SECTION 13 34 19
METAL ENCLOSURE SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

This section covers materials, labor and equipment required to complete the outdoor, heated metal enclosure for the backflow preventers as shown and specified.

1.2 RELATED WORK

A. Concrete curbs and foundations: Section 03 30 00, CAST-IN-PLACE CONCRETE.

B.

1.3 MANUFACTURERS QUALIFICATIONS

A. Approval by Contracting Officer is required of products or service of proposed manufacturer, suppliers and installers, and will be based upon submission by Contractor of certification that:

B. Manufacturer regularly and presently manufactures pre-engineered metal buildings as specified as one of its principal products.

C. Installer has technical qualifications, experience, trained personnel and facilities to install specified items. Approval will not be given, however, where experience record is one of unsatisfactory performance.

D. Manufacturer's product submitted has been in satisfactory and efficient operation on three installations similar and equivalent to this project for three years. Submit list of installations.

1.4 DESIGN CRITERIA

A. Design metal outdoor enclosure to ASSE Standard #1060-2006.

1.0 Classifications

Class I Freeze Protection Enclosures (Heated)
Enclosures designed and constructed to maintain a minimum internal temperature of 40°F with the external temperature of -30°F with a minimum Thermal Resistance (R) Value of eight (8.0).

2.0 Structural Strength

All classification enclosures must designed to support a minimum vertical load of 100 pounds per square foot (100 psf).

3.0 Drainage Capability

All classification enclosures must be designed to discharge water from within the enclosure to prevent submerging the equipment. The depth of water rise within the enclosure shall not exceed 6 inches during full discharge of a Reduced Pressure Zone backflow preventer and according to the following diameter requirements:

Diameter	**Backflow Preventer Enclosure Drain Capability (GPM)**
½"	75
1"	200
2"	300
3"	450
4" & 6"	750
8" & 10"	1100

4.0 Access for Testing and Maintenance

Equipment components such as test cocks and valve handles or hand wheels must be within 24 inches of the access opening.

Hinged access panels must be restrained in the open and closed position.

All unrestrained panels and horizontal hinged panels must weigh 70 lbs. or less.

5.0 Security and Vandalism

Access to the internal equipment shall be lockable. Access shall be by keyed devices or have the ability to affix padlocks

6.0 Materials of Construction

Exposed Exterior Wall Panel Materials

Aluminum

Exposed Internal Wall Panel Materials

Closed cell foam insulation (1% maximum water absorption)

Approved External materials

1.5 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:

B. Samples: Wall and roof panels, 600 mm (24-inch) wide by 300 mm (12 inch) high sections, with factory finish in specified colors. Fasteners for panels

C. Certificates:

1. Stating that the zinc coating on steel panels is the specified thickness.
2. Stating that the thermal values of the roof and wall panels with insulation meet the specified requirements.
3. Indicating manufacturers and installers meet qualifications specified.
4. Certificate test reports confirming compliance’s with specified bullet resistive rating.

D. Manufacturer's Literature and Data:

Metal Panels
Insulation
Sealing materials
Steel doors, door frames and hardware interlocking thresholds
Windows

E. Shop Drawings: Shop drawings, erection drawings and erection manuals showing complete erection layouts, installation instructions, and details of connections. Details and layouts shall show the steel framing location, lengths, and markings of panels and other component parts to correspond with sequence and procedure for erection. Shop drawings shall show connections with adjoining work.

1.6 STORAGE AND PROTECTION

Materials stored on site before erection shall be stacked and covered with suitable weather tight covering. Store metal panels so that any accumulated water will drain off. Panels shall not be stored in contact with materials that cause staining. Materials having defects or damages that effect appearance, serviceability or use will be rejected.

1.7 WARRANTY

Prefabricated metal encloosure shall be warranty against defects in materials and workmanship, and that after erection completed work shall

be weather tight and shall be subject to the terms of the "Warranty of Construction" Article in FAR clause 52.246-21, except that the warranty period shall be two years.

1.8 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

A36/A36M-05.....Carbon Structural Steel.

A242/A242M-04(E2005)....High-Strength Low-Alloy Structural Steel.

A653/A653M-07.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron-alloy-Coated (Galvannealed) by the Hot-Dip Process

A1008/A1008M(REV A-07)..Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy

A1011/A1011M-07.....Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy

B117-07.....Standard Practice for Operating Salt Spray (Fog)

B209/209M-07.....Aluminum and Aluminum-Alloy Sheet and Plate

C553-02.....Specifications for Mineral Fiber Blanket Thermal Insulation for Commercial and Insulation for Commercial and Industrial Applications

C1036-06.....Flat glass

D522 REV A-93(R2001)....Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings

D2244-07.....Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

D2794-93(R2004).....Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation

D3359-02.....Standard Test Methods for Measuring Adhesion by Tape Test

D4214-07.....Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films

G153-04.....Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

C. Metal Building Manufacturers Association (MBMA):
   1. Recommended Guide Specifications for Pre-Engineered Metal Buildings.
   2. Recommended Design Practices Manual.

D. American Institute of Steel Construction (AISC): Document No. 360-05. Specifications for Structural Steel Buildings; Allowable Stress Design and Plastic Design (1989).

E. National Fire Protection Association (NFPA), No. 220: Standard Types of Building Construction (2006)

F. American Welding Society (AWS):
   D1.1/D1.1M-06.....Structural Welding Code.

G. American Iron and Steel Institute (AISI):
   Light Gage Cold Formed Design Manual.

H. Uniform Building Code, Latest Edition.

I. Underwriters Laboratories, Inc. (UL):
   752-06.....Bullet-Resisting Equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Panels:
   1. 18-ga., stucco-embossed aluminum
   2. Four 40"W 72.5"H removable access openings in the enclosure's front sections and rear shall assure easier testing and maintenance. Each opening has a removable panel with a four-pronged locking system and an external handle that accommodates a padlock..
   3. The ceiling and inner walls have a minimum of 1" of spray-applied polyisocyanurate insulation foam throughout the enclosure. The foam shall bond directly to the aluminum walling, require no clips or pins and shall not be affected by either heat or cold._ 1” of foam shall provide a minimum "R" factor of 8.

2.2 ANCHORING

A. Anchoring shall be internal and the anchor kit shall be provided with the enclosure.

2.3 ENCLOSURE DESIGN

A. The enclosure design includes four 1500W, 120V, single-phase heaters mounted to the enclosure's interior walls. Each heater is 22"L x 6"H and sits approximately 6" from the interior wall to the heater face. Each heater shall be thermostatically controlled to maintain 40°F within the enclosure while the external temperatures may fall as low as -30°F. Each heater has a six-foot cord with plug for easy connection & fan-forced heat for circulation. All heaters are ETL certified. General location of the receptacle is indicated as an "E" within a box on the plan view.

B. Unit shall be factory pre-wired for a G.F.I. protected electrical services and receptacles in accordance with local and national codes.

C. Circuits pre-wired for servicing the enclosure shall be 20 Amp to properly accommodate heaters and/or other equipment that may be used within the enclosure.

2.4 VISUAL POWER LOSS AND TEMPERATURE ALARM

A The alarm shall consist of the cabinet, battery, battery charger,, relays, amber strobe with cage, temperature sensor, six foot power cord and plug. It shall be designed to activate the strobe light if the enclosure loses electrical power of if the temperature falls below 38°F. It shall operate on 120V, single-phase service and plug into a G.F.I. receptacle. It must be supplied by the same electrical service that feeds the heaters. With a fully charged battery, it shall display for a minimum of six hours or until deactivated.

PART 3 - EXECUTION

3.1 ERECTION

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 shown or specified.

1. Set accurately bases or sill members to obtain uniform bearing and maintain established floor line elevation. Anchors and anchor bolts for securing members to concrete curb or structural steel sub-frame shall be of black steel, set accurately to templates and of proper size to adequately resist applicable design loads at the base.

B. Wall Panels: Panels shall be applied with configurations running in a vertical position. Supply panels in single lengths from base with no horizontal joints, except at the junction of door units,. Walls shall be closed at base and eave, and around doors, frames, louvers, and other similar openings by flashings and/or formed closures to assure adequate weathertightness. Flashing or stops will not be required where weather-closed or approved self-flashing panels are used.

C. Roof Panels: Roof panels shall be applied with configurations running in direction of roof slope. Roof shall be flashed and/or sealed as necessary to make roof weather tight. Flashing and/or caulking shall be accomplished in a manner that will assure complete weather-tightness and method to be used shall be subject to approval by Resident Engineer.

D. Fasteners for Securing Roof and Wall Panels: Fastening method, size and spacing shall be as recommended by metal building manufacturer and as approved by Resident Engineer. Fasteners shall be non-corrosive and of design that will produce a weathertight connection. Clearly show fasteners and fastening method on shop and erection drawings.

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F. Weatherproofing: Joints between exterior pre-engineered metal building components and other adjacent components and materials, except flashing of metal wall panels shall be designed for and shall receive sealing tapes, gaskets, sealant materials, metal flashing and other methods of sealing as required to provide weathertight joints. Color of sealing materials shall match adjacent metal building components.

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