

Solar Panel Support Structures

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-engineered, pre-finished Solar Panel Support system.

1.2 RELATED SECTIONS

- A. Section 03100 - Concrete Forms and Accessories.
- B. Section 03300 - Cast-In-Place Concrete

1.3 REFERENCES

- A. American Architectural Manufacturers Association (AAMA):
 1. AAMA 603 - Voluntary Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.
 2. AAMA 605 - Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
 3. AAMA 607.1 - Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
 4. AAMA 608.1 - Voluntary Guide Specification and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.

1.4 DESIGN REQUIREMENTS

- A. Columns and Beams: Aluminum extrusions.
- B. Structural Framing:
 1. Heli-arc welded, support columns and beams forming one-piece rigid bents.
 2. Mechanically fastened support columns and beams using internally concealed bolted connections.
- C. Building Code: _____.
- D. Design Loads:
 1. Comply with Building Code for site location.
 2. Collateral Loads: Additional loads imposed by other materials or systems identified in contract documents.

- E. Structural Design: Prepare complete structural design calculations for members except footings. Provide reactions as required for footing design by a registered professional engineer.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's catalog data, detail sheets, and specifications.
- C. Shop Drawings: Layout and erection drawings showing framing, cross sections, and details, clearly indicating proper assembly.
- D. Samples: Color selection samples consisting of actual coating material or anodizing process on aluminum extrusions.
- E. Quality Assurance/Control Submittals:
 - 1. Qualifications: Letter certifying manufacturer's required qualifications.
 - 2. Structural Design Calculations.
 - 3. Manufacturer's Installation Instructions.

1.6 QUALITY ASSURANCE

- A. Overall Standard: Structural engineering design documents stamped by a structural engineer registered to practice in _____.
- B. Manufacturer Qualifications: Minimum five years experience in producing Pergola and Trellis structures and structures of the type specified.
- C. Installer Qualifications: Minimum two years experience in erecting aluminum structures of the type specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Conform to Section 01660 - Product Storage and Handling Requirements.
- B. Follow manufacturer's instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Perfection Architectural Systems, Inc., 2310 Mercator Drive Orlando, FL 32807; ASD. Tel: (800) 238-7207, Fax: (407) 671-8252.
- B. Representative: _____.

- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Substitutions: Not permitted.
- E. Provide all components from a single manufacturer.

2.2 MATERIALS

- A. Aluminum Extrusions: 6063 alloy, T-6 temper.
- B. Grout: 1 part portland cement, 3 parts masonry sand; 2,000 pounds per square inch (13.8 MPa) compressive strength.
- C. Foam Block-Outs: Rigid foam blocks sized as required for column embedment depth and shape.

2.3 COMPONENTS

- A. Columns:
 - 1. Radius-cornered aluminum tubular extrusion of size shown on drawings.
 - 2. Radius-cornered aluminum tubular extrusion as required by structural engineering design.
 - 3. Grout Key: Provide two 1-1/2 inch (38 mm) diameter holes in column base, one each in opposite sides.
 - 4. Provide clear acrylic protection coat on surfaces in contact with grout.
- B. Support Beams: Aluminum tubular extrusions with welded plate end closures shape and profile as indicated on drawings.
 - 1. Size: As shown on drawings.
 - 2. Size: As required by structural engineering design.
- C. Cross Beams: Aluminum tubular extrusions with welded plate end closures shape and profile as indicated on drawings.
 - 1. Size: As shown on drawings.
 - 2. Size: As required by structural engineering design.

2.4 ACCESSORIES

- A. Fasteners:
 - 1. Screws: No. 14 by 1 inch (25 mm), self-tapping, Type 18-8 stainless steel with neoprene washers.
 - 2. Other Fasteners: Type 18-8 stainless steel, type recommended by manufacturer for specific condition.

2.5 FABRICATION

- A. Shop Assembly: Fabricate support beams and columns into one-piece rigid bents with corners mitered and heli-arc welded to the extent that completed bents can be shipped on local, state, and federal highways without special permit. Provide bolted connections for bents required to be shipped unassembled.
- B. Shop Assembly: Fabricate cross beams for field assembled mechanical connections.

2.6 FINISHES

- A. Columns:
 - 1. Clear Anodized: AA-M-10C-22A-31, Architectural Class II, comply with AAMA 607.1.
 - 2. Bronze Anodized: AA-M-10C-22A-44, Architectural Class I, comply with AAMA 608.1.
 - 3. Thermo-Set Enamel: AA-C-12C-42R-1, comply with AAMA 603.
 - a. Color: As selected by architect from manufacturer's standard color range.
 - b. Color: Custom color as selected by architect.
 - 4. Fluoropolymer Coating: 70 percent PVDF resin based fluoropolymer, AA-C-12C-42R-1, custom color as selected by architect, comply with AAMA 605.
 - a. Two coat application.
 - b. Three coat application.
- B. Support Beams:
 - 1. Clear Anodized: AA-M-10C-22A-31, Architectural Class II, comply with AAMA 607.1.
 - 2. Bronze Anodized: AA-M-10C-22A-44, Architectural Class I, comply with AAMA 608.1.
 - 3. Thermo-Set Enamel: AA-C-12C-42R-1, comply with AAMA 603.
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 - a. Two coat application.
 - b. Three coat application.
- C. Cross Beams:
 - 1. Clear Anodized: AA-M-10C-22A-31, Architectural Class II, comply with AAMA 607.1.
 - 2. Bronze Anodized: AA-M-10C-22A-44, Architectural Class I, comply with AAMA 608.1.
 - 3. Thermo-Set Enamel: AA-C-12C-42R-1, comply with AAMA 603.
 - a. Color: As selected by architect from manufacturer's standard color range.
 - b. Color: Custom color as selected by architect.
 - 4. Fluoropolymer Coating: 70 percent PVDF resin based fluoropolymer, AA-C-12C-42R-1, custom color as selected by architect, comply with AAMA 605.
 - a. Two coat application.
 - b. Three coat application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine footings in which columns will be set. Verify footing locations and elevations comply with shop drawings.
- B. Examine building surfaces to which structure will connect.
- C. Coordinate with responsible trade to perform corrective work on unsatisfactory footings or surfaces.
- D. Commencement of work by installer is acceptance of existing conditions.

3.2 ERECTION

- A. Erect in accordance with manufacturer's installation instructions.
- B. Set columns straight, and true to line, adequately braced to maintain position until grout has cured.
- C. Keep aluminum surfaces from direct contact with ferrous metal or other incompatible materials by applying one coat of clear acrylic coating.

3.3 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer.
- B. Remove surplus materials and debris from the site.

3.4 PROTECTION

- A. Protect finished aluminum surfaces from damage due to subsequent construction operations.

END OF SECTION