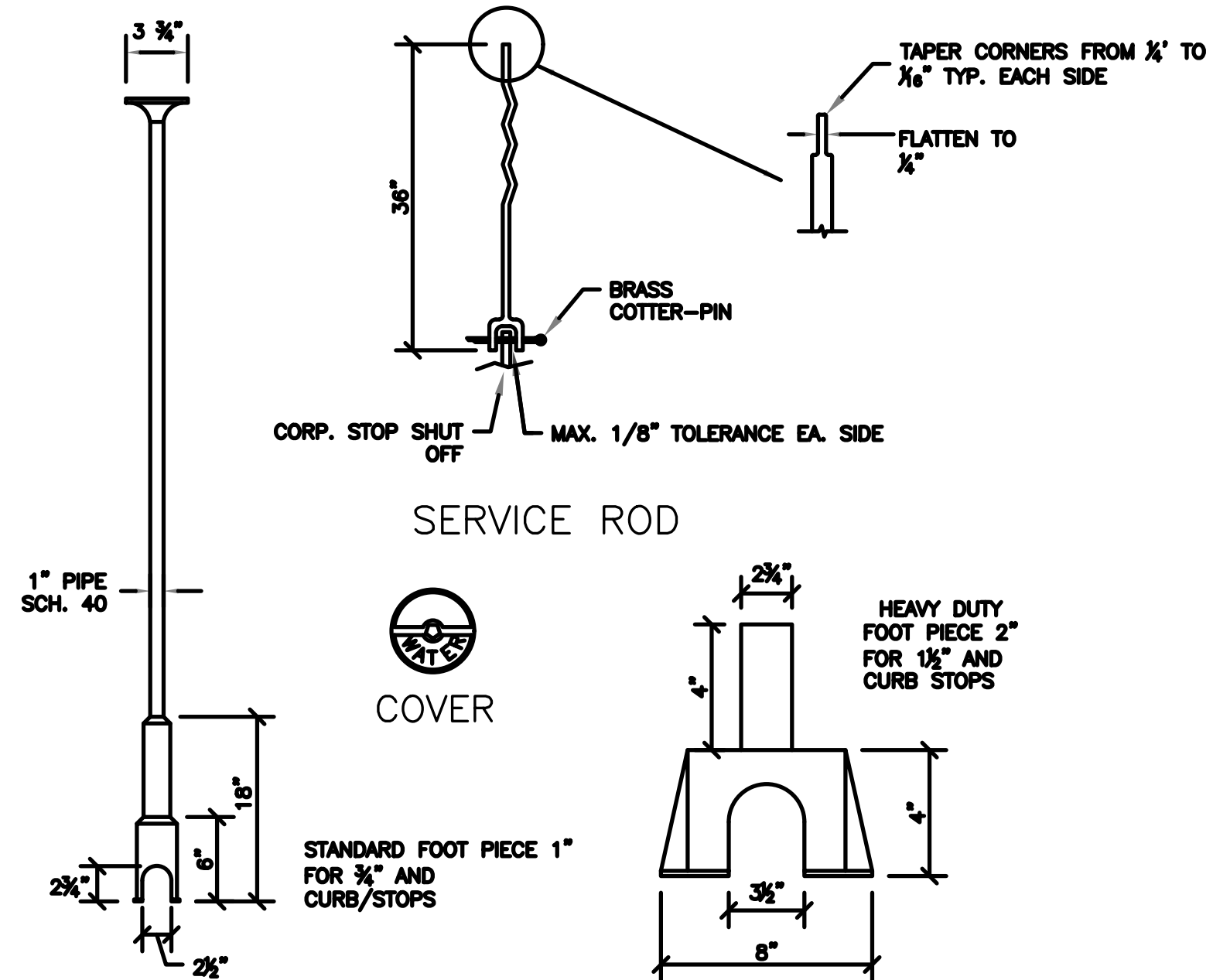
TYPICAL SERVICE CONNECTION  
NOTE: SERVICE LINE TO BE INSTALLED BY THE CONTRACTOR FROM THE SERVICE TAP



SECTION THRU EARTH TRENCH

SECTION THRU LEDGE TRENCH

WATER PIPE TRENCH DETAIL  
N.T.S.  
(INCIDENTAL TO ITEM 33 1416-1)

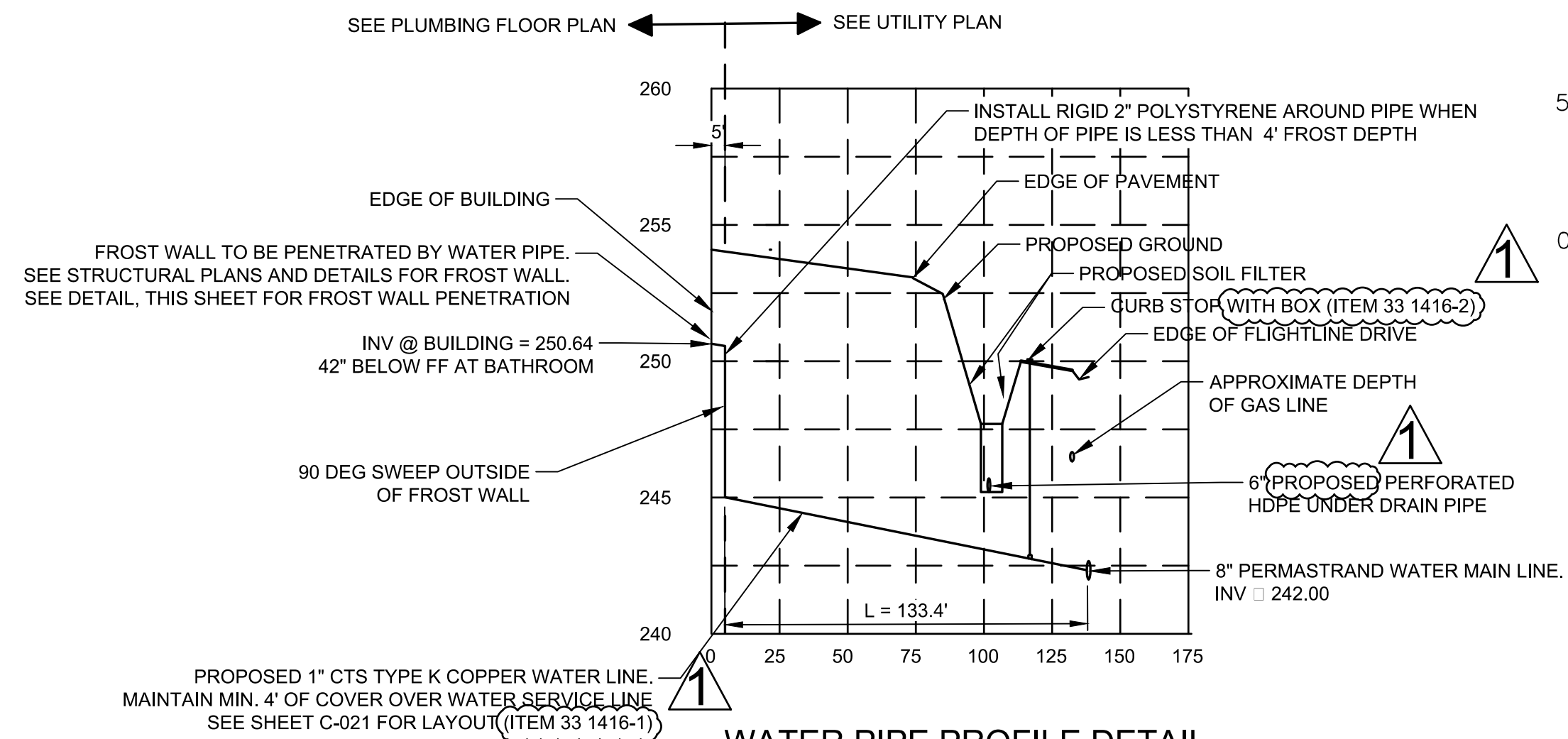


SERVICE BOX

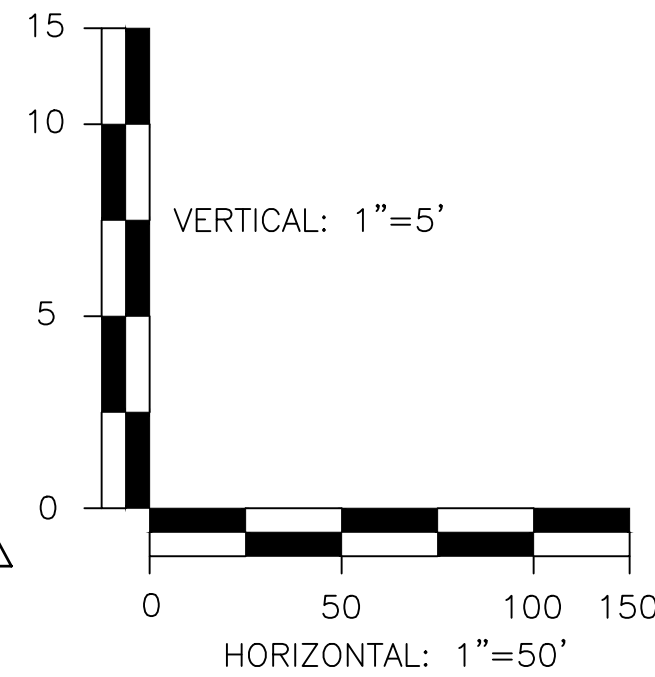
FOOT PIECE

NOTE: ANY EXTENSION OF SERVICE BOX REQUIRES:  
1. 1" FEMALE IRON PIPE COUPLING  
2. 1" THREADED PIPE (THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)

SERVICE BOX DETAIL  
N.T.S.  
(INCIDENTAL TO ITEM 33 1416-2)



WATER PIPE PROFILE DETAIL  
N.T.S.



Project:  
**CONSTRUCT  
NEW T-HANGAR  
AND TAXILANE**  
45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:  
  
Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631

McFarland Johnson  
53 Regional Drive  
Concord, NH 03301

Fennick  
McCredie  
Architecture

Team:  
Architect:  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900  
Structural/MEP Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421  
Civil Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:

ISSUED FOR BID

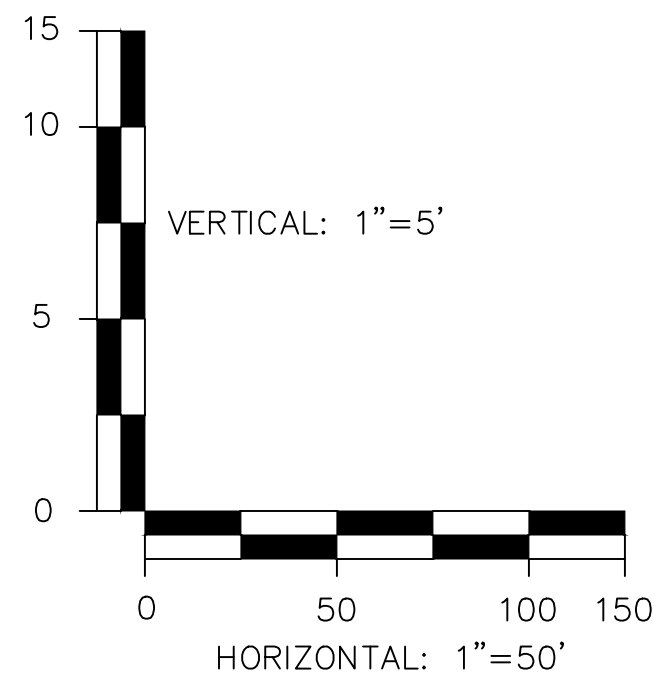
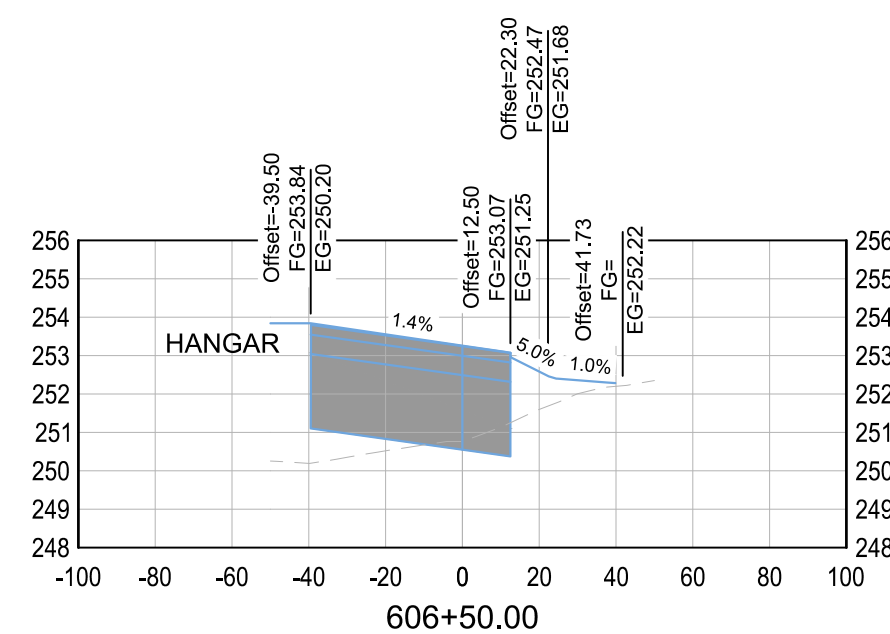
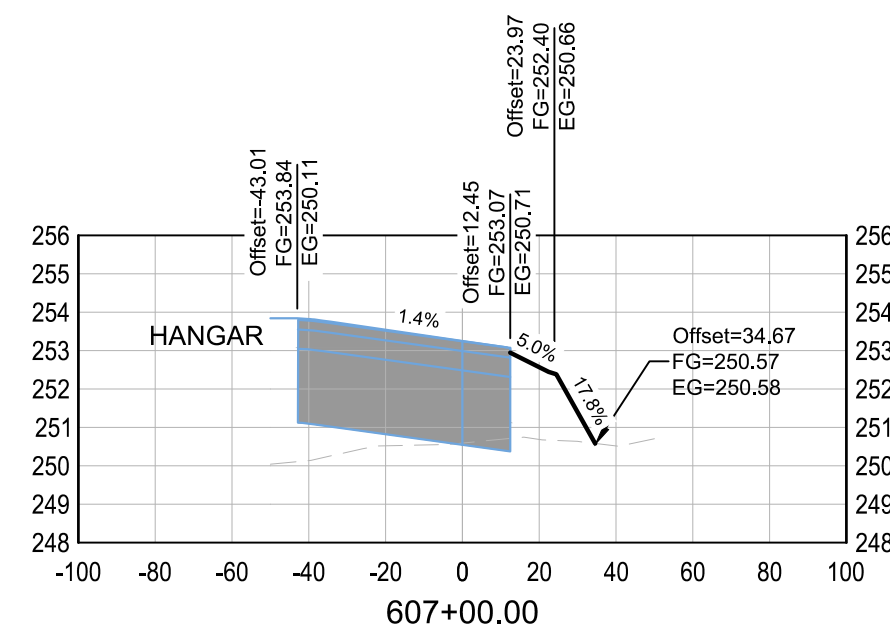
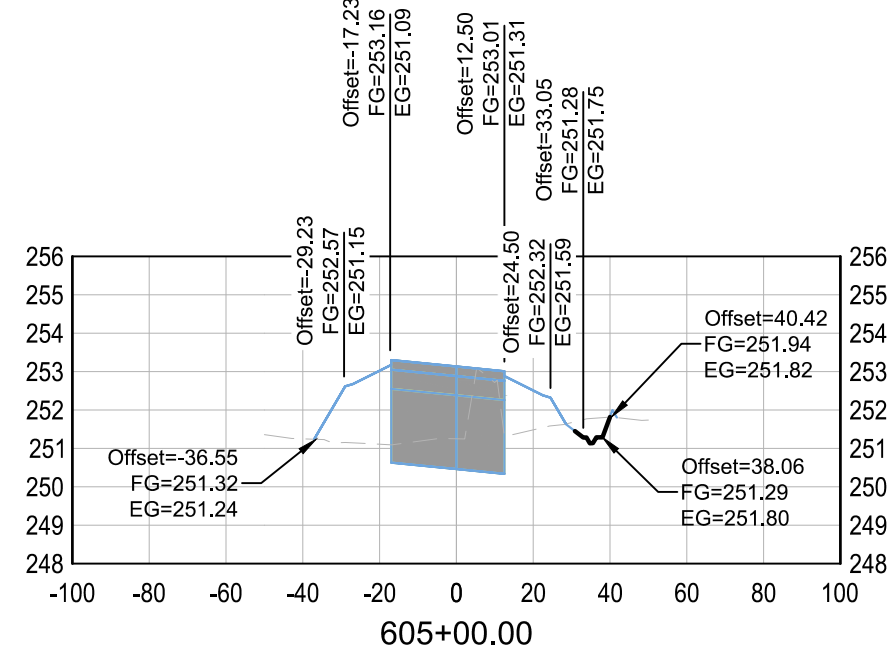
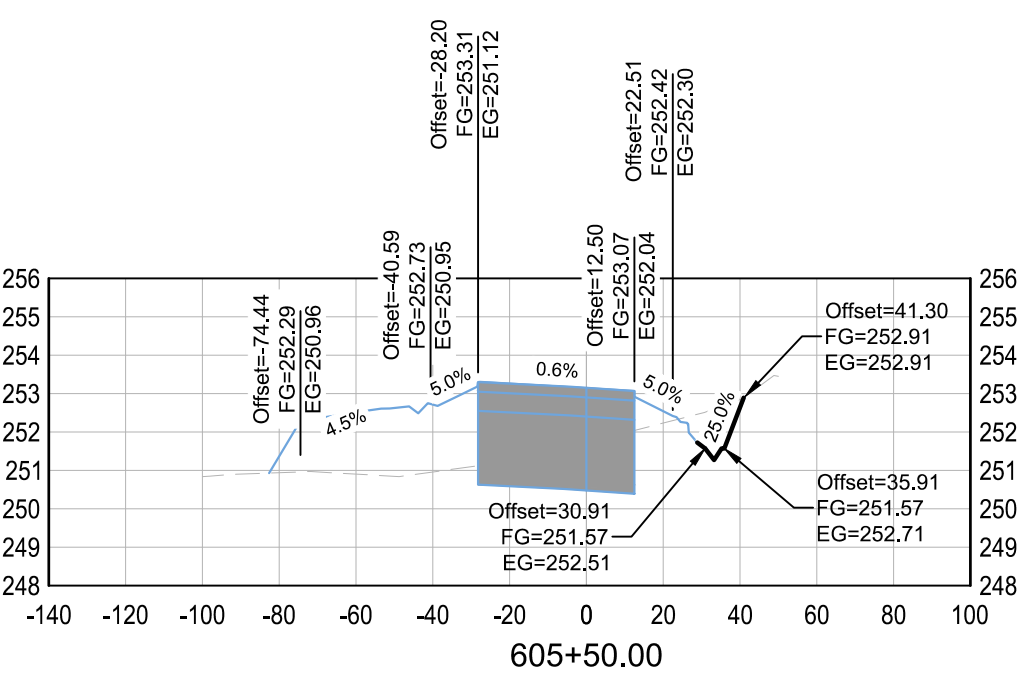
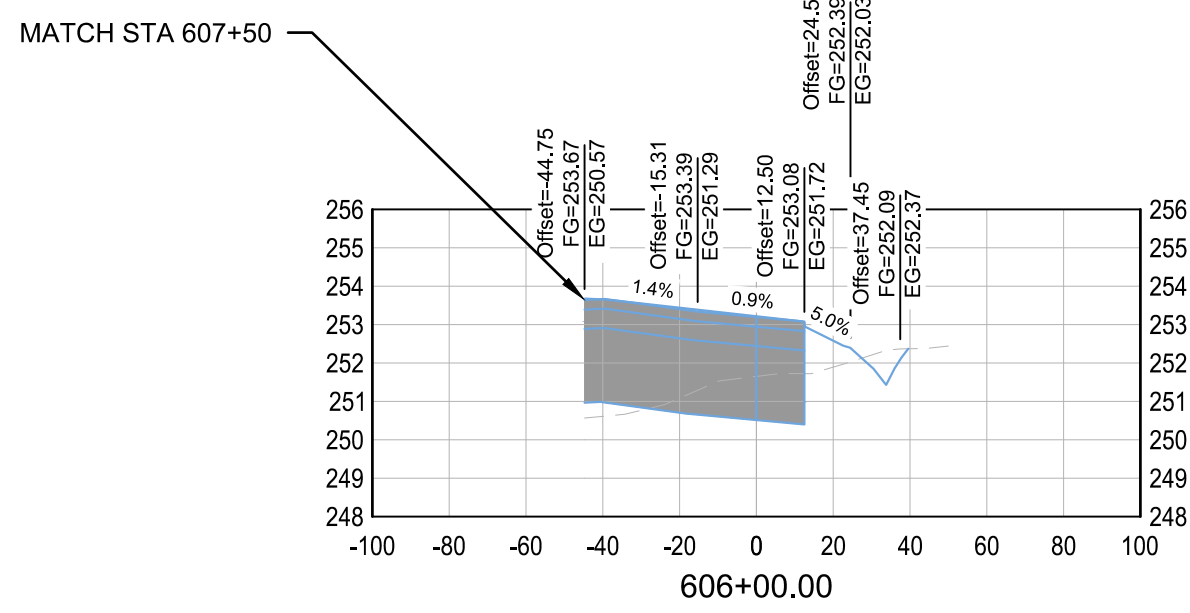
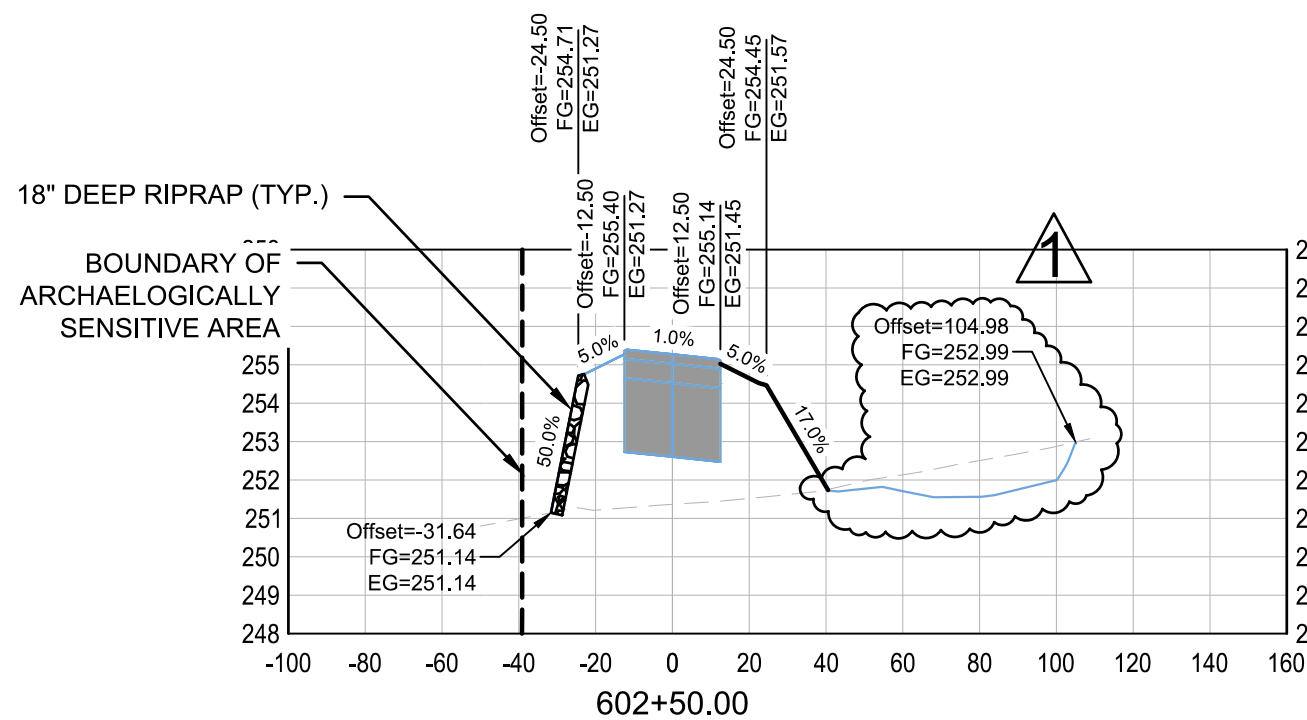
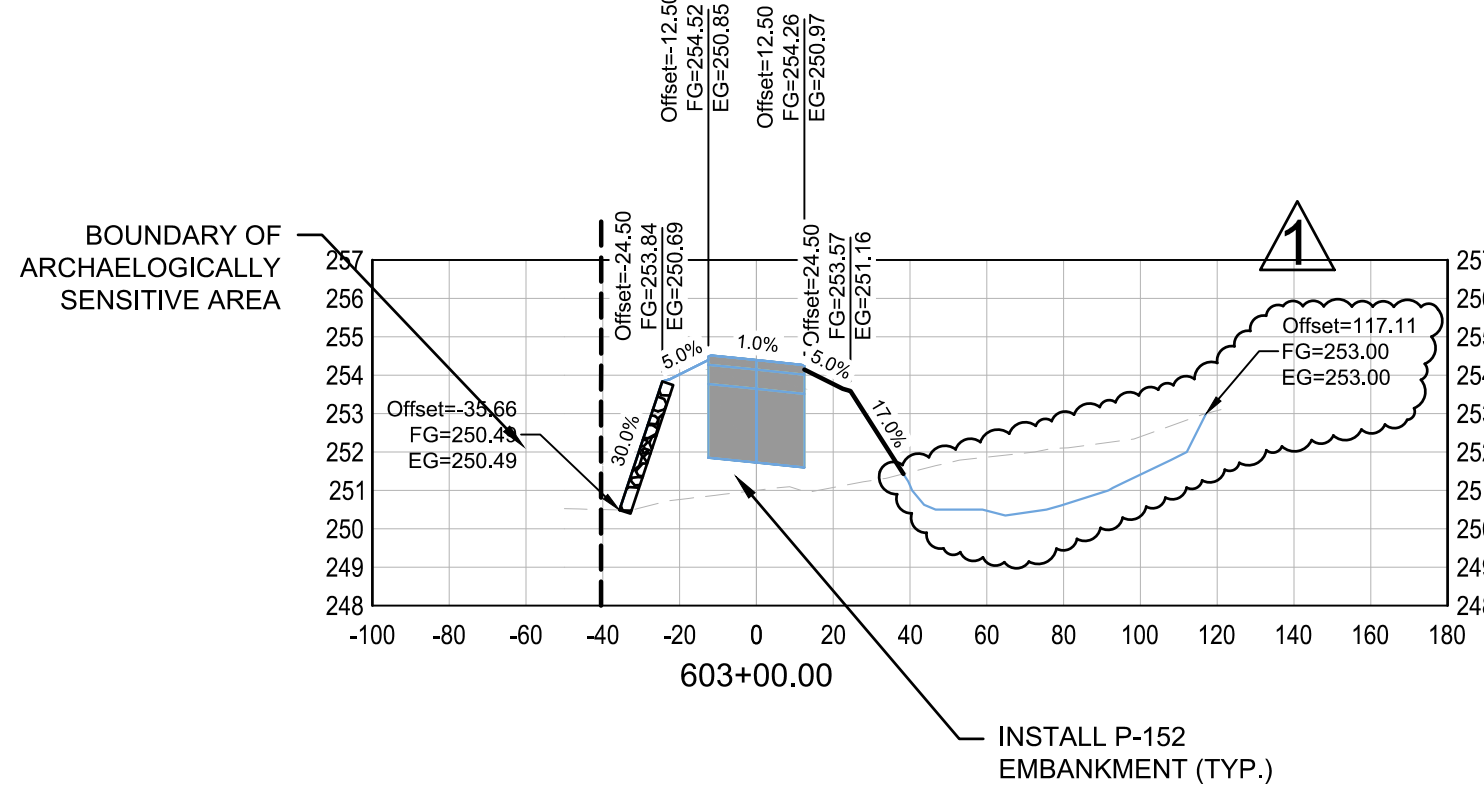
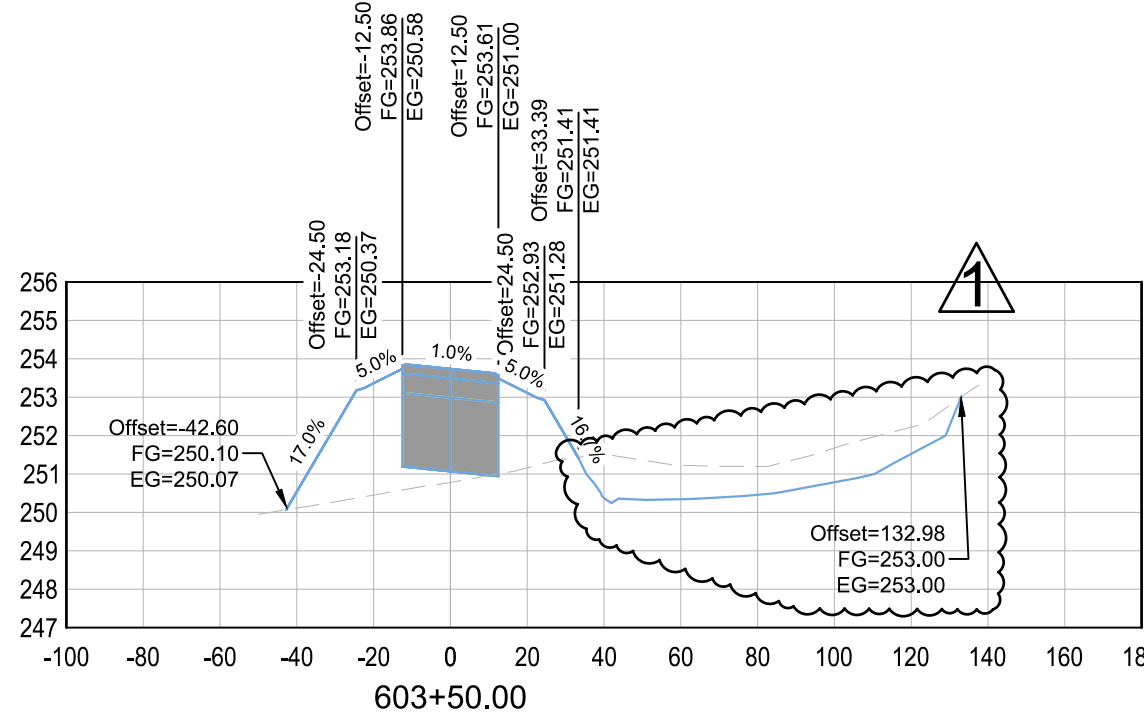
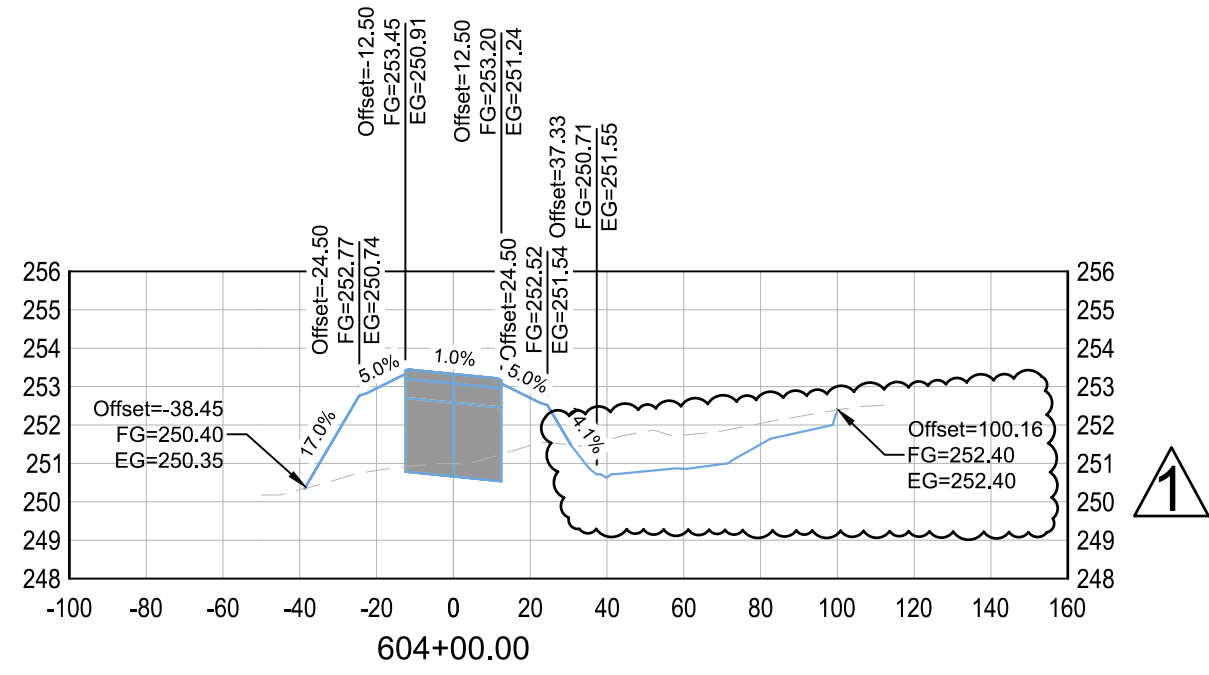
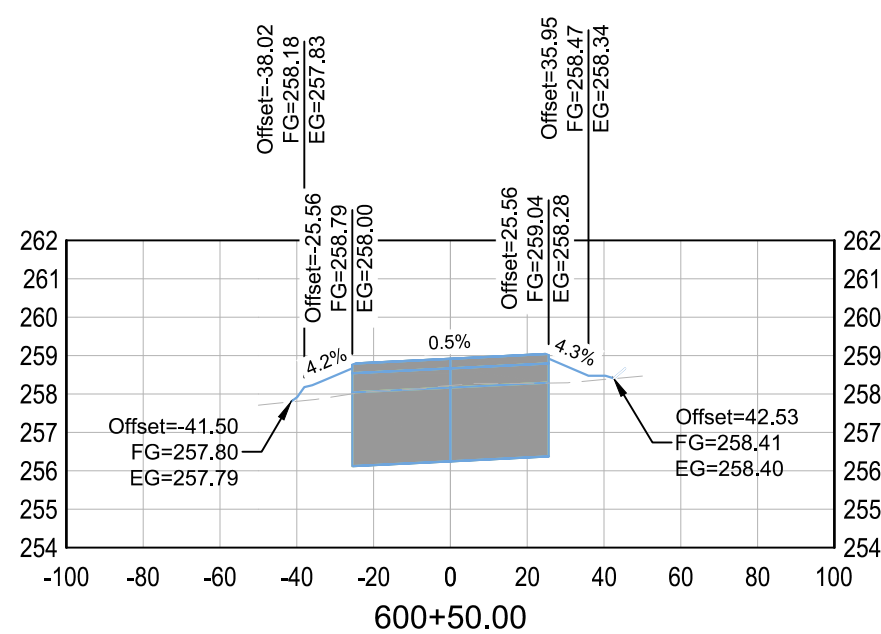
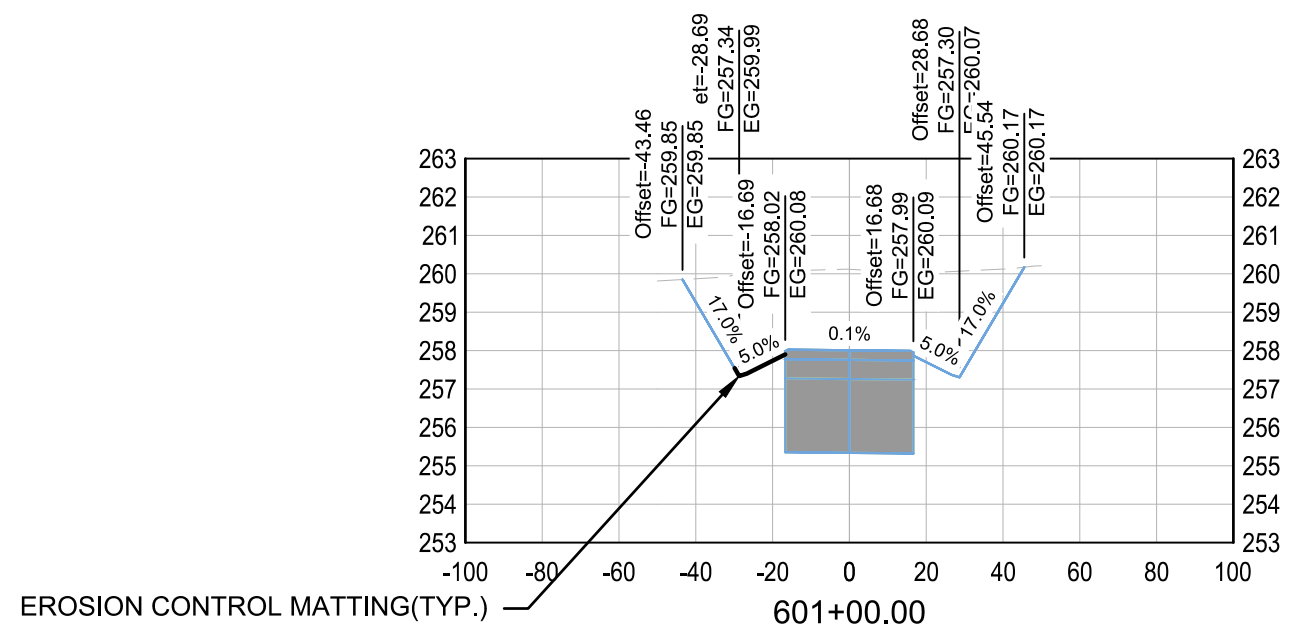
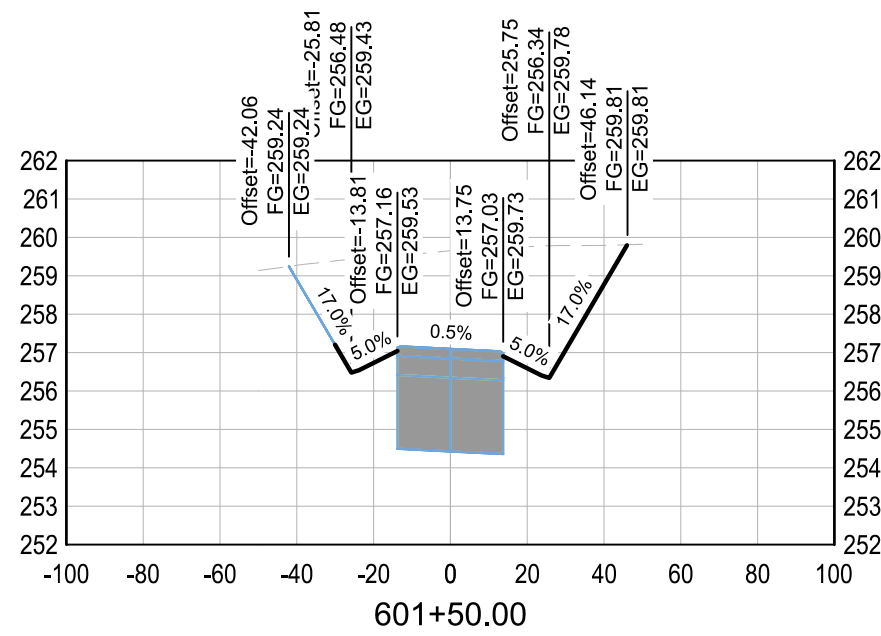
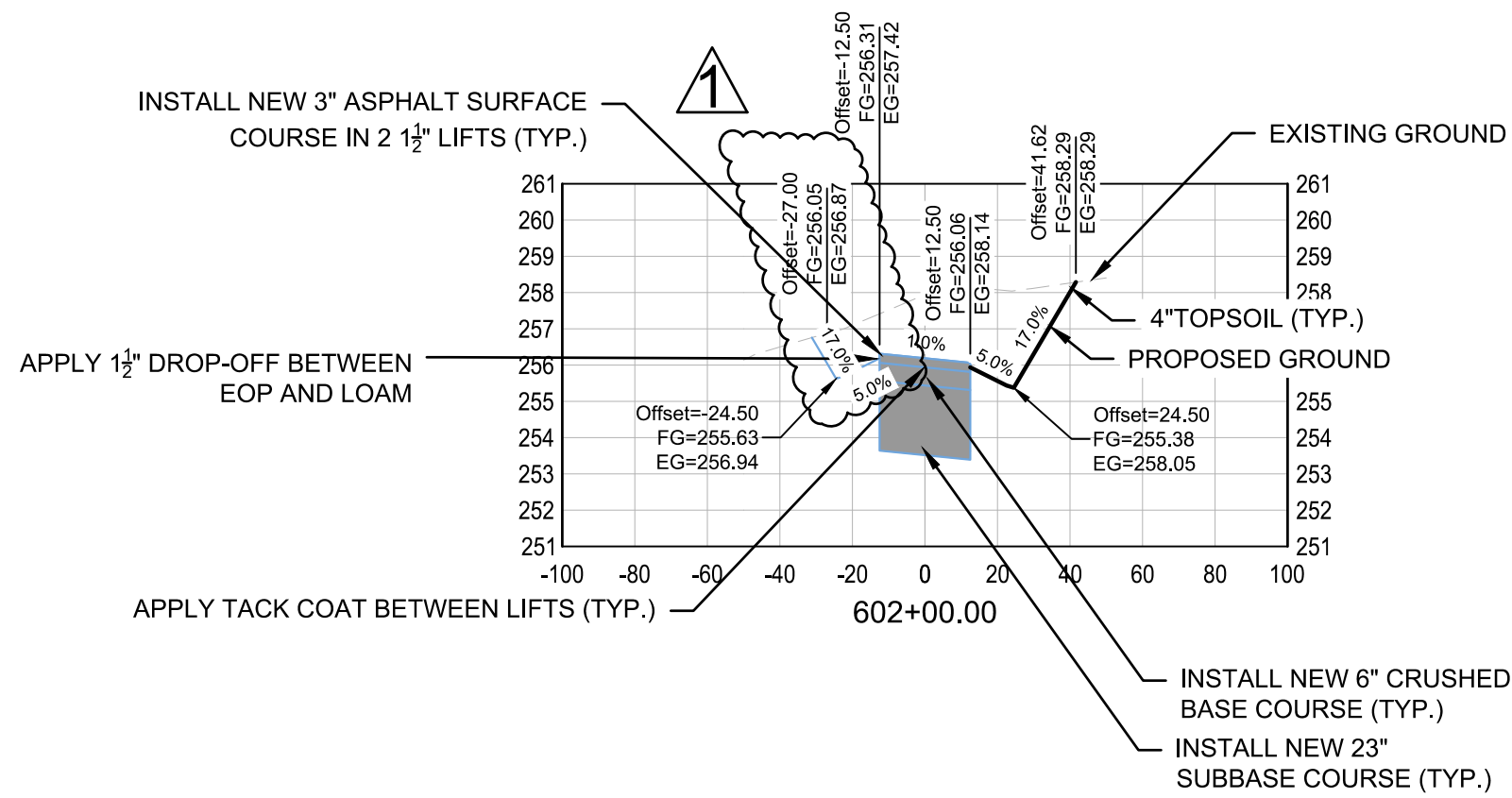
| No. | Date     | Revision      |
|-----|----------|---------------|
| 1   | 12.11.24 | ADDENDUM NO.2 |

|             |                |
|-------------|----------------|
| Job No.:    | 19186.01       |
| Drawn By:   | MRB            |
| Checked By: | JTG            |
| Issue:      | ISSUED FOR BID |
| Date:       | 11/21/2024     |
| Scale:      | NTS            |

Drawing Title:  
**WATER UTILITY  
DETAILS**

Drawing No.:  
**C-025**





Project:

## CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

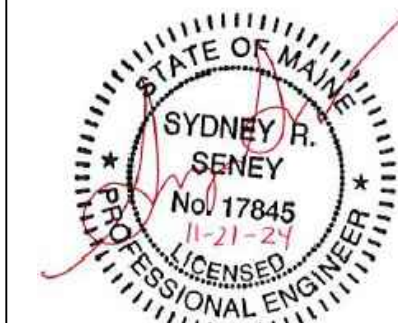
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



ISSUED FOR BID

| No.      | Date     | Revision |
|----------|----------|----------|
| 12.11.24 | ADDENDUM | NO.2     |

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: AS NOTED

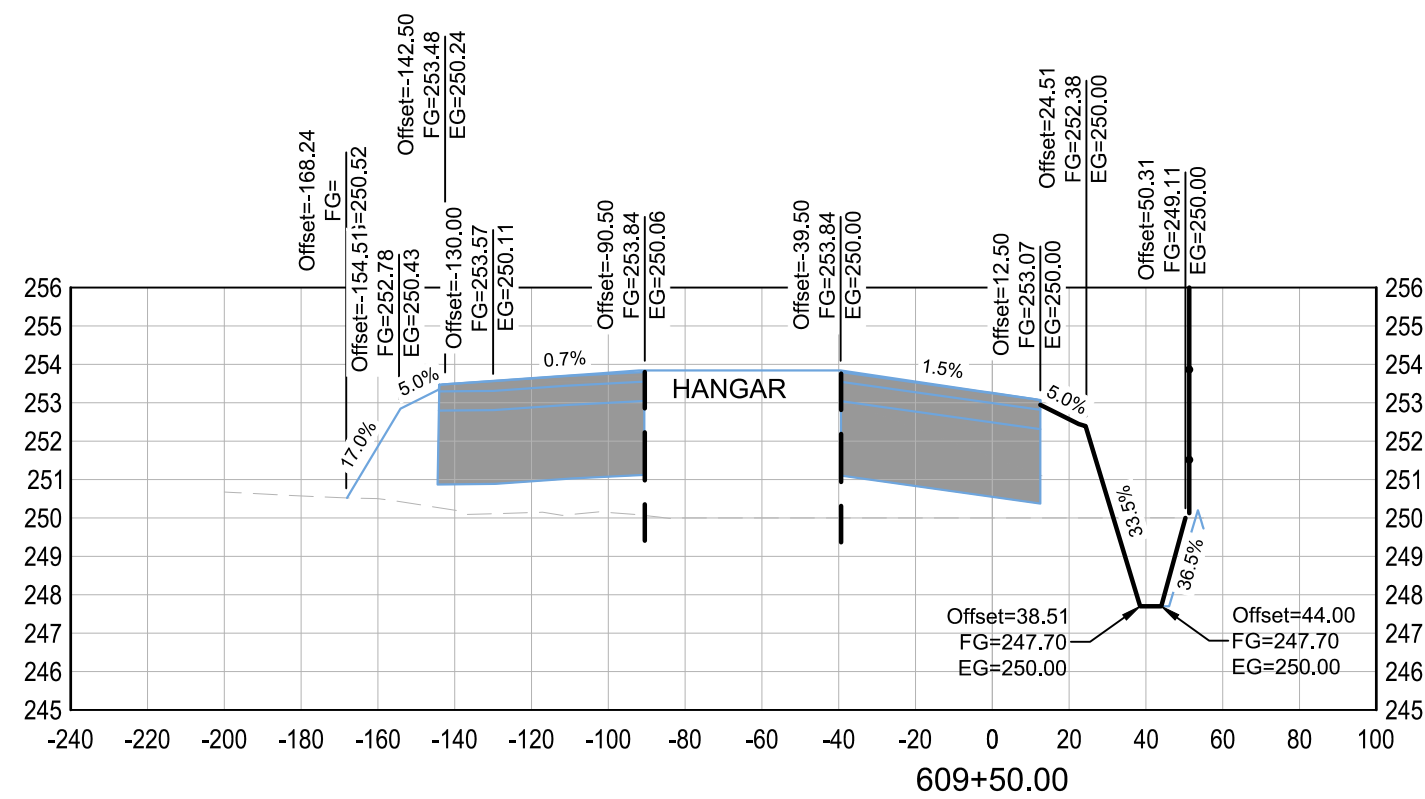
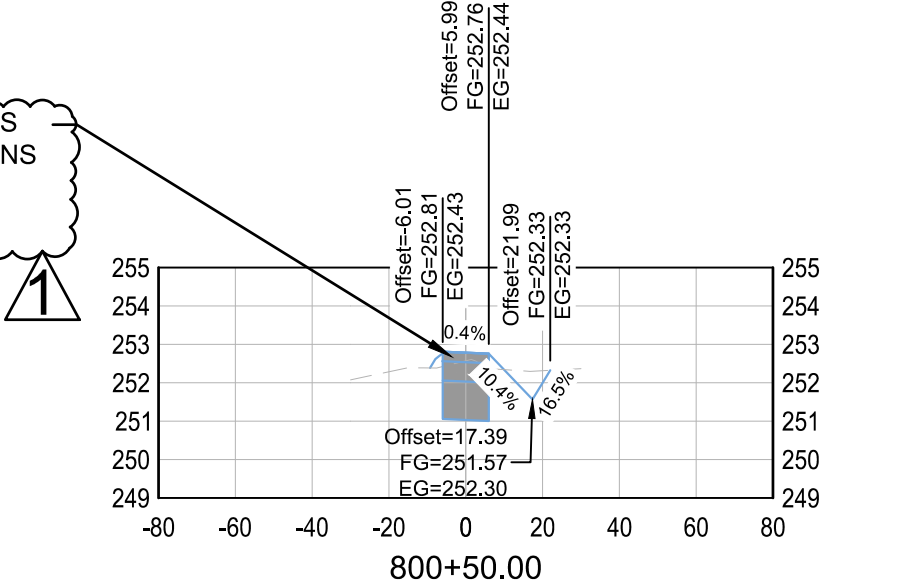
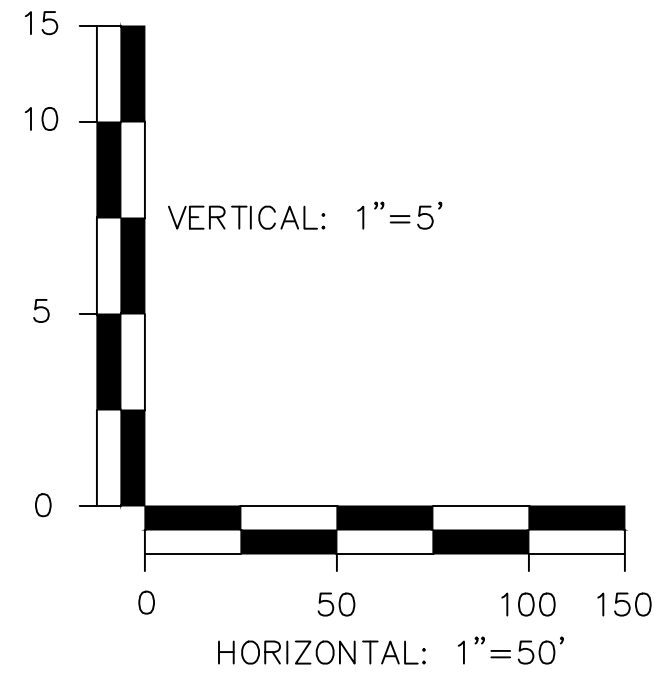
Drawing Title:

## CROSS SECTIONS (SHEET 1 OF 2)

Drawing No.:

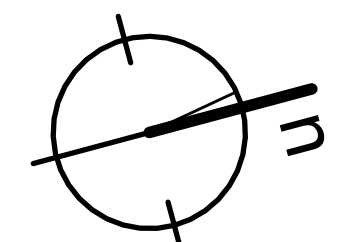
## C-026





C-027

A-100





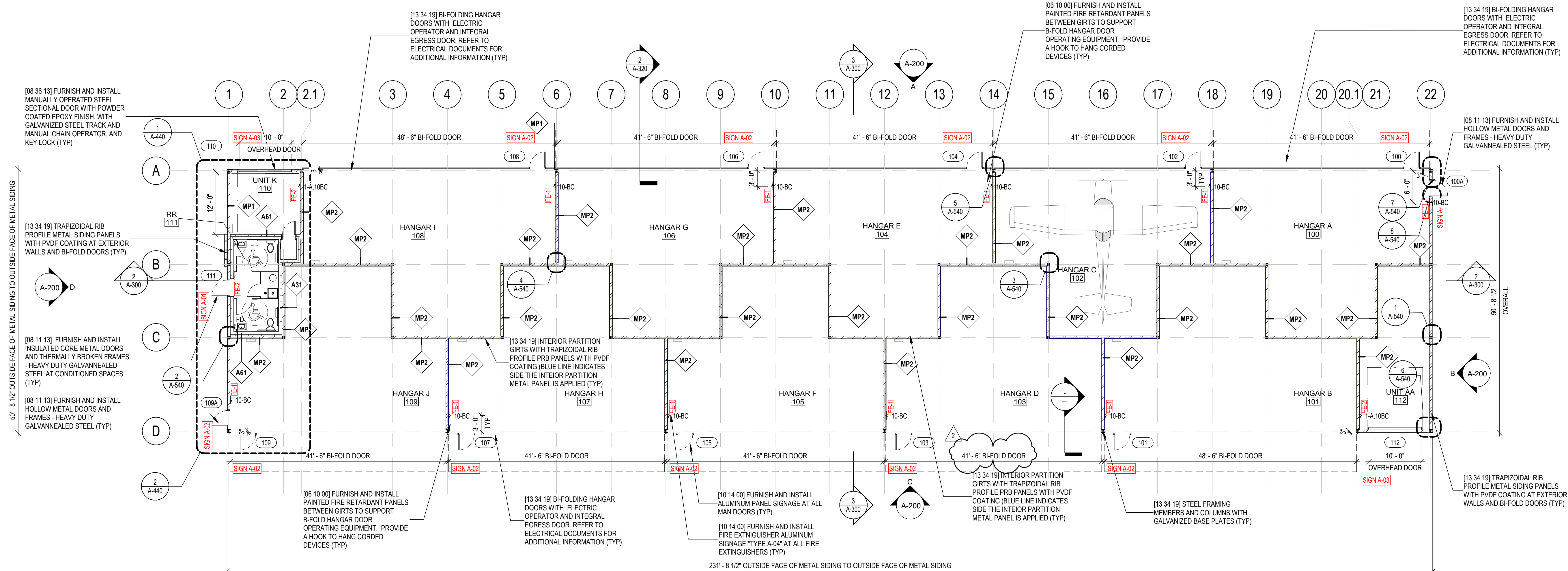
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|-------|-----------|
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| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1  | 10-BC     |
| FE-1A | 10-BC 2   |
| FE-2  | 1-A, 10BC |
| FE-2  | 1-A, 10BC |

| BI-FOLD DOOR THRESHOLD STEEL |              |                                   |                                            |            |
|------------------------------|--------------|-----------------------------------|--------------------------------------------|------------|
| ITEM                         | BI-FOLD DOOR | MATERIAL                          | COMMENTS                                   | FINISH     |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-3                         | THRESHOLD A  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |
| MT-4                         | THRESHOLD B  | CUSTOM WELDED DIAMOND PLATE STEEL | SUPPLY EACH GROUPING IN THREE EQUAL PIECES | GALVANIZED |

REFER TO SHEET A-102 FOR LOCATIONS OF THRESHOLDS

| ACCESS DOOR |          |                       |                       |
|-------------|----------|-----------------------|-----------------------|
| ITEM        | MATERIAL | COMMENTS              | FINISH                |
| AD-1        | STEEL    | INSULATED ACCESS DOOR | POLYESTER POWDER COAT |
| AD-1        | STEEL    | INSULATED ACCESS DOOR | POLYESTER POWDER COAT |
| AD-2        | STEEL    | OVERSIZED ACCESS DOOR | POLYESTER POWDER COAT |

REFER TO SHEET A-441 FOR LOCATIONS OF ACCESS DOORS



1 CONSTRUCTION PLAN - MAIN LEVEL  
SCALE: 3/32" = 1'-0"

THIS SHEET INTENDED TO BE VIEWED IN COLOR

**Civil Engineer:**  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:

## ISSUE FOR BID

| No. | Date     | Revision  |
|-----|----------|-----------|
| 2   | 12/10/24 | ADD NO. 1 |

|             |               |
|-------------|---------------|
| Job No.:    | 1260          |
| Drawn By:   | DM            |
| Checked By: | DMC           |
| Issue:      | ISSUE FOR BID |
| Date:       | 11/21/2024    |
| Scale:      | 3/32" = 1'-0" |

Drawing Title:  
CONSTRUCTION  
PLAN - MAIN LEVEL

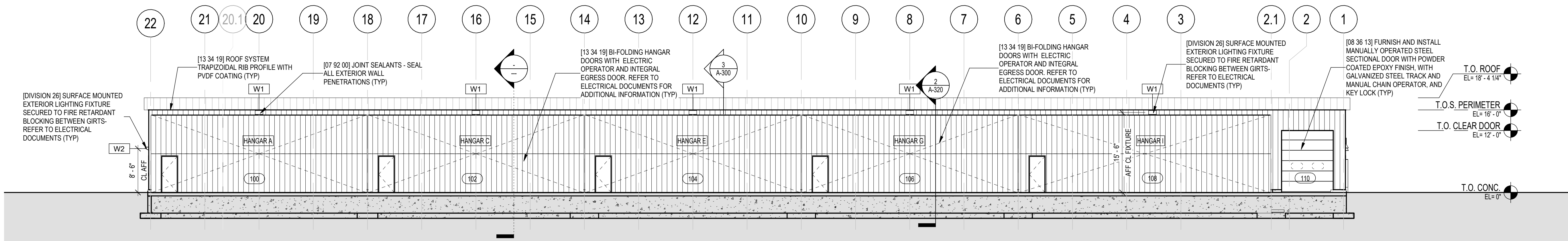
Drawing No.:

A-101

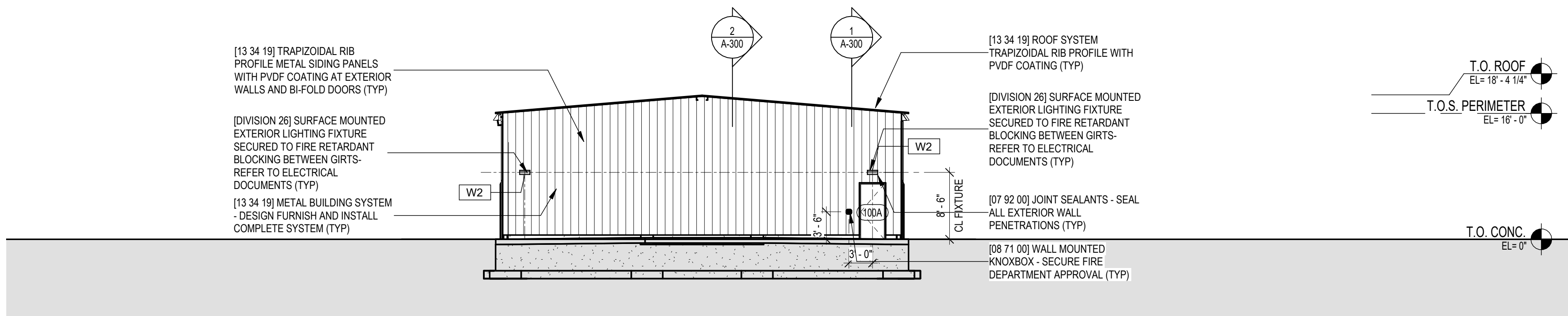




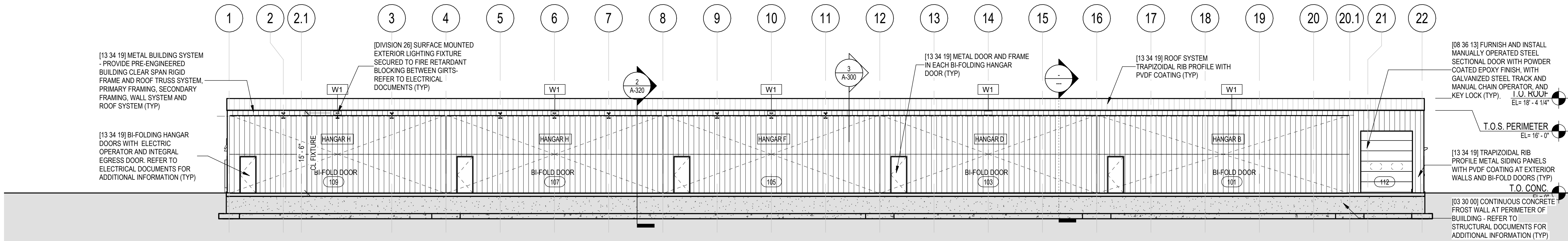




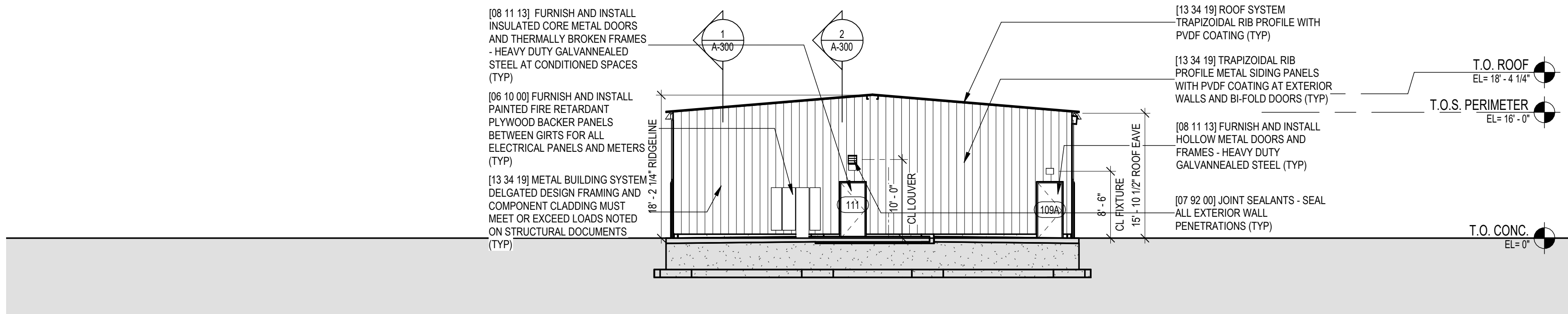
**A** BUILDING ELEVATION EAST  
SCALE: 3/32" = 1'-0"



**B** BUILDING ELEVATION NORTH  
SCALE: 3/32" = 1'-0"

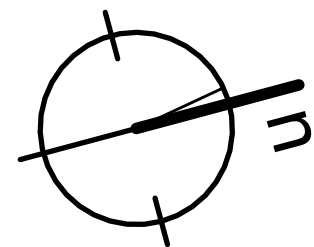
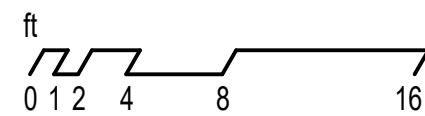


**C** BUILDING ELEVATION WEST  
SCALE: 3/32" = 1'-0"



**D** BUILDING ELEVATION SOUTH  
SCALE: 3/32" = 1'-0"

ALL STEEL FRAMING PRIMARY AND SECONDARY FOR THE METAL BUILDING SYSTEM SHALL BE SHOP PRIMED. THIS INCLUDES BASE PLATE PURLINS, AND EXTERIOR WALL GIRTS.



Project:

## CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631

**McFarland Johnson**

53 Regional Drive  
Concord, NH 03301

**fennick  
mccredie  
Architecture**

Team:

**Architect:**  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

**Structural/MEP Engineer:**  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

**Civil Engineer:**  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:

### ISSUE FOR BID

| No. | Date     | Revision |
|-----|----------|----------|
| 2   | 12/10/24 | ADD NO.2 |

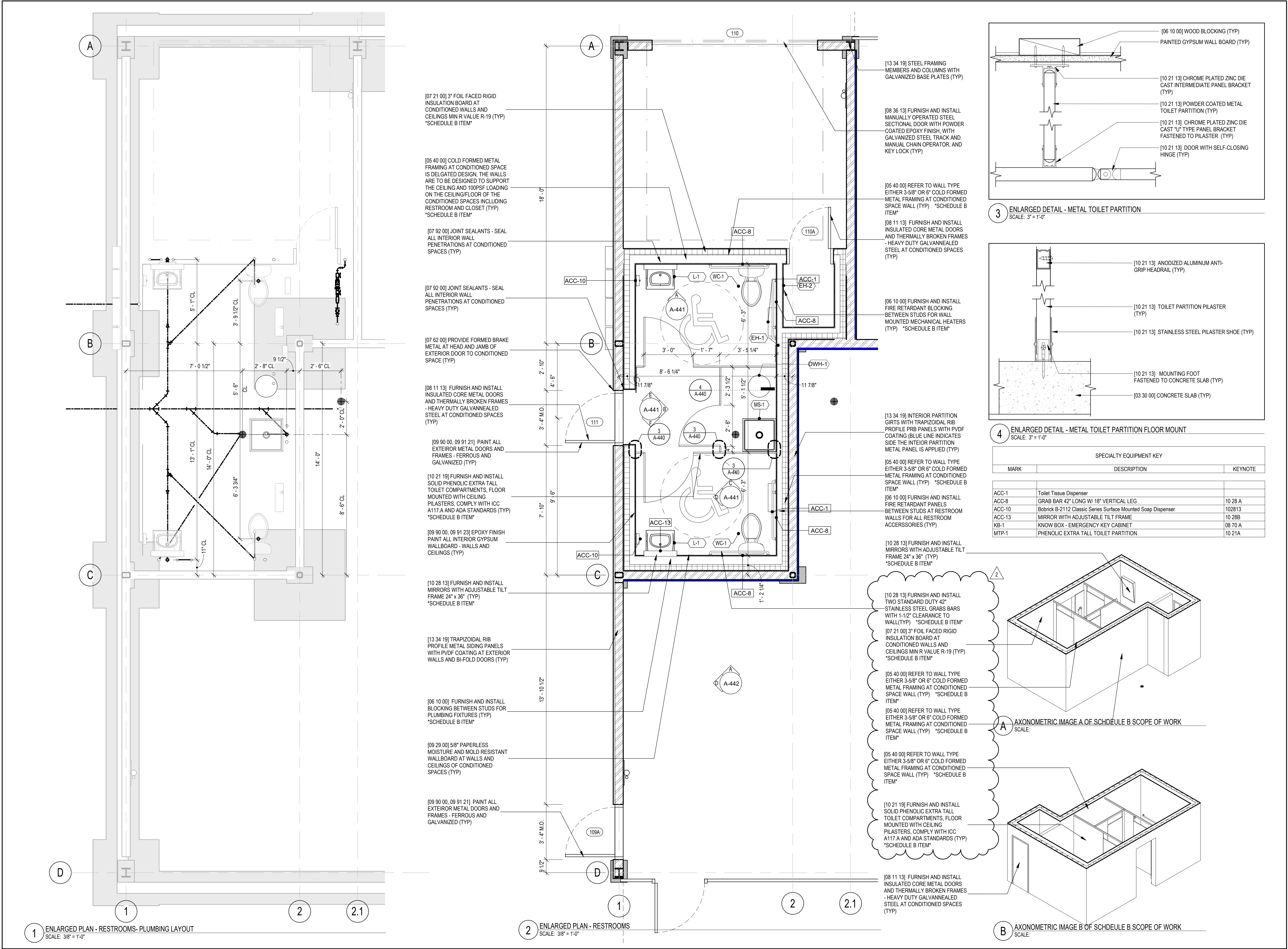
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| Job No.:    | 1260          |
| Drawn By:   | DM            |
| Checked By: | Checker       |
| Issue:      | ISSUE FOR BID |
| Date:       | 11/21/2024    |
| Scale:      | 3/32" = 1'-0" |

Drawing Title:  
**EXTERIOR  
ELEVATIONS**

Drawing No.:

**A-200**





Project:  
**CONSTRUCT NEW T-HANGAR AND TAXILANE**  
45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:  
  
**Auburn-Lewiston Municipal Airport**  
80 Airport Drive  
Auburn, ME  
t. 207 786 0631

**McFarland Johnson**  
53 Regional Drive  
Concord, NH 03301

**Fennick McCredie Architecture**

Team:  
**Architect:**  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900  
**Structural/MEP Engineer:**  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421  
**Civil Engineer:**  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:

**ISSUE FOR BID**

| No. | Date     | Revision |
|-----|----------|----------|
| 2   | 12/10/24 | ADD NO.2 |

Job No.: 1260  
Drawn By: DM  
Checked By: DMC  
Issue: ISSUE FOR BID  
Date: 11/21/2024  
Scale: As indicated

Drawing Title:  
**ENLARGED RESTROOM PLANS**

Drawing No.:  
**A-440**



Project:

# CONSTRUCT NEW T-HANGAR AND TAXILANE

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Municipal Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



53 Regional Drive  
Concord, NH 03301



Team:

Architect:  
Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

Structural/MEP Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:  
McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:

## ISSUE FOR BID

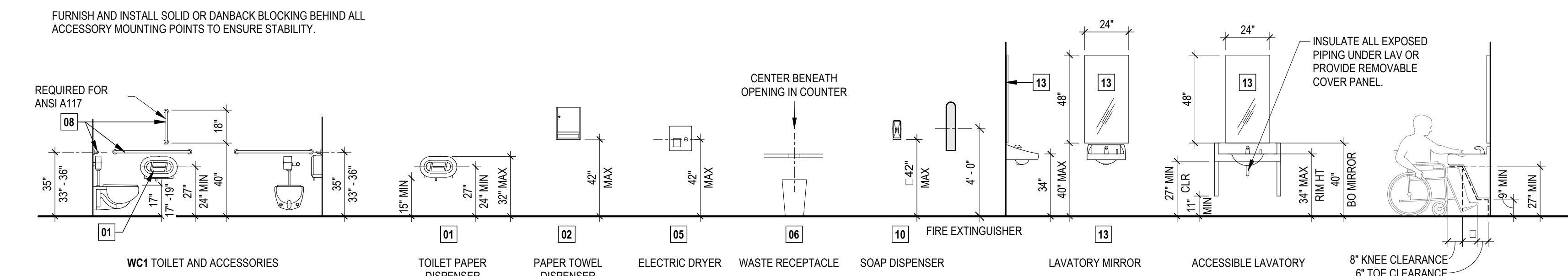
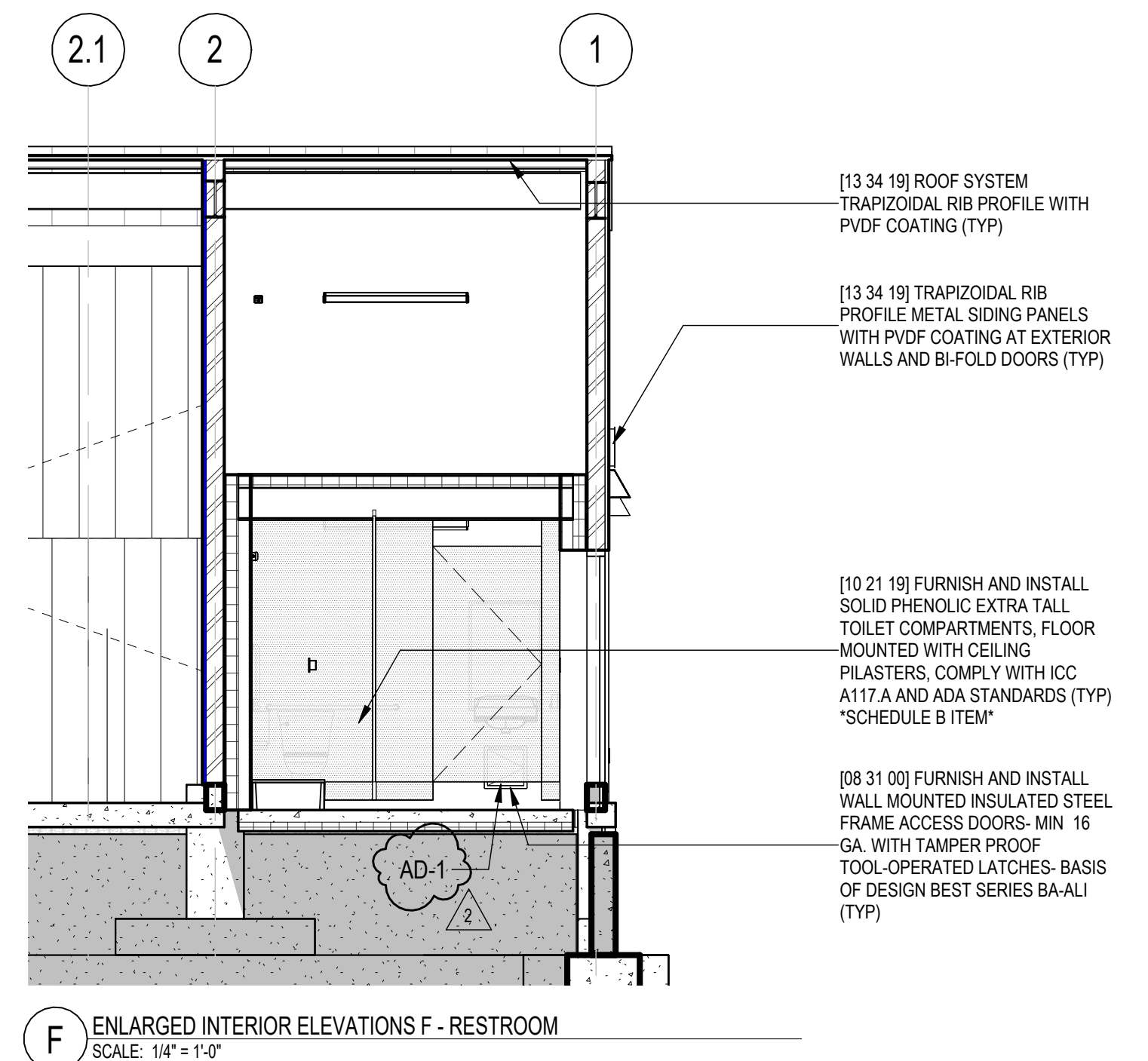
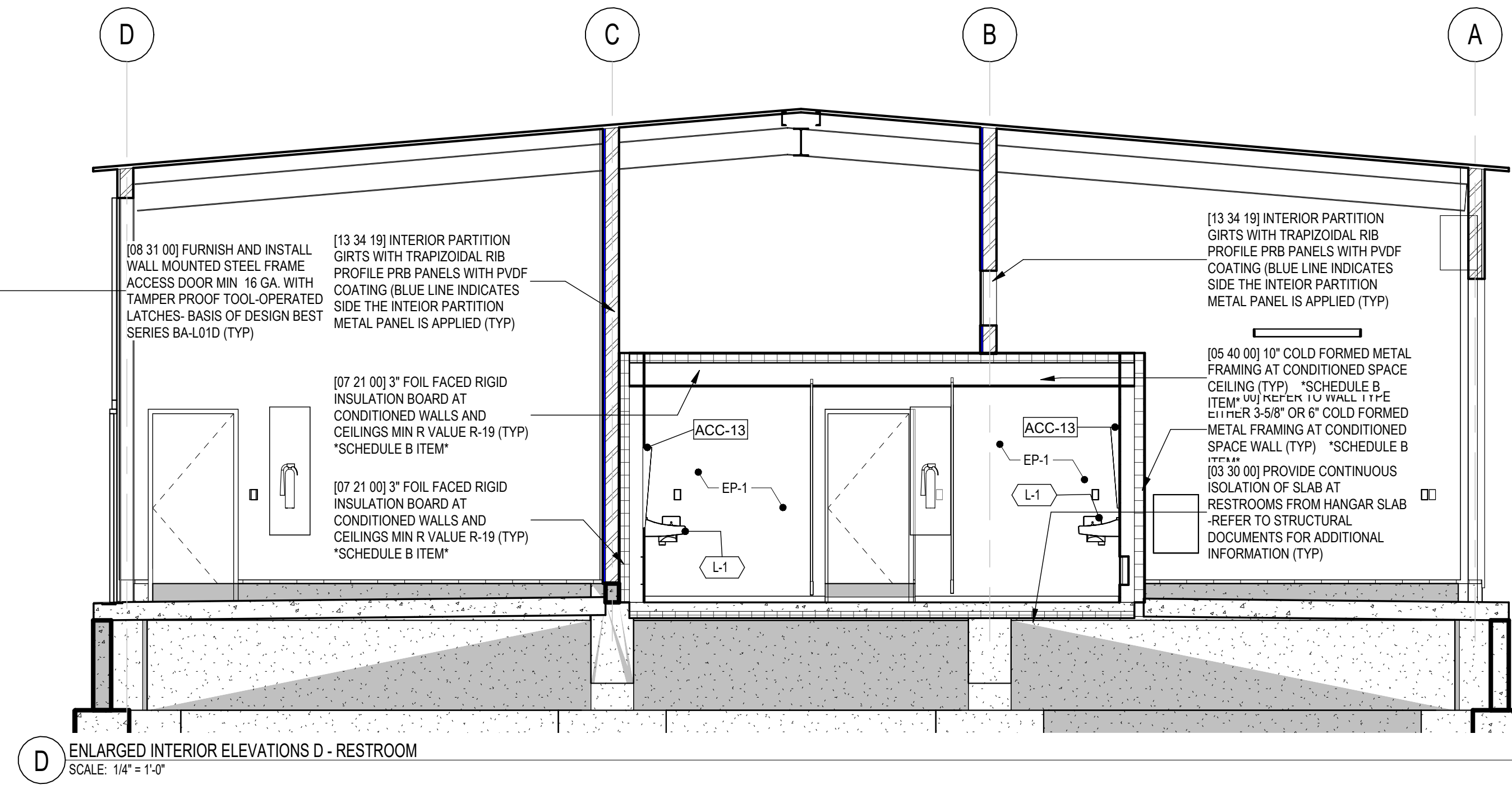
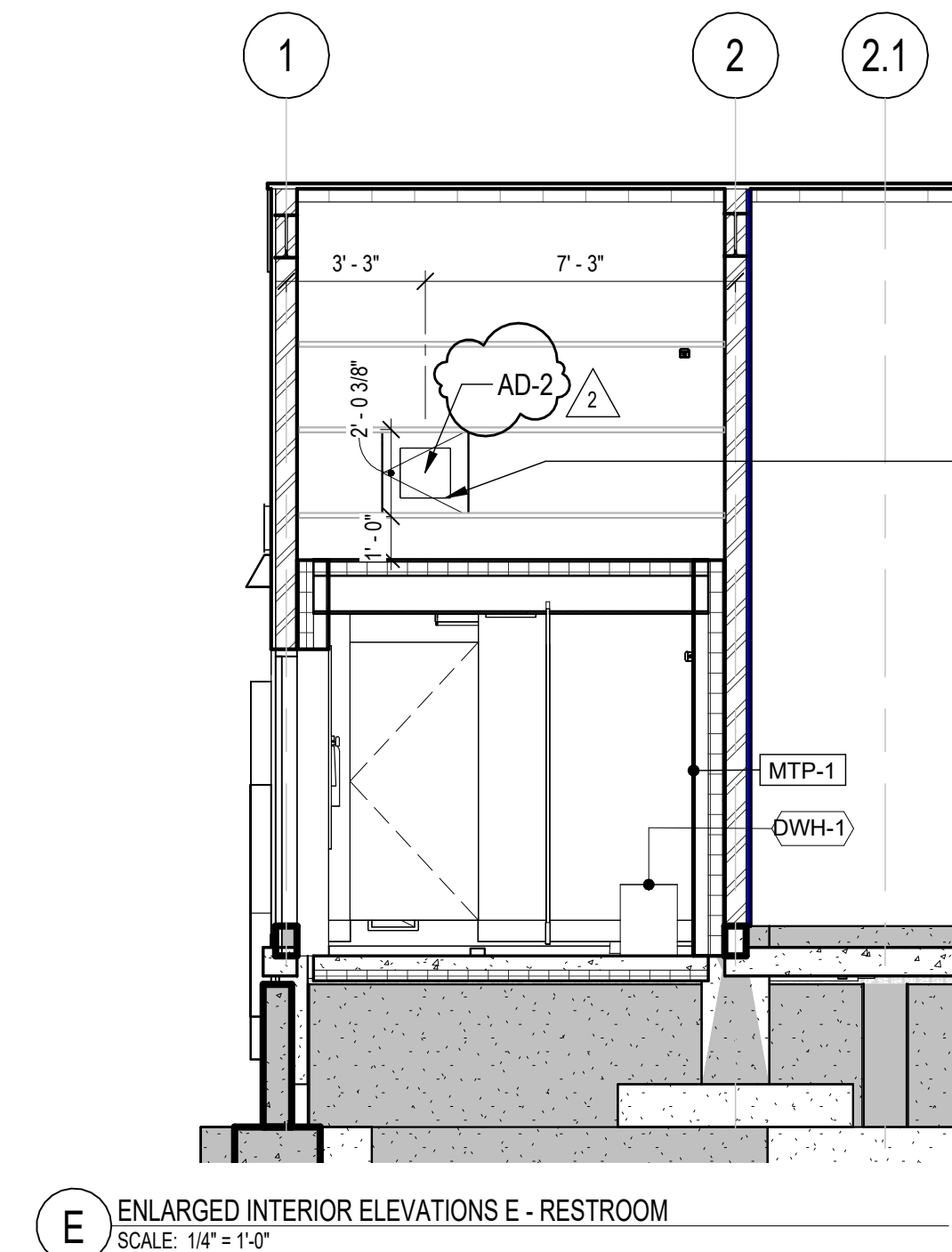
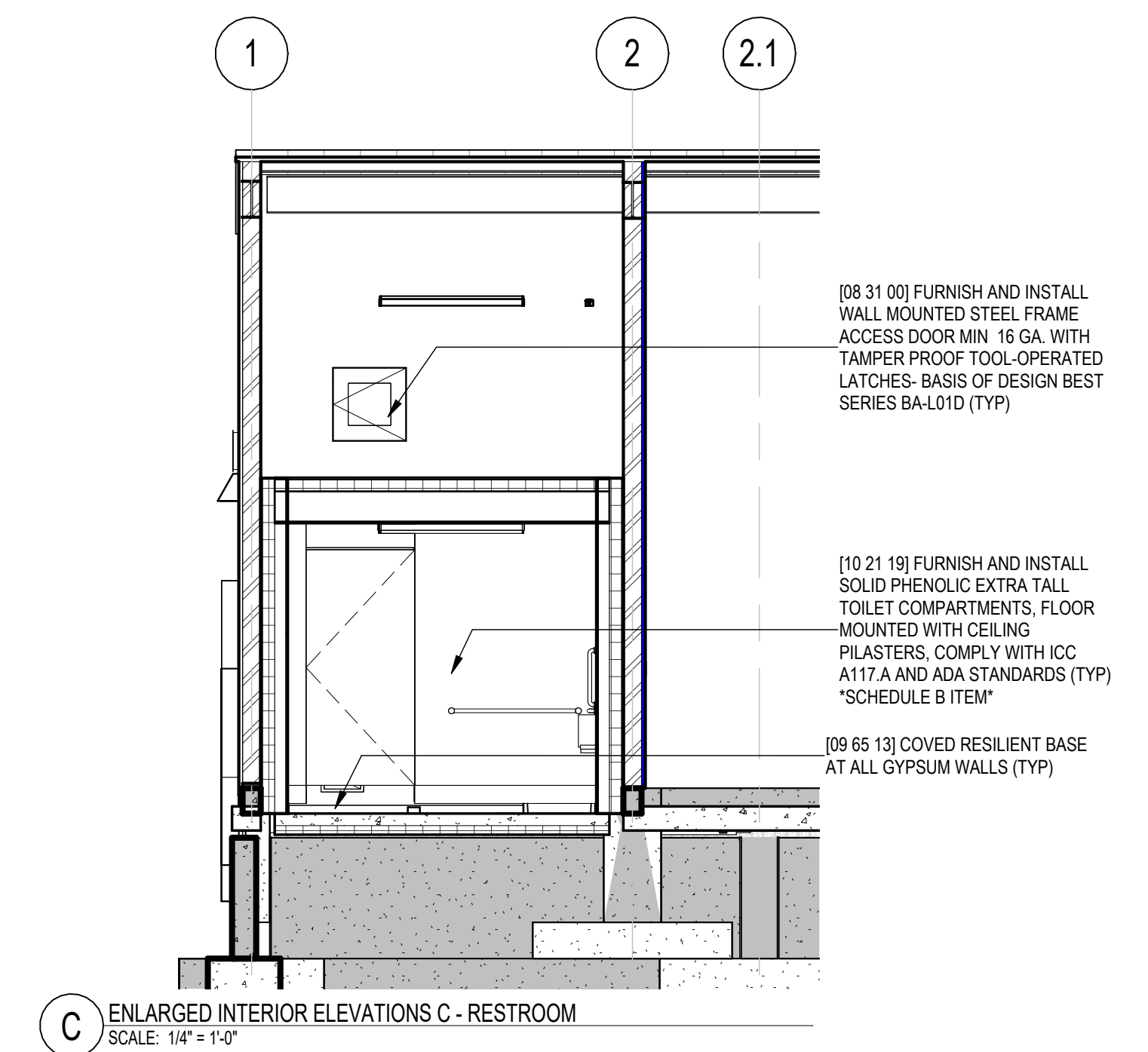
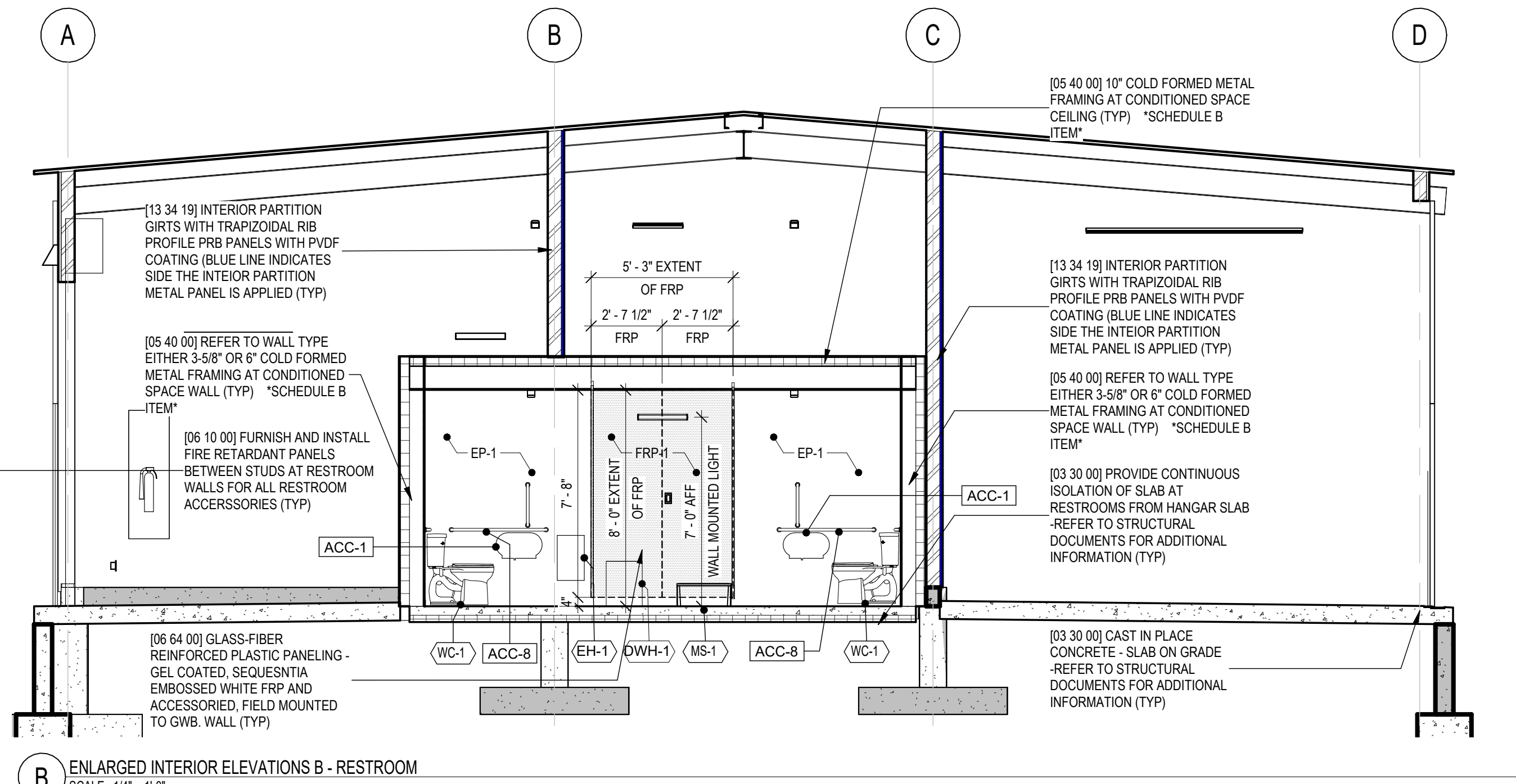
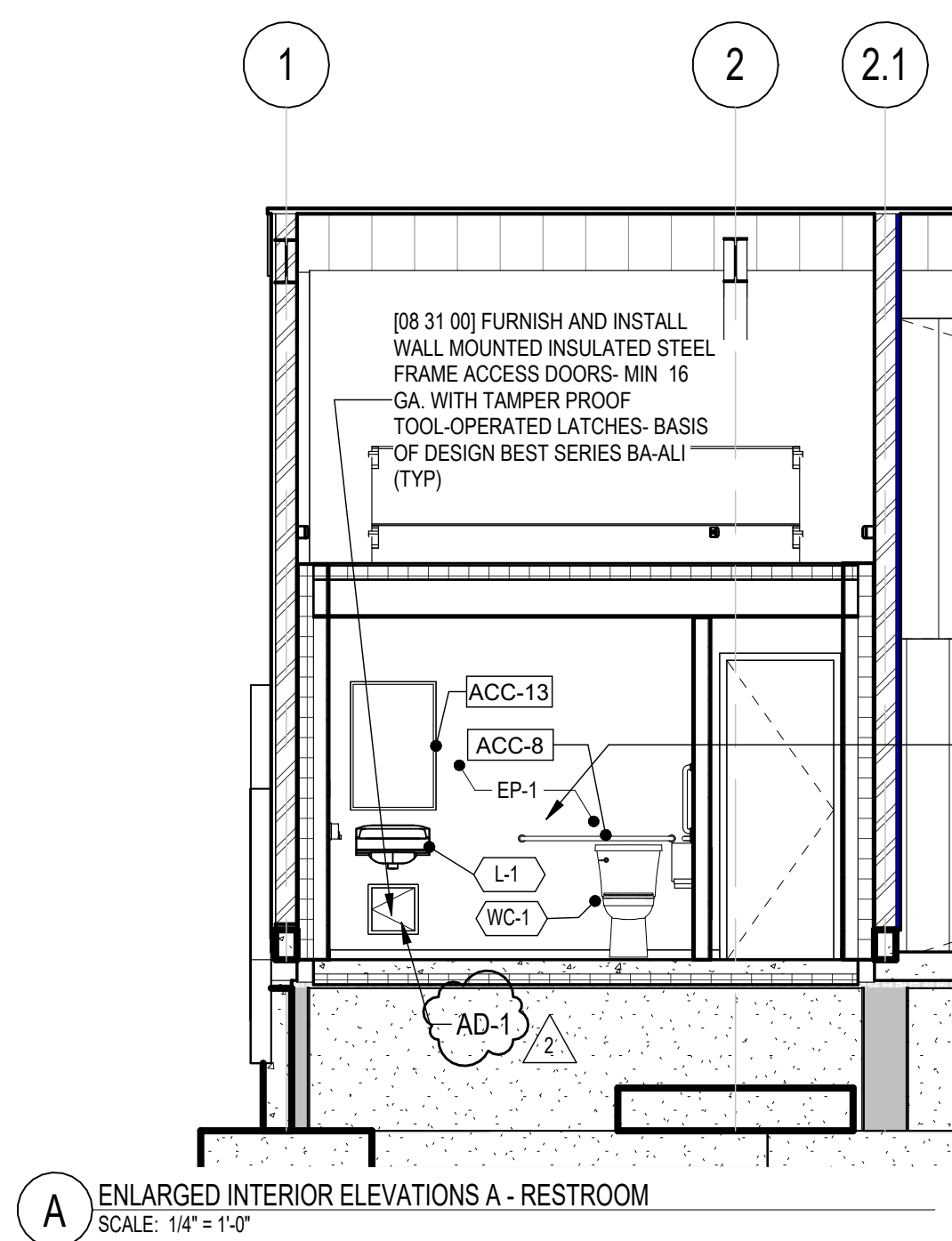
| No. | Date     | Revision |
|-----|----------|----------|
| 2   | 12/10/24 | ADD NO.2 |

|             |               |
|-------------|---------------|
| Job No.:    | 1260          |
| Drawn By:   | DM            |
| Checked By: | Checker       |
| Issue:      | ISSUE FOR BID |
| Date:       | 11/21/2024    |
| Scale:      | As indicated  |

Drawing Title:  
**ENLARGED  
RESTROOM  
ELEVATIONS**

Drawing No.:

**A-441**

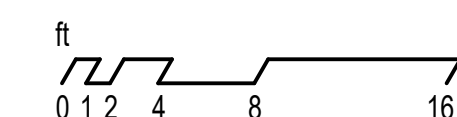


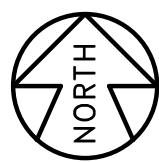
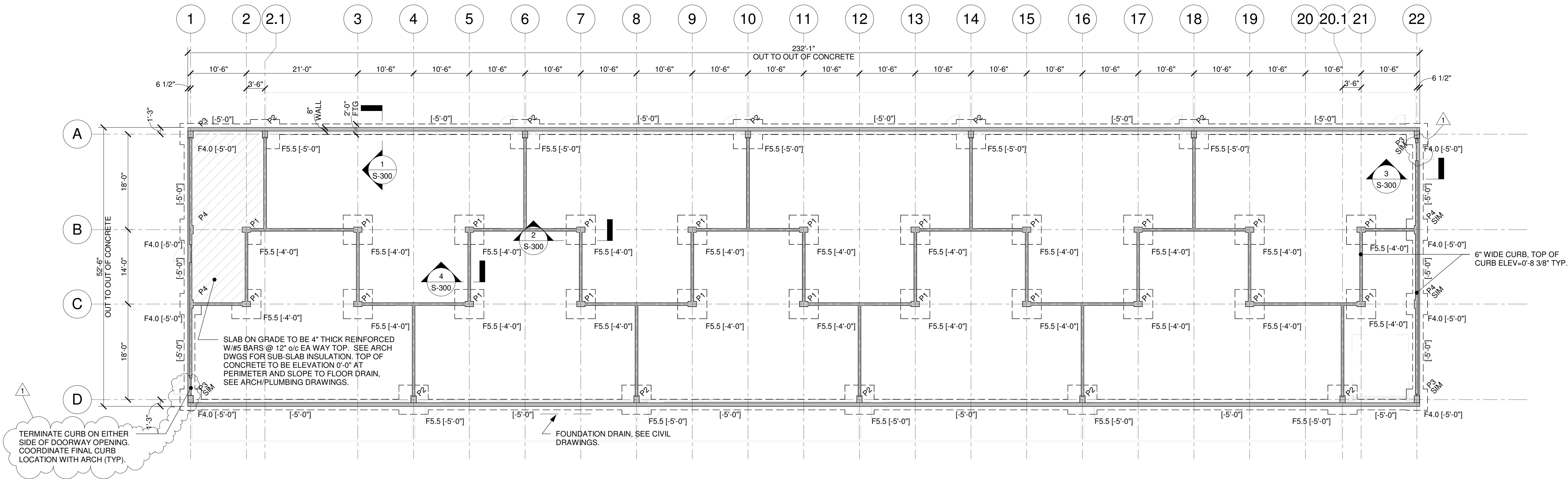
## FIXTURES AND ACCESSORIES

2 FIXTURE MOUNTING ELEVATIONS  
SCALE: 1/4" = 1'-0"

## GENERAL FINISH NOTES

- ALL GWB WALLS TO RECEIVE PNT-1 UNO.
- ALL PTD WOOD AND METAL SURFACE TO RECEIVE SEMI-GLOSS PNT UNO.
- PROVIDE TRANSITION/REDUCER STRIPS AT ALL CHANGES IN FLOORING, TYP.
- CLOSET FINISHES TO BE SAME AS ROOM SERVED.
- PAINT UNDERSIDE OF STAIR CONSTRUCTION ABOVE.
- UNO, ALL CLOSETS TO RECEIVE COAT ROD AND MELAMINE SHELF, TYP.
- ALL EXPOSED GWB SURFACE TO BE PAINTED.
- ALL MATERIAL TRANSITION TO OCCUR UNDER DOOR, WHERE APPLICABLE.





## FOUNDATION PLAN

SCALE: 3/32" = 1'-0"

- ELEVATION TOP OF SLAB=0'-0" (RELATIVE ELEVATION, 253.90' ACTUAL ELEVATION, SEE CIVIL DRAWINGS) AT GRIDS A AND D AND SLOPES. ELEVATION TOP OF SLAB BETWEEN GRIDS B AND C, 2 TO 22 = +0'-2 3/8". SLOPE DOWN AT 1/8" PER FOOT TO SLAB PERIMETER.
- ELEVATION BOTTOM OF FOOTING INDICATED THUS [ ] ON PLAN, REFERENCED TO ELEVATION 0'-0".
- INTERIOR SLAB-ON-GRADE TO BE 8" THICK SLAB REINFORCED WITH #5 BARS @ 12" o/c EA WAY, TOP AND BOTTOM, EXCEPT AS NOTED ON PLAN. PROVIDE ASTM E1745 CLASS A VAPOR BARRIER DIRECTLY UNDERR INTERIOR SLAB. REFER TO GEOTECHNICAL REPORT BY R.W. GILLESPIE & ASSOCIATES, INC. DATED 14 NOVEMBER 2024 FOR COMPLETE SUBSURFACE PREPARATION AND BACKFILLING REQUIREMENTS. CONTRACTOR SHALL PREPARE THE FOUNDATION SUBGRADES PER THE GEOTECHNICAL REPORT.
- CONTRACTOR SHALL SUBMIT A SLAB JOINT PLAN TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. SLAB JOINTS SHALL BE NO FURTHER THAN 25' o/c.
- COORDINATE FINAL SLAB, PIER AND FOOTING LAYOUT WITH STAMPED BUILDING DRAWINGS. SOME REVISIONS TO THE FOOTING SIZE AND DEPTH WILL BE REQUIRED. CONTRACTOR TO SUBMIT FINAL BUILDING LAYOUT AND REACTIONS TO ENGINEER OF RECORD. ALLOW A MINIMUM OF 4 WEEKS FOR ENGINEER OF RECORD TO REVIEW AND PROVIDE UPDATED FOUNDATION DRAWINGS. (ADJUSTMENTS SHALL NOT RESULT IN ANY INCREASE TO THE CONTRACT COST.)
- COORDINATE FLOOR SOCKET LOCATION AND REQUIREMENTS WITH BUILDING SUPPLIER.
- PROVIDE PVC SLEEVES FOR WATER AND SEWER THROUGH FOUNDATION WALL. COORDINATE SIZE AND LOCATION WITH CIVIL AND PLUMBING.

| FOOTING SCHEDULE |        |       |           |             |                          |
|------------------|--------|-------|-----------|-------------|--------------------------|
| TYPE             | LENGTH | WIDTH | THICKNESS | REINFORCING |                          |
| F4.0             | 4'-0"  | 4'-0" | 1'-0"     | (5)         | #5 EA WAY TOP AND BOTTOM |
| F5.5             | 5'-6"  | 5'-6" | 1'-0"     | (6)         | #6 EA WAY TOP AND BOTTOM |

Project:

Auburn-Lewiston  
Municipal Airport  
Hangar

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



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Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



McFarland Johnson

53 Regional Drive  
Concord, NH 03301



Fennick  
McCredie  
Architecture

Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
Boston, Ma 02110  
t. 617.350.7900

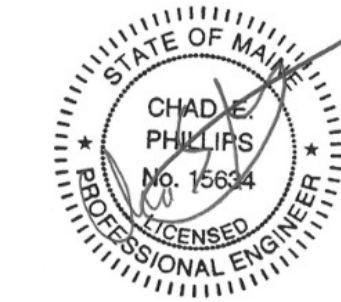
Structural/MEP Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Civil Engineer:

McFarland Johnson  
49 Court St, Suite 240  
Binghamton, NY 13901  
t. 607.723.9421

Stamp:



## ISSUE FOR BID

| No. | Date     | Revision       |
|-----|----------|----------------|
| 1   | 12/16/24 | Addendum No. 2 |

Job No.: 19186.01

Drawn By: CEP

Checked By: KCM

Issue: ISSUE FOR BID

Date: 11/14/24

Scale: 3/32" = 1'-0"

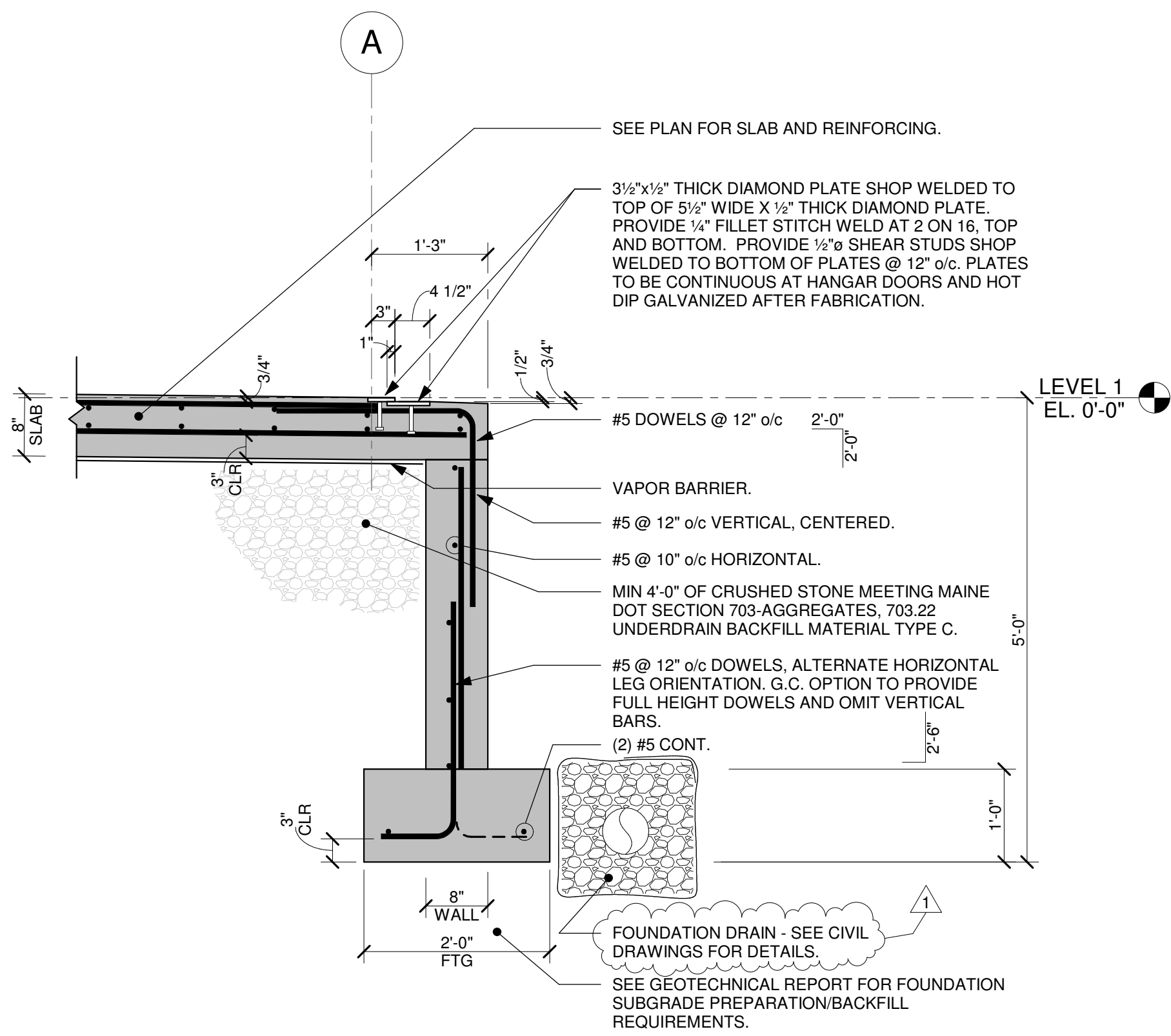
Drawing Title:

FOUNDATION PLAN

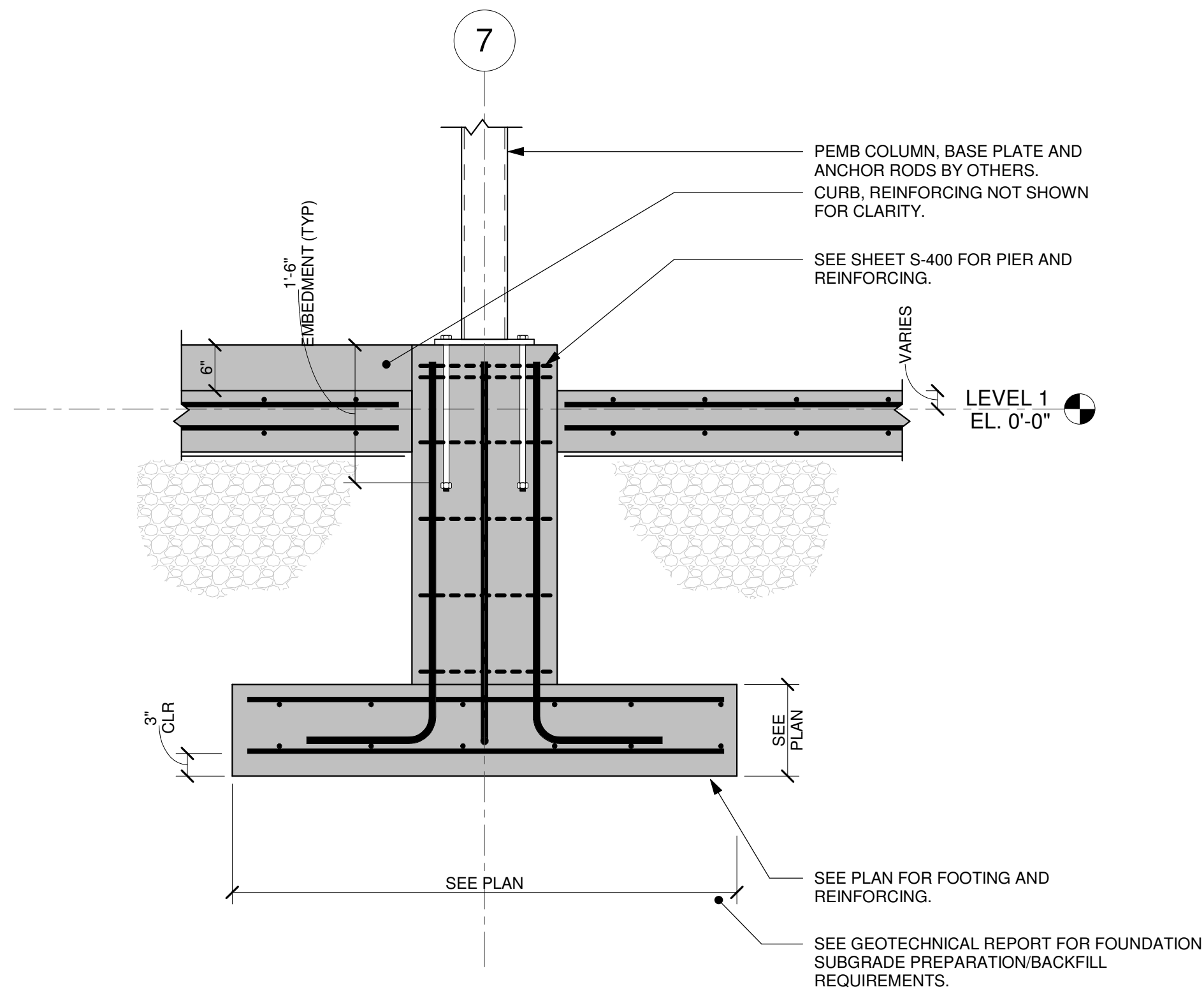
Drawing No.:

S-100

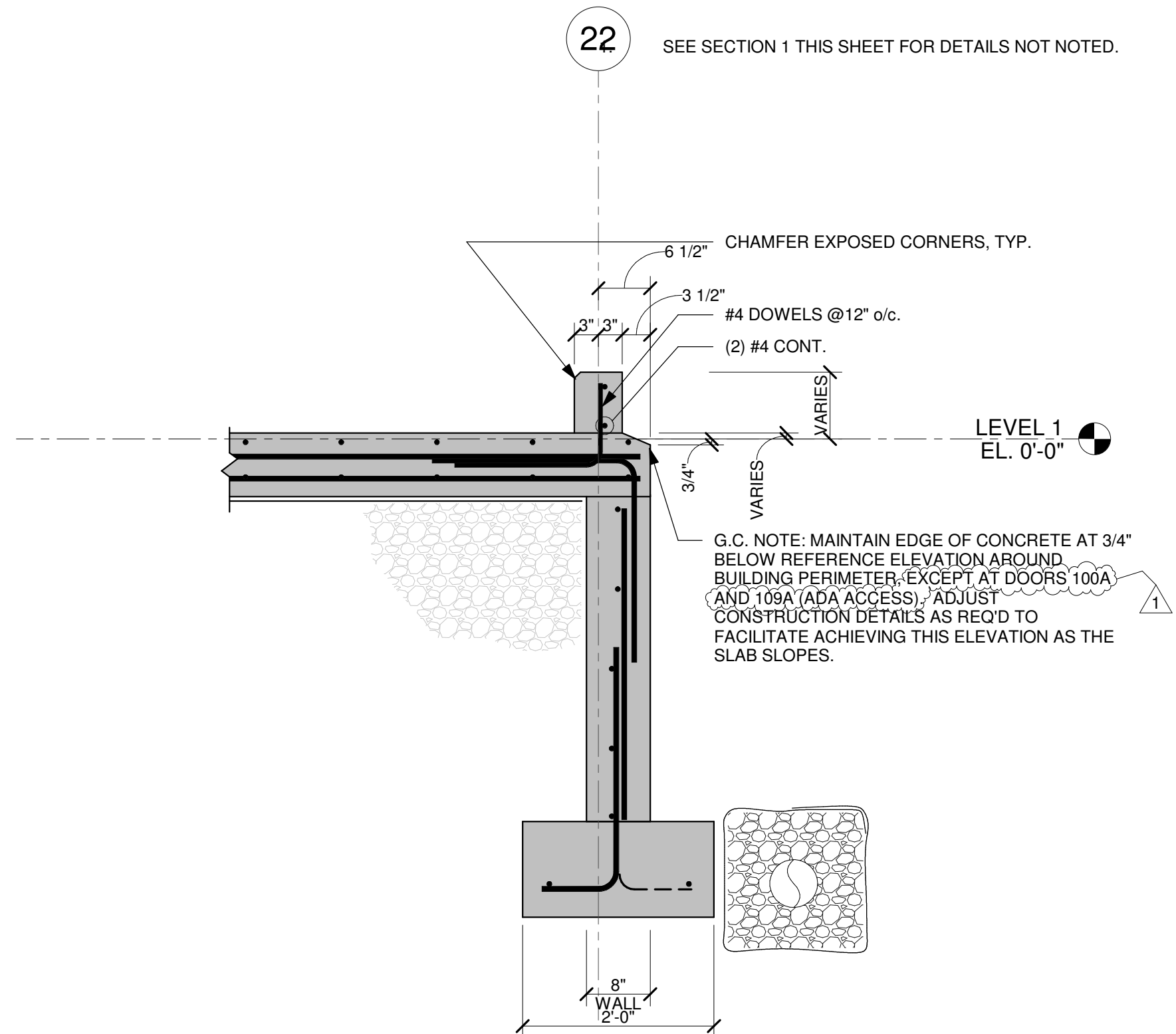
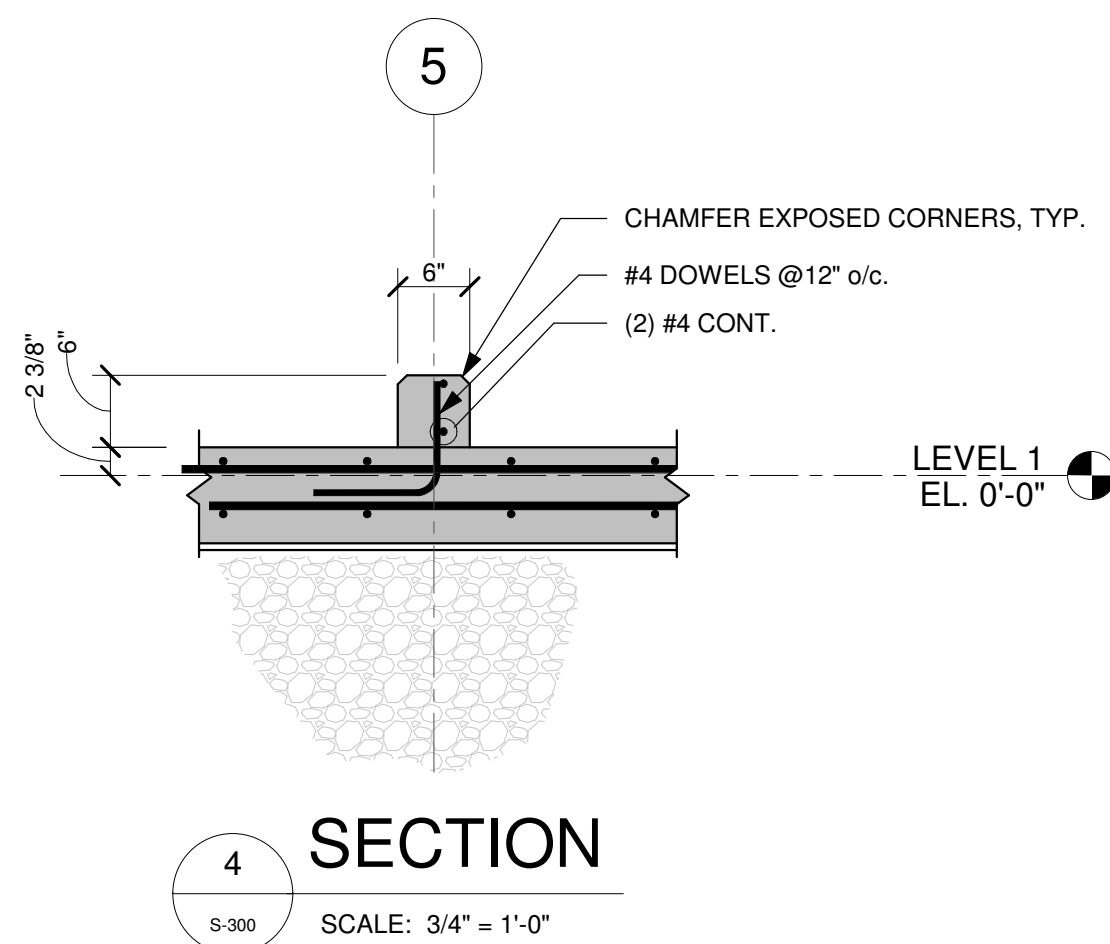




1 SECTION  
SCALE: 3/4" = 1'-0"



2 SECTION  
SCALE: 3/4" = 1'-0"



3 SECTION  
SCALE: 3/4" = 1'-0"

Project:

Auburn-Lewiston  
Municipal Airport  
Hangar

45 FLIGHT LINE DRIVE,  
AUBURN, ME 04210

Client:



Auburn-Lewiston  
Airport  
80 Airport Drive  
Auburn, ME  
t. 207.786.0631



McFarland Johnson  
53 Regional Drive  
Concord, NH 03301



Fennick  
McCredie  
Architecture

Team:

Architect:

Fennick McCredie Architecture  
70 Franklin Street  
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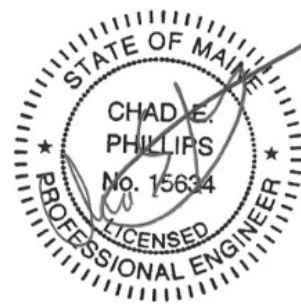
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Civil Engineer:

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Stamp:



ISSUE FOR BID

| No. | Date     | Revision       |
|-----|----------|----------------|
| 1   | 12/16/24 | Addendum No. 2 |

|             |               |
|-------------|---------------|
| Job No.:    | 19186.01      |
| Drawn By:   | CEP           |
| Checked By: | KCM           |
| Issue:      | ISSUE FOR BID |
| Date:       | 11/16/24      |
| Scale:      | 3/4" = 1'-0"  |

Drawing Title:

SECTIONS

Drawing No.:

S-300

GENERAL NOTE:

MANUFACTURERS LISTED ON THIS SHEET ARE FOR BASIS OF DESIGN PURPOSES.  
SIMILAR PRODUCTS ARE TO BE SUBMITTED TO ENGINEER FOR APPROVAL.

## WATER CLOSET SCHEDULE

| GENERAL |            |                    | BOWL         |        |       | SEAT         |         |       | UNIT CONNECTIONS   |             |            |           |
|---------|------------|--------------------|--------------|--------|-------|--------------|---------|-------|--------------------|-------------|------------|-----------|
| TAG     | MOUNTING   | ACCESS DESIGNATION | MANUFACTURER | MODEL  | COLOR | MANUFACTURER | MODEL   | COLOR | FLUSH VOLUME (GPF) | SUPPLY SIZE | DRAIN SIZE | VENT SIZE |
| WC-1    | FLOOR/TANK | ADA                | KOHLER       | K-3551 | WHITE | BEMIS        | 3155SSC | WHITE | 1.28               | 3/8"        | 3"         | 2"        |
|         |            |                    |              |        |       |              |         |       |                    |             |            |           |

## DOUBLE CHECK VALVE SCHEDULE

| GENERAL |          |                             |                        | UNIT INFORMATION |                            |              |              | ACCESSORIES |  | NOTES |
|---------|----------|-----------------------------|------------------------|------------------|----------------------------|--------------|--------------|-------------|--|-------|
| LABEL   | LOCATION | TYPE                        | SERVICE                | SIZE (IN)        | MAX. PRESSURE RATING (PSI) | MANUFACTURER | MODEL NUMBER |             |  |       |
| DCV-1   | RESTROOM | DOUBLE CHECK VALVE ASSEMBLY | DOMESTIC WATER SERVICE | 1"               | 175                        | WATTS        | LF-007-QT    |             |  |       |
|         |          |                             |                        |                  |                            |              |              |             |  |       |

## DOMESTIC WATER HEATER SCHEDULE

| GENERAL |               |              | UNIT PERFORMANCE |                      |               |                 | ELECTRICAL REQUIREMENTS |       |       | DESIGN BASIS |        |       |
|---------|---------------|--------------|------------------|----------------------|---------------|-----------------|-------------------------|-------|-------|--------------|--------|-------|
| LABEL   | LOCATION      | TYPE         | HEAT SOURCE      | OUTPUT TEMP. (DEG F) | RECOVERY RISE | GALLON CAPACITY | POWER WATTS             | VOLTS | PHASE | MANUFACTURER | MODEL  | NOTES |
| DWH-1   | RESTROOM WALL | COMPACT TANK | ELECTRICITY      | 120 DEGREES          | 90 DEGREES    | 10              | 6,000                   | 240   | 1     | A.O. SMITH   | EJC-10 |       |
|         |               |              |                  |                      |               |                 |                         |       |       |              |        |       |

## PUMP SCHEDULE

| GENERAL                                           |          |         |               | UNIT PERFORMANCE |           |             |       |       |                | UNIT INFORMATION |              |       |
|---------------------------------------------------|----------|---------|---------------|------------------|-----------|-------------|-------|-------|----------------|------------------|--------------|-------|
| LABEL                                             | LOCATION | TYPE    | SERVICE       | FLOW (GPM)       | HEAD (FT) | SPEED (RPM) | VOLTS | PHASE | H <sub>z</sub> | MANUFACTURER     | MODEL NUMBER | NOTES |
| P-1                                               | RESTROOM | IN-LINE | RECIRCULATION | 1                | 10        | 3300        | 115   | 1     | 60             | BELL & GOSSETT   | NBF-22       | 1     |
| NOTES:<br>1. PROVIDE WITH AQUASTAT AND TIMECLOCK. |          |         |               |                  |           |             |       |       |                |                  |              |       |

## SANITARY ACCESSORIES

| TAG                                                               | DESCRIPTION    | MANUFACTURER | MODEL       | DRAIN SIZE        | NOTES |
|-------------------------------------------------------------------|----------------|--------------|-------------|-------------------|-------|
| FCO-1                                                             | FLOOR CLEANOUT | WATTS        | CO-1200-R   | SEE PLANS, 4" MAX | 1     |
| FD-1                                                              | FLOOR DRAIN    | WATTS        | FD-100-A7-6 | 3"                |       |
| NOTES:<br>1. PROVIDE LINE SIZE FLOOR CLEANOUT UP TO 3" PIPE SIZE. |                |              |             |                   |       |

## DOMESTIC WATER SUPPLY ACCESSORIES

| GENERAL                                                                                                |                |                    |              |              | UNIT PERFORMANCE |          |                        | NOTES |
|--------------------------------------------------------------------------------------------------------|----------------|--------------------|--------------|--------------|------------------|----------|------------------------|-------|
| TAG                                                                                                    | DESCRIPTION    | ACCESS DESIGNATION | MANUFACTURER | MODEL NUMBER | CWS SIZE         | HWS SIZE | PRESSURE RANGE ( PSI ) |       |
| ET-1                                                                                                   | EXPANSION TANK | N/A                | WATTS        | PLT-5        | 3/4"             | N/A      | 0-150                  |       |
| WM-1                                                                                                   | WATER METER    | N/A                | NEPTUNE      | T-10         | 1"               | N/A      | 0-200                  | 1     |
| 1. WATER AND METER SHOULD BE COORDINATED WITH OWNER AND LOCAL TOWN WATER DEPARTMENT PRIOR TO PURCHASE. |                |                    |              |              |                  |          |                        |       |

## SINK SCHEDULE

| GENERAL                                                                                                                                                                                        |                           | BOWL          |          |              |       |             | FAUCET       |         | TRAP         |       | SUPPLIES/STOPS |       | INSULATION/COVERS |       | TAILPIECE    |       | UNIT CONNECTIONS |          |            |           |                                 | NOTES                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------|----------|--------------|-------|-------------|--------------|---------|--------------|-------|----------------|-------|-------------------|-------|--------------|-------|------------------|----------|------------|-----------|---------------------------------|--------------------------|
| TAG                                                                                                                                                                                            | ACCESSIBILITY DESIGNATION | MATERIAL      | MOUNTING | MANUFACTURER | MODEL | SIZE        | MANUFACTURER | MODEL   | MANUFACTURER | MODEL | MANUFACTURER   | MODEL | MANUFACTURER      | MODEL | MANUFACTURER | MODEL | CWS SIZE         | HWS SIZE | DRAIN SIZE | VENT SIZE | MINIMUM SUPPLY PRESSURE ( PSI ) |                          |
| MSB-1                                                                                                                                                                                          | NON-ADA                   | POLYMER RESIN | FLOOR    | MUSTEE       | 63M   | 24"x24"x10" | MUSTEE       | 63.600A | N/A          | N/A   | N/A            | N/A   | N/A               | N/A   | N/A          | N/A   | 1/2"             | 1/2"     | 3"         | N/A       | 25                              | SEE ACCESSORY LIST BELOW |
| MOP SINK ACCESSORIES:<br>1. HOSE AND HOSE HOLDER: MUSTEE 65.700.<br>2. MOP HANGER: MUSTEE 65.600.<br>3. BUMPER GUARDS: MUSTEE 63.403 AND 65.404 - ONE EACH.<br>4. WALL GUARDS: MUSTEE 67.2346. |                           |               |          |              |       |             |              |         |              |       |                |       |                   |       |              |       |                  |          |            |           |                                 |                          |

## LAVATORY SCHEDULE

| GENERAL |                           | BOWL           |            |              |                 |       | FAUCET       |            | CARRIER      |        | TRAP         |             | SUPPLIES/STOPS |       | INSULATION/COVERS |             | TAILPIECE    |             | UNIT CONNECTIONS |          |            |           |                                 | NOTES |
|---------|---------------------------|----------------|------------|--------------|-----------------|-------|--------------|------------|--------------|--------|--------------|-------------|----------------|-------|-------------------|-------------|--------------|-------------|------------------|----------|------------|-----------|---------------------------------|-------|
| TAG     | ACCESSIBILITY DESIGNATION | MATERIAL       | MOUNTING   | MANUFACTURER | MODEL           | COLOR | MANUFACTURER | MODEL      | MANUFACTURER | MODEL  | MANUFACTURER | MODEL       | MANUFACTURER   | MODEL | MANUFACTURER      | MODEL       | MANUFACTURER | MODEL       | CWS SIZE         | HWS SIZE | DRAIN SIZE | VENT SIZE | MINIMUM SUPPLY PRESSURE ( PSI ) |       |
| L-1     | ADA                       | VITREOUS CHINA | WALL MOUNT | KOHLER       | KINGSTON K-2005 | WHITE | CHICAGO      | 420 POABCP | WATTS        | CA-411 | MCGUIRE      | PW2150WCPRO | MCGUIRE        | 2165  | MCGUIRE           | PW2150WCPRO | MCGUIRE      | PW2150WCPRO | N/A              | 1/2"     | 1-1/2"     | 1-1/4"    | 25                              |       |
|         |                           |                |            |              |                 |       |              |            |              |        |              |             |                |       |                   |             |              |             |                  |          |            |           |                                 |       |

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McCredie  
Architecture

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Architect:

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Stamp:

### ISSUE FOR BID

| No. | Date      | Revision   |
|-----|-----------|------------|
| 1   | 12/6/2024 | Addendum 2 |

Job No.: 1260

Drawn By: CJZ

Checked By: MAE

Issue: ISSUE FOR BID

Date: 11/21/2024

Scale: -

Drawing Title:

PLUMBING  
SCHEDULES

Drawing No.:

P-001

KEYED ELECTRICAL NOTES (#)

1.

PROVIDE A 20A, 1-POLE CIRCUIT BREAKER COMPATIBLE WITH EXISTING LOAD CENTER PANEL "P1" LOCATED IN THE NORTH MAINTENANCE BLDG. TO FEED NEW GATE OPERATOR CIRCUIT WITH (2) #12, #12G. UTILIZE EMT CONDUIT WITHIN EXISTING BLDG. ROUTE CONDUIT UP HIGH ALONG WALL JUST UNDER ROOF/JOISTS TO MAINTAIN OH DOOR CLEARANCES. TRANSITION TO 1" RIGID PVC SCHEDULE 40 CONDUIT FOR UNDERGROUND PORTION OF RUN TO GATE OPERATOR. PROVIDE A 1" SCHED. 40 PVC CONDUIT BETWEEN READER AND SAND SHED FOR FUTURE WIEGAND CABLING AND DOOR CONTROLLER. THIS WORK IS BY ADD ALTERNATE #1. AND IS INCIDENTAL TO PAY ITEM F-162-5.3.
2.

PROVIDE A WEATHERPROOF CARD/KEYPAD READER THAT CAN ACT AS STANDALONE & HAVE THE CAPABILITY TO TIE INTO AN ACCESS CONTROL HEAD-END IN THE FUTURE BY SWITCHING TO WIEGAND OUTPUT MODE, ALLOWING IT TO CONNECT TO ANY OEM CONTROLLER AND PROVIDE CARD AND PIN OUTPUT. PROVIDE A GOOSNECK MOUNT WITH OUTDOOR COVER, CONCRETE FOUNDATION AND CONDUIT/WIRING TIED INTO THE NEW SLIDING GATE OPERATOR. COORDINATE READER PROGRAMMING WITH AIRPORT. BASIS OF DESIGN FOR READER: HID ENTRYPROX. PROVIDE PROXY CARDS FOR AIRPORT STAFF AND (1) ADDITIONAL FOR THE KNOX BOX (COORDINATE EXACT QUANTITY PRIOR TO BIDDING). THIS WORK IS BY ADD ALTERNATE #1. AND IS INCIDENTAL TO PAY ITEM F-162-5.3.
3.

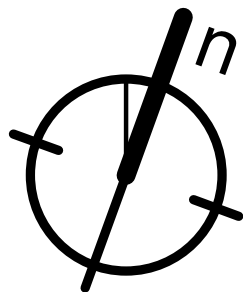
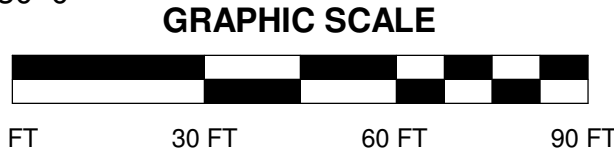
EXISTING OVERHEAD SECONDARY WIRES AND COMMUNICATION CABLES TO BE PULLED BACK TO UTILITY POLE. REPLACE EXISTING OVERHEAD CONDUCTORS WITH NEW CONDUCTORS SIZED TO MATCH EXISTING AND ROUTE UNDERGROUND TO MAINTENANCE BUILDING. COMMUNICATION CABLES SHALL BE ALSO ROUTED UNDERGROUND. COORDINATE WITH OWNER & SERVICE PROVIDERS TO EXTEND CABLING AS REQUIRED FOR NEW PATH. CONTRACTOR SHALL COORDINATE WITH AIRPORT AND SERVICE PROVIDERS FOR ALL WORK INCLUDING DISCONNECTION AND RECONNECTION (AIRPORT MAY NEED TO INITIATE SERVICE WORK). PROVIDE A 2" PVC CONDUIT FOR POWER, (2) 4" PVC CONDUITS FOR COMM. CABLING, CONDUIT AND TRENCHING TO BE INCLUDED IN BID. COORDINATION AND WIRING/CABLING WORK SHALL BE PAID FOR UNDER ALLOWANCES X-600-1, X-600-3, X-600-5. EXISTING CABLING IS UNDERSTOOD TO BE: ELECTRICAL SERVICE OH SECONDARY WIRING FROM CENTRAL MAIN POWER (COORDINATE DISCONNECT/RECONNECT WITH CMP). TELECOM SERVICE CABLING (COORDINATE WITH SERVICE PROVIDER) COAX SERVICE CABLE (COORDINATE WITH SERVICE PROVIDER)
4.

PROVIDE A KNOX BOX AT SECURITY FENCE GATE LOCATION FOR EMERGENCY RESPONDER ACCESS. KNOX BOX SHALL BE LARGE ENOUGH TO HOLD A PROXY CARD (KNOXBOX 3200 OR LARGER). COORDINATE ACCESS KEY WITH LOCAL EMERGENCY RESPONDERS.
5.

REFERENCE SPECIFICATION L-110 FOR PAYMENT FOR CONDUITS.



1 SITE ELECTRICAL PLAN  
SCALE: 1" = 30'-0"

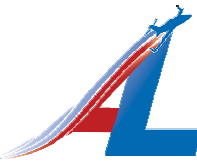


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Stamp:

ISSUED FOR BID

| No. | Date      | Revision   |
|-----|-----------|------------|
| 1   | 12/6/2024 | ADDENDUM 2 |

|             |                |
|-------------|----------------|
| Job No.:    | 1260           |
| Drawn By:   | BFD            |
| Checked By: | CMH            |
| Issue:      | ISSUED FOR BID |
| Date:       | 11/21/2024     |
| Scale:      | 1" = 30'-0"    |

Drawing Title:

SITE ELECTRICAL  
PLAN

Drawing No.:

E-001