SPECIAL SPECIFICATION

2318

Metal Canopy

1. **Description.** Furnish and install pre-engineered 38 foot x 64 foot metal canopy at the location shown on the plans, in accordance to the manufacturer’s specifications, this specification and plans.

2. **General Requirements.**

   **Summary.**

   A. Section includes pre-engineered, shop fabricated structural steel frame; sloped roof system including gutters and downspouts, drilled shaft foundations and illumination.

   B. Related Sections:

      1. Electrical: as shown on drawings
      2. Drilled Shaft Foundations: Item 416
      3. Concrete Structures: Item 420
      4. Hydraulic Cement Concrete: Item 421
      5. Steel Structures: Item 441
      6. Metal for Structures: Item 442
      7. Galvanizing: Item 445
      8. Cleaning and Painting Steel: Item 446
      9. 447. Structural Bolting Item 447
     10. Structural Field Welding: Item 448
     11. 449. Anchor Bolts: Item 449

Prior to construction, the Contractor will select a pre-engineered fabricator, capable of providing the detailed structural design for the canopy, as specified in the plans. The Contractor will obtain preliminary design drawings and specifications from the fabricator and submit them to the Engineer for initial review and approval. The Contractor’s selected fabricator shall provide the detailed structural design for the building, which must be sealed by a licensed professional engineer, in the state of Texas.
The Contractor will verify that the metal canopy and foundation design meets the requirements as specified in the plans, and will submit a copy of the final design to the Engineer for final review.

Contractor shall be responsible for obtaining Windstorm insurance certificate from the State Board of Insurance and shall coordinate with the engineer of record in performing the required Windstorm field inspections.

A. References.

American Institute of Steel Construction:


B. ASTM International:

   c. ASTM A490 - Standard Specification for Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength.
   e. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
   f. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized)
   g. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

i. American Welding Society:
   (a) AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
(b) AWS D1.1 - Structural Welding Code - Steel.

j. Metal Building Manufacturers Association:

(c) MBMA - Low Rise Building Systems Manual.

k. National Fire Protection Association:

(d) NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

l. SSPC: The Society for Protective Coatings:

(e) SSPC - Steel Structures Painting Manual.

(f) SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

C. System Description.

1. Single span steel frame with straight columns. Columns made of 3 steel vertical pipes of 3.5 inch minimum diameter and interconnected by steel pipes of 2.5 inch minimum diameter as depicted on the drawings.

2. Primary Framing: Rigid frame of steel W beams and columns, to support steel roof truss and wind bracing. Cold formed pre-manufactured steel trusses shall be designed for all dead loads plus the design live loads listed above. the trusses shall be designed in accordance with American Iron and Steel Institute (AISI) for the loads as specified.


4. Roof System: Roof deck over steel joists shall be a metal standing seam roof deck over ½” glass-faced roof board over 1 ½” deep, 22 gauge intermediate rib metal deck (Min. section modulus = 0.111 inches cubes, as MFG’D by Vulcraft or approved equal). Lap ends of deck 2” at supports. Weld washers shall be used and welds shall not exceed 12” on center at end lap joints and at each side lap at intermediate supports and not more than 18” on center between side laps at intermediate supports. The deck assembly shall conform to U.L. Wind Uplift Class 90 or FM Class 90.

5. Roof Slope: 1 in. in 4 in.

6. Support for sign provided by others as shown in plans.

D. Pre-engineered Requirements.

1. Members should withstand dead load, live load and design loads due to pressure and suction of wind calculated in accordance with applicable code.
2. Members to support electrical equipment indicated.

3. Maximum allowable deflection: 1/240 of span with imposed loads for exterior wall and roof system.

4. Provide drainage to exterior for water entering or condensation occurring within roof system.

7. Size and fabricate roof systems free of distortion or defects detrimental to appearance or performance.

8. Foundation: Drilled shaft foundations of minimum 30 inch diameter and minimum 25 foot length. Design foundation using boring information provided in the plans. Use boring 9 or 10.

B. Utilities. The contractor is responsible for electrical connections and fees, including underground bores, piping and conduit. The contractor is required to furnish all materials for the electrical and illumination. Illumination shall consist of 4 rows of dual tube lights with water resistant exterior grade fixtures, switches near future building, grounding and lightning protection.

1. Performance Requirements.
   a. Fabricator/contractor shall provide complete design calculations, reviewed shop and erection drawings.
   b. Provide components of each type from one manufacturer compatible with adjacent materials.

C. Submittals.

1. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections, attachments, ambers, loads; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, method or installation; framing anchor bolt settings, sizes, and locations from datum, and foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.

2. Product Data: Submit data on profiles, component dimensions, fasteners, performance characteristics.

3. Samples: Submit two samples of precoated metal panels for each color selected, 12 X 12 in. in size illustrating color and texture of finish.

4. Manufacturer’s Instructions: Submit preparation requirements, anchor bolt placement.

5. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.
D. Closeout Submittals.
   1. Project Record Documents: Record actual locations of concealed components and utilities.

E. Quality Assurance.

F. Qualifications.
   1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

   2. Erector: Company specializing in performing Work of this section with minimum three years documented experience and approved by manufacturer.

G. Warranty.
   1. Furnish 5-year manufacturer warranty for all structural components

   2. Furnish 5-year warranty to include coverage for exterior pre-finished surfaces color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.


   A. Components – Framing and foundation

   1. Structural Steel Members: ASTM A36/A36M.

   2. Plate or Bar Stock: ASTM A529/A529M.


   5. Welding Materials: AWS D1.1; type required for materials being welded.

   6. Primer: SSPC Paint 20, Red Oxide Grout: ASTM C1107, 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 in two days and 7000 psi in 28 days.

   7. Foundation: Drilled shaft foundations. Minimum reinforcing as per “FD” standard in the plans.

   B. Components - Roof System.
1. Sheet Steel Stock: ASTM A792/A792M aluminum-zinc alloy Coating Designation AZ50.

2. Fasteners: Manufacturer’s standard type, galvanized, finish to match adjacent surfaces when exterior exposed.

3. Sealant: Manufacturer’s standard type, non-staining, elastomeric, skinning.

4. Trim, Closure Pieces, Caps, Flashings, Facias, Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

C. Fabrication - Framing.

1. Fabricate members in accordance with AISC Specification for plate, bar, tube, or rolled structural shapes.

2. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.

D. Fabrication - Roof Systems.

1. Roofing: Minimum 24ga. metal thickness, “R” profile, 1 1/4 in. deep, lapped edges.

2. Internal and External Corners: Same material thickness and finish as adjacent material, profile rake formed to required angles. Back brace mitered internal corners with 24 ga. sheet.

3. Flashings, Closure Pieces, Fascia, Infills, Caps: Same material and finish as adjacent material, profile to suit system.

4. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive.

E. Fabrication - Gutters and Downspouts.

1. Fabricate of same material and finish as roofing metal.

2. Form gutters and downspouts profile and size to collect and remove water. Fabricate with connection pieces.

3. Form sections in maximum possible lengths. Hem exposed edges.

4. Fabricate support straps of same material and finish as roofing metal, color as selected.

5. Conceal downspout within canopy columns.

F. Factory Finishing.

1. Framing Members: Clean, prepare, and prime to SSPC Manual requirements.
2. Galvanizing for Nuts, Bolts and Washers: ASTM A153/A153M.

3. Ceiling and Roof Components and Accessories: Precoated enamel on steel of fluoropolymer finish, color as selected from manufacturer’s standard range.

4. Exterior Surfaces of Roof Components and Accessories: Precoated enamel on steel of fluoropolymer finish, color as selected from manufacturer’s standard range.

4. Construction.

A. Examination.

1. Verify foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position.

B. Erection - Framing.

1. Erect framing in accordance with AISC Specification.

2. 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.

3. Set column base plates with non-shrink grout to achieve full plate bearing.

4. Do not field cut or alter structural members without approval of the Engineer.

5. After erection, prime welds, abrasions, and surfaces not shop primed.

C. Erection - Roofing Systems.

1. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.

2. Fasten cladding system to structural supports, aligned level and plumb.

3. Locate end laps over supports. End laps minimum 2 in. Place side laps over bearing.

4. Use exposed fasteners.

5. Install sealant and gaskets to prevent weather penetration.

D. Erection - Gutter and Downspouts.

1. Rigidly support and secure components. Joint lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.

2. Apply bituminous paint on surfaces in contact with cementitious materials.
3. Install splash pads under each downspout.

4. Framing Members: 1/4 in. from level; 1/8 in. from plumb.

5. Siding and Roofing: 1/8 in. from indicated position.

5. **Measurement.** This Item will be measured by each “Metal Canopy.”

6. **Payment.** The work performed and materials furnished in accordance with this Item and provided under “Measurement” will be paid at the unit price bid for “Metal Canopy.” This price is full compensation for design, erecting, transporting, furnishing and placing the metal canopy, including framing, roof, gutters, downspouts; furnishing and installing electrical and lighting including conduit, electrical conductors, ground boxes, electrical service, light fixture assemblies, trenching and boring; drilled pier foundations including excavation, furnishing, placing, and removing casing / furnishing, processing, and recovering slurry; pumping; furnishing, and placing reinforcing steel; furnishing and placing concrete, including additional concrete required to fill an oversize casing or oversize excavation; conducting slump loss tests; backfilling; disposing of cuttings and slurry; and materials, tools, equipment, labor, and incidentals.