ITEM 662.400101SU – FUEL STATION CANOPY

DESCRIPTION

This work shall consist of furnishing and installing the fuel station canopy complete with foundations, structural steel, and finishes.

References

The following documents are referenced as applicable Codes for the installation of the Fuel Station Canopy.

A. Building Code of New York State.


C. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures (copyrighted by ASCE, ANSI approved).


F. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code (copyrighted by NFPA, ANSI approved) - hereinafter referred to as NEC.

Performance Requirements

A. Structural Performance: Provide pre-engineered canopy capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated for the specific location where canopy will be installed.
   a. Minimum design wind load per ASCE 7, Chapter 6.
   b. Minimum design snow load per ASCE 7, Chapter 7.
   c. Minimum seismic criteria per ASCE 7, Chapters 11 – 13.

B. Thermal Movements. Provide pre-engineered canopy that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss. Temperature range: 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), material surfaces.

Submittals

A. Product Data: Submit manufacturer's data sheets on each product to be used, including:
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1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Paint and primer.

B. Shop Drawings: Submit shop drawings. Include plans, elevations, sections, details, attachments to other work, and foundations. Canopy supplier shall furnish complete canopy drawings signed and sealed by a professional engineer licensed in New York State.

C. Samples: Submit samples for initial color selection. Submit samples of each specified finish. Submit samples in form of manufacturer's color charts showing full range of colors and finishes available. Where finishes involve normal color variations, include samples showing the full range of variations expected.

D. Certificates: Submit product certificates signed by the manufacturer certifying material compliance with specified performance characteristics and criteria, and physical requirements. Also submit welding certificates.

E. Warranty Data: Submit warranty documents specified herein.

Quality Assurance

A. Manufacturer Qualifications: Company specializing in engineering and manufacturing pre-engineered canopy with a minimum documented experience of twenty years and with a quality assurance program utilizing a quality inspection for each system.

B. Welding: Qualify procedures and personnel according to the following:

1. Welding shall be performed by certified welders.
2. Welding shall be in accordance with AWS D1.1 (with E70XX electrodes).
3. Steel shop connections shall be welded and field connections shall be bolted. Shop welds may be changed to field welds with the approval of the Engineer.
4. Slag shall be cleaned from welds and inspected. Steel shall be painted with red oxide rust-inhibitive primer.

C. Source Limitations: Obtain pre-engineered metal canopy through one source from a single manufacturer.

D. Product Options:

1. Information on the Drawings and in the Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
2. The Drawings indicate size, profiles, and dimensional requirements of pre-engineered metal canopy.

F. Coordination

1. The contractor shall prepare for and pour the concrete footings for the pre-engineered metal canopy per the approved shop drawings. Provide footing drawings as per the Building Code of New York State and prints and rebar details for concrete footings, as well as provide anchor bolts to be embedded in concrete footer.

Project Conditions

A. Field Measurements: The Contractor shall verify location and elevation of footings relative to finished grade, columns, and other construction contiguous with pre-engineered metal canopy by field measurements before fabrication and indicate measurements on shop drawings. The Contractor shall, where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating metal canopy without field measurements. Contractor is responsible to coordinate footer locations and elevations with any interferences with or attachments to abutting structures.

Warranty

A. Manufacturer shall warranty the canopy to be free of defects in materials, leaks, and workmanship for 1 year from date of shipment. Manufacturer shall provide a 20-year limited warrantee against peeling, flaking, chipping of canopy deck when properly maintained, and pass on manufacturer's warrantees for accessory items.

MATERIALS

Materials

A. Structural Steel

1. Material and work shall conform to the latest AISC 360.

2. Wide flange I-beam shall conform to ASTM A572 Grade 50. Other rolled sections shall conform to ASTM A36.

3. Square and rectangular tubing shall conform to ASTM A500, Grade B

4. Plate steel shall conform to ASTM A36.

5. Structural steel shall be painted with a rust inhibitive (red oxide) primer (std).

B. Sheet Metal

1. Sheet metal shall be ASTM A653, Grade 40.

2. Decking: 3 inch (76 mm) by 16 inch (406 mm) by 20 gage galvanized steel with baked enamel finish.
3. Center and Tapered Gutter: 24 gage hot-dip galvanized steel baked enamel finish.


5. External Downspouts: 3 inch (76 mm) by 4 inch (102 mm) by 24 gage ASTM A123 hot-dip galvanized steel with baked enamel finish.

Pre-Engineered Metal Canopy

A. General: Provide a complete, integrated set of manufacturer's standard design canopy components using a flexible frame with fixed base wherein the steel framing system uses stacked I Beam construction transferring the moment to the concrete footing without requiring a rigid connection between steel frame members. The beam arrangements allow for a cantilever design which can bring the columns from the perimeter of the structure to the inner protected zones between the drive lanes. These mutually dependent components form a pre-engineered canopy, ready for construction on project site. Said pre-engineered metal canopy will be designed to meet all site structural wind, snow and seismic requirements.

B. Canopy Fascia: Aluminum Composite Panel (ACM) with a fluorocarbon paint finish (white), masked on one side. It shall have a warranty of 20 years.

C. Canopy Finishes: Comply with NAAMM MFM for recommendations for applying and designating finishes.

1. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

D. Fabrication: Fabricate pre-engineered canopy completely in factory.

Canopy Roof Drainage

A. Downspout: Roof downspouts shall be as recommended by the canopy manufacturer.

B. Cast Iron Pipe: Clean outs and long sweep elbows for connection of downspouts to site drainage shall be Service Class Cast Iron, ASTM A 74. Plugs for clean outs shall be brass.

Paint: Topcoat for factory-primed steel shall be Alkyd, Quickdry, semi-gloss, MPI #81, White.

Concrete: Concrete for footings shall be Class A concrete conforming to the requirements of Section 501. Reinforcing steel shall be uncoated grade 60 rebar per Section 709.
CONSTRUCTION DETAILS

Preparation

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

Installation

A. Set pre-engineered metal canopy plumb and aligned. Level base plates shall be true to plane with full bearing on concrete bases.

B. Fasten pre-engineered metal canopy columns to anchor bolts and/or foundation bolts.

C. Provide anchor bolts as follows:

1. Anchor bolts or foundation bolts will be set by the Contractor in accordance with approved site specific drawings. They must not vary from the size and dimensions shown on the erection drawings.

2. Anchor bolts shall conform to ASTM A 307 Grade A, and shall have a minimum of 7 inches (178 mm) of exposed thread and 23 inch (584 mm) minimum embedment with 1-1/4 inch (32 mm) nut and washer as embedment end.

D. Provide bolted connections as follows:

1. Structural erection bolts shall conform to ASTM A 325/A 325M.

2. A minimum diameter of 3/4 inch erection bolts shall be used for cross beam-to-column connections and a minimum of 5/8 inch diameter bolts for all other connections.

3. Drilled holes in structural steel shall be deburred.

4. Flat structural washers (minimum of one) shall be used on bolted connections.

5. Bolts shall be tightened to snug tight per latest RCSC specifications.

E. Provide screws as follows:

1. Fastening shall be performed per installation prints provided by the manufacturer.

2. Self-drilling and self-tapping screws shall have a sufficient cut point and a 1/2 inch (13 mm) outside diameter dished metal-backed neoprene washer to be used in water sealing applications.

F. All anchor bolts and/or leveling plates shall be set within 1/4 inch (6 mm) tolerance on layout and grade level.
G. Following installation of canopy paint factory steel with two coats of topcoat paint.

H. Install downspouts and connection to site drainage system where required by the manufacturer.

METHOD OF MEASUREMENT

This work will be measured on a lump sum basis.

BASIS OF PAYMENT

The item will be paid on a lump sum basis for the Contractor to furnish all labor, materials, and equipment necessary to satisfactorily complete the work. The item shall include the foundation and the canopy. The payment shall include unclassified excavation and disposal, and select fill below the proposed finished surface’s subgrade elevation. Payment shall be made as follows:

A. Progress Payments. Progress payments will be made at the unit price bid at the following milestones:

   a. Foundation installation = 15%
   b. Canopy installation = 80%
   c. Paint and Drainage = 5%

At the discretion of the Engineer, partial progress payments may be made based on work actually performed within the Contractor’s billing period.