

**SECTION 05140**

**STRUCTURAL ALUMINUM**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

The work under this Section includes the fabrication and erection of structural aluminum.

1.02 QUALITY ASSURANCE

Standards: Unless otherwise specified, all materials, workmanship and practices shall conform to the following Standards:

- A. South Florida Building Code, latest edition.
- B. Aluminum Construction Manual, latest edition, by the Aluminum Association.

**PART 2 - PRODUCTS**

2.01 GENERAL

The following general requirements shall apply for all aluminum furnished under this Project:

- A. Structural Shapes (I-beams, H-beams, channels, angles, tees and zees) and Bars: Shall conform to ASTM B308/B308M-95a and shall be Aluminum Association (AA) Designation 6061-T6 alloy or as otherwise specified.
- B. Sheets and Plates: Shall conform to ASTM B209-95 and shall be AA Designation 6061-T6. Aluminum sheets and plates shall be alloy 5086-H116 conforming with the standards of ASTM B209-95, "Aluminum and Aluminum-Alloy Sheet and Plate". Aluminum sheet for roof flashings, scuppers, gutter troughs and other roof metal shall be alloy 6061-T6.
- C. Pipe: Rods, bars, structural tubes, etc., not covered under ASTM B308 shall conform to ASTM B221-95a. Pipe shall be AA Designation 6061-T6 alloy, Schedule 40 minimum, unless otherwise specifically indicated herein or shown on the Plans.
- D. Anodizing: All aluminum items, except conduits, furnished and installed under this Project shall be anodized.
- E. Finish: After forming and welding operations, and before assembly, each piece of aluminum shall be finished (anodized) in accordance with the following Aluminum Association Designations:
  - 1. Sheet . . . . . AA-M10C11C21A31, with minimum 0.4 mil coating.
  - 2. Structural shapes and bars . . . . . AA-M10C11C21A41, with minimum 0.8 mil coating.
  - 3. Plates, pipe and gratings . . . . . AA-M10C11C21A41, with minimum 0.8 mil coating.

F. Standard Threaded Fasteners:

1. Stainless steel bolts and screws, AISI Type 316.
2. Stainless steel nuts and washers, AISI Type 316.

G. Welding Electrodes: 4043 filler metal.H. Certification: A written Certification stating compliance with the aluminum finish (anodizing) as specified above shall be furnished for all aluminum material and/or items furnished and installed by the Contractor.I. Protection:

1. Surface Treatment: Aluminum in exposed surfaces shall be protected by a factory applied coating of water-tight clear methacrylate lacquer having a minimum thickness of 0.008-inch, capable of withstanding the action of lime and mortar for a period of at least one week in an atmosphere of 100% relative humidity at 100-degrees Fahrenheit; the action of 10% by weight muriatic acid for a period of 6-hours at 70-degrees Fahrenheit; and the action of atmospheric weather for a period of 12-months. Spray coating after anodizing and sealing procedures have been followed. Coating shall be capable of passing Aluminum Association Mortar Test for Clear Lacquers on Anodized Aluminum
2. Surfaces in contact with concrete, grout (except epoxy grout), mortar, steel (except stainless steel), or buried in the ground shall be protected with a heavy coating of Bitumastic 300M, as manufactured by Kop-Coat, Inc. or approved equal.

## 2.02 ALUMINUM GRATING (Shall not be used for intermediate level of Dry Well)

- A. Aluminum grating shall be bar type conforming to the requirements of Federal Specification RR-G-661c, Type I with right angle cross member.
- B. Bearing bar size shall not be less than 1½-inches x 3/16-inch and of 6063-T6 alloy, except as otherwise indicated. Cross bars shall be of 6063-T5 alloy. Aluminum bars shall have a standard mill finish or anodized, as indicated on the Drawings. Joints shall occur at supporting members. Grates shall be fastened to supporting members at each contact point.
- C. Grating shall be of all aluminum construction, with bearing bars sized and spaced for a minimum of 125 pounds per square foot uniform load, and with welded or pressure-locked cross bars spaced as required but not more than 4 inches apart.
- D. The top surface of the grating shall be of non-slip design (including cross bars if flush with bearing bars) which shall be integral with the bar design.
- E. Grit or other type surfaces applied to the metal will not be permitted.
- F. Furnish gratings in sections, approximately 3 feet wide, measured across the bearing bars, with each grating section provided with 1/4 inch thick end band straps welded to the section, and the straps running the full width of the section. Each grating section shall be anodized after the end banding straps have been welded to the section in accordance with Article 2.01.

- G. Aluminum alloy for grating shall be AA 6061-T6 or AA 6063-T5. Fasteners shall be standard with the manufacturer of the grating, but shall be of anodized aluminum construction.

### 2.03 STAIR TREADS

Aluminum stair treads shall be of the same pattern as the aluminum grating, alloy 6063-T5 and shall have a 1-1/4 inch wide abrasive safety nosing, "Alumalum", Style A by American Abrasive Metals Co., Irvington, N.J., or approved equal. Aluminum bars shall have a standard mill finish or anodized, as indicated on the Drawings.

## **PART 3 - EXECUTION**

### 3.01 ERECTION:

- A. Erect in accordance with the specified Standards and as shown and indicated on the Contract Drawings.
- B. Painting: No painting is required.
- C. Welding: Welding shall be performed by the Gas Metal Arc (MIG) or Gas Tungsten Arc (TIG) process, per AWS Welding Handbook.
- D. Where the contact of dissimilar metals may cause electrolysis or where aluminum will come in contact with concrete, mortar or plaster, the contact surface of the metals shall be separated using not less than one coat of zinc chromate primer and one heavy coat of aluminum pigmented asphalt paint on each surface; or where deemed necessary by the Engineer of Record, not less than one course of asphalt saturated cotton fabric cemented to both metals with flashing cement, shall be used. Finished works shall be cleaned and excess cement removed.
- E. Do not cover work, in place, until approved.
- F. Repair work that will remain exposed, to the satisfaction of the Department and in a manner that will not be obvious as a patch. All repairing shall be performed by the trade that installed the original work. Remove and replace items that cannot be satisfactorily repaired.

END OF SECTION