SPECIAL SPECIFICATION

7751

Fabrication and Installation of Median Tower Structure

1. **Description.** the furnishing and installation of aluminum Median Towers, chemical painting, concrete footings, lighting, and other miscellaneous elements as indicated on the plan sheets and specified herein.

2. **Materials.** Materials shall be in accordance with the Item 421, “Portland Cement Concrete”, the Item 440, “Reinforcing Steel”, the Item 442, “Metal for Structures”; the Item 445, “Galvanizing”; the Item 446, “Cleaning, Paint and Painting”; and the following specifications:

   A. Structural steel shall conform to ASTM A 36.

      Steel for anchorage shall be of shapes and thickness required to meet structural requirements for their use. All steel shall meet ASTM A36 requirements and be given shop prime coat of zinc-rich primer meeting SSPC Paint 20. Touch up after welding in field.

   B. Structural steel tubing shall conform to ASTM A500 and ASTM A501.

   C. Steel Sheet and strip: ASTM A515, Grade 55, ASTM A606, ASTM A607, ASTM A570, ASTM A611, and ASTM A653, Grade B

   D. Steel Plate for cold forming: ASTM A6 and ASTM A192.

   E. Hot Rolled Steel Bars (Including Bar-Size Shapes): ASTM A575 (Merchant Quality) or ASTM A576 (Special Quality), and ASTM A29.

   F. Aluminum Extrusions: ASTM 8221, alloy 6063-T5, 6061-T6 or as recommended to suit required service and finish.

   G. Reinforcing structural steel shall be ASTM A615 Grade 60, minimum.

   H. Aluminum pipe and tubing: Alloy and temper recommended by aluminum producer of finisher for type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM 8429 for pipe and tubing.

   I. Aluminum sheets and plates: ASTM 8209, alloy 6061-T6, alloy 5005-H34, alloy 3003, or as recommended to suit required service and finish. Minimum 0.125-inch and 0.250-inch thickness in solid aluminum sheets as indicated on drawings.

   J. Galvanize touch-up paint: Brush apply only; two coats

      1. Matcote Co., Inc. “Brushweld Matcote 1-284”
2. Sherwin-Williams “Zinc-Clad 5 B69 A 45”

3. ZRC Chemical Products Co. (Div of Norfolk Corp.) “ZRC Cold Galvanizing Compound”

K. All welding electrodes: AWS E70XX for hot-rolled steel and E60XX for cold-formed steel.

L. All exposed fasteners and fasteners in wet area of wall shall be ASTM A 193, Series 300 Stainless steel. Finish exposed fasteners to match adjacent aluminum. Exposed fasteners may only be used if approved by the Engineer. Work shall be designed to conceal all fasteners. All non-stainless steel fasteners being used in structural application must meet minimum requirements of SAEJ429 Grade 5. Grade 8.0 or higher fasteners, high strength bolts of non-US origin or high strength bolts that are zinc-plated shall not be used. Nuts used at expansion and moving connections shall be designed to provide positive means of preventing disengagement. Staking of bolts, use of lock washers, or threads being deformed is not acceptable. Matched bolts, nuts, washers shall be used at all friction connections. Dielectric insulators, in addition to metal coatings, shall be used when connecting dissimilar metals. Connections shall include locking devices which prevent movement due to dynamic or vibration loads, thermal or other cycle conditions when appropriate.

M. All washers shall be 300 series stainless steel, plain round, complying with FS FF-W-84.

N. Provide flashing as required of Stainless Steel or Aluminum.

O. Provide aluminum and/or steel brackets, clips, shims and reinforcements as required.

P. Proved sealants and gaskets in fabrication, assembly and installation of work, which are recommended and guaranteed by manufacturer to remain permanently elastic, non-shrinking, non-migrating, and compatible with adjacent material and weather proof.

Q. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

R. Aluminum Finish: Comply with NAAMM’s “Metal Finishes Manual for Architectural and Metal Products” for recommendations for applying and designating finishes.

1. High performance Finish System: Manufacturer’s standard low gloss, catalyst hardened acrylic aliphatic polyurethane finish system consisting of primer, base coat, catalyst, color coat, and clear coat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with manufacturer’s written instructions. Approved manufacturer’s include:

   (1) DuPont

   (2) Matthews Paint Company

   (3) PPG
(4) The Sherwin-Williams Company

(5) Approved Equal

S. Lighting: Lights, ballasts, conduit and cabling shall be provided as indicated on the drawings and meet the following requirements:

1. Lights shall be as follows or approved equal:

   (1) Monaco 2001 by Lumiere, 2001-MH70T6-208-ELMSM-CS; quantity 16 per tower

   or

   (2) 8100 by Hydrel, 8100-150CMT-208-SP-YM; quantity 8 per tower

3. Submittals and Information to be Retained. Submit manufacturer’s Specifications, anchor details and installation instructions for products to be used in the fabrication of metal fabrication. Show fabrication and erection of metal fabrications on all Shop Drawings. Include plans, elevations, and details of Sections and connections. Show anchorage and accessory items. Submit Shop Drawings, signed and sealed by a professional engineer licensed in the state of Texas, to the Design Engineer for review and approval.

   Provide samples, prior to the start of fabrication, representative of the detailed fin; including welded section of typical frame members; 1’-0” section of base and cover for foundation system; each type of fastener, screw, nut, bolt, washer, shim, and separator tape to be used; Mock-up, in size to be determined by fabricator and accepted by the Engineer, of fin shape to accurately indicate module, sight lines and profiles.

   The following shall be submitted to the Engineer for review of fabricator’s qualifications; Welder’s certificates which demonstrate that all welders are certified per AWS; Installer qualifications including evidence of three similar metal fabrication installations within the past ten years; Fabricator’s approach and CPM for the fabrication and installation of Median Towers.

4. Quality Assurance/Quality Control. Comply with the provisions of the Items, Special Specifications and Referenced Standards, unless shown otherwise on the plans. Take field measurements prior to preparation of Shop Drawings and fabrication. Furnish inserts and anchoring devices that must be set in concrete for installation of metal work. Preassemble 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 reassembly and coordinated installation.

   Each component of foundation support system and steel support system, decorative ornamental metal fabrication shall be signed and sealed by a professional engineer licensed in the state of Texas, in accordance with 2000 standard building code (International building code) with 2002 Texas Amendments and ASCE-7 and the provisions set forth in the contract documents; the more stringent provisions of each to govern.

   Engage single firm experienced in manufacture and installation of systems that are similar to those indicated for this project to assume undivided responsibility for fabrication and
installation and total coordination of all components and support system, and decorative ornamental metal fabrication. Firm must demonstrate minimum ten years of successful experience in fabrication and installation of work similar to work for this project.

A. **Qualified Fabricator:** Qualified fabricators shall meet the qualifications set forth within this Specification. Qualified fabricators are as follows or approved equal;

1. Henry Incorporated  
   a. 2285 Park Central Blvd.  
   b. Decatur, GA 30035  
   c. 770-593-1234

2. Architectural Image Manufacturing  
   a. 2179 Bouldercrest Road SE  
   b. Atlanta, GA 30316  
   c. 404-243-8000

5. **Fabrication.** For fabrication of Metal Work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks and rolled trade names, roughness, and other variations.

Use aluminum materials of size and thickness shown. Assemble materials to dimensions shown on Shop Drawings, using proven details of fabrication and support. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

Shop weld corners and seams continuously, complying with AWS recommendations. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces. Increase sizes of welds as required to compensate for grinding smooth. Shop form exposed connections with hairline joints; flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, socket type flat-head (countersunk) screws or bolts. Provide sufficient backing at screw locations to cover at least three threads. Provide for anchorage of type suitable for use with supporting structure. Fabricate and space anchoring devices as shown to provide adequate support. Cut, reinforce, drill and tap metal Work as required to receive finish hardware.

Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other steel, aluminum, and iron shapes as required for framing and supporting Work, and for anchoring or securing Work to substrates. Fabricate items of sizes, shapes and dimensions shown.

Fabrication of Structural Aluminum Framing: Fabricate shapes and sizes as required for profiles shown. Except as otherwise noted, fabricate units from structural aluminum shapes and plates and aluminum tubing, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other Work.
Fabricate steel angles, support framing and pipe sleeves as required to complete Work. Galvanize items at exterior and in exterior walls.

Fabricate aluminum support framing units to sizes, shapes and profiles shown. Except as otherwise shown, fabricate framing and sleeves from structural aluminum shapes, plates and bars, of welded construction on using mitered joints for field connections. Cut, drill and tap units to receive hardware.

6. **Site Preparation.** Examine areas and conditions under which metal fabrications are to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to installer. Furnish setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and steel supporting items having integral anchors, which are to be embedded in concrete construction.

7. **Installation.** The concrete footings shall be constructed in accordance with Item 420, “Concrete Structures.” Provide anchorage devices and fasteners where necessary for securing steel supporting items to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through bolts, and other connectors as required.

Perform cutting, drilling, and fitting required for installation of steel supporting metal items. Set Work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels with lines visually parallel. Provide temporary bracing or anchors in framework for items that are to be built into concrete.

Fit exposed connections accurately together to form tight hairline joints. Fit exposed connections accurately together to form tight hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized or powder coated after fabrication, and are intended for bolted or screwed field connections.

Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting and welding work.

Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

For galvanized surfaces clean welds, bolted connections and abraded areas and repair galvanizing in accordance with Item 445, “Galvanizing”.

8. **Measurement.** This item will be measured as each median tower structure, complete in place.

9. **Payment.** The work performed and materials furnished in accordance with this item and measured as provided under “Measurement” will be paid for at the unit price bid for “Fabrication and Installation of Median Tower Structures.” This price shall be full compensation for furnishing and installing concrete footings, structural steel, reinforcing steel, structural aluminum, finish aluminum, and lighting; for painting and galvanizing; and for all labor, tools, equipment, and incidentals necessary to complete the work.