

SECTION 05500  
METAL FABRICATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Shop fabricated ferrous metal items.
- B. Shop fabricated aluminum items.

1.2 REFERENCES

- A. AAMA 603.8 - Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum
- B. AAMA 605.2 - Specification for High Performance Organic Coatings on Architectural Extrusions and Panels
- C. AAMA 606.1 - Specifications and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum
- D. AAMA 607.1 - Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
- E. AAMA 608.1 - Specifications and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum
- F. ANSI A14.3 - Ladders, Fixed, Safety Requirements
- G. ASTM A36 - Structural Steel
- H. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe
- I. ASTM A123 - Zinc (Hot-Galvanized) Coatings on Iron and Steel Products
- J. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- K. ASTM A283 - Carbon Steel Plates, Shapes, and Bars
- L. ASTM A307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
- M. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- N. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- O. ASTM B26 - Aluminum-Alloy Sand Castings
- P. ASTM B85 - Aluminum-Alloy Die Castings
- Q. ASTM B177 - Chromium Electroplating on Steel for Engineering Use
- R. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate
- S. ASTM B210 - Aluminum-Alloy Drawn Seamless Tubes
- T. ASTM B211 - Aluminum-Alloy Bar, Rod and Wire
- U. ASTM B221 - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape and Tube
- V. AWS A2.0 - Standard Welding Symbols
- W. AWS D1.1 - Structural Welding Code
- X. Florida Building Code.
- Y. SSPC (Steel Structure Painting Council) - Steel Structures Painting Council

1.3 SUBMITTALS FOR REVIEW

- A. Section 01300 - Submittals: Procedures for submittals
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details.
- C. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld

lengths.

#### 1.4 QUALIFICATIONS

- A. Prepare Shop Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Florida.
- B. Welders' Certificates: Submit under provisions of Section 01300, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

### PART 2 PRODUCTS

#### 2.1 MATERIALS - STEEL

- A. Steel Sections: ASTM A36.
- B. Steel Tubing: ASTM A500, Grade B.
- C. Plates: ASTM A283.
- D. Pipe: ASTM A53, Type E or S, Grade B, Schedule 40 minimum.
- E. Bolts, Nuts, and Washers: ASTM A325 or A307 galvanized to ASTM A153 for galvanized components.
- F. Welding Materials: AWS D1.1; type required for welded materials.
- G. Ladders: ANSI A14.3.
- H. Shop and Touch-Up Primer: SSPC 15, Type 1, red oxide.
- I. Touch-Up Primer for Galvanized Surfaces: SSPC 20, Type I Inorganic zinc rich.

#### 2.2 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221, Alloy 6063, Temper T5
- B. Sheet Aluminum: ASTM B209, Alloy, Temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210, Alloy 6063, Temper T6.
- D. Aluminum-Alloy Bars: ASTM B211, Alloy 6063, Temper T6.
- E. Aluminum-Alloy Sand Castings: ASTM B26, Alloy.
- F. Aluminum-Alloy Die Castings: ASTM B85, Alloy.
- G. Bolts, Nuts and Washers: Stainless steel.
- H. Welding Materials: AWS D1.1; type required for welded materials.

#### 2.3 FABRICATION

- A. Fit and shop assemble in largest practical sections for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

#### 2.4 FABRICATION TOLERANCES

- A. Square: 1/8" maximum difference in diagonal measurements.

- B. Maximum Offset Between Faces: 1/16".
- C. Maximum Misalignment of Adjacent Members: 1/16".
- D. Maximum Bow: 1/8" in 48".
- E. Maximum Deviation From Plane: 1/16" in 48".

## 2.5 FINISHES - STEEL

- A. Prepare surfaces to be primed in accordance with SSPC SP 2.
- B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- C. Do not prime surfaces in direct contact with concrete or where field welding is required.
- D. Shop Prime paint items with one coat compatible with field finish.
- E. Painted finishes to be per Section 09900-Painting.
- F. Structural Steel Members: Galvanize after fabrication to ASTM A123. Provide minimum 1.25 oz/sq ft galvanized coating.
- G. Non-structural Items: Galvanize after fabrication to ASTM A123. Provide minimum 1.25 oz/sq ft galvanized coating.
- H. Chrome Plating: ASTM B177, weight, nickel-chromium alloy, satin finish.

## 2.6 FINISHES - ALUMINUM

- A. Exterior Aluminum Surfaces: Exterior, hard coat, two step anodized to clear color to 0.0007" thickness organic coating to color selected.
- B. Interior Aluminum Surfaces: Interior, hard coat, two-step anodized to clear color to 0.0007" thickness organic coating to color selected.
- C. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

### 3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal and aluminum where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections.

### 3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated on shop drawings.
- D. Perform field welding in accordance with AWS D1.1.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete
- G. Provide isolation coatings where dissimilar metals are in contact or where aluminum is in contact

with concrete.

### 3.4 ERECTION TOLERANCES

- A. Maximum Variation from Plumb:  $\frac{1}{4}$ " per story, non-cumulative.
- B. Maximum Offset from True Alignment:  $\frac{1}{4}$ ".
- C. Maximum Out-of-Position:  $\frac{1}{4}$ ".

END OF SECTION