

SECTION 05 50 00
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 204 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
- B. AAMA 606.1 - Voluntary Guide Specifications and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum
- C. AAMA 607.1 - Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
- D. AAMA 608.1 - Voluntary Guide Specifications and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum
- E. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels
- F. ANSI ASC A14.3 - American National Standard for Ladders - Fixed - Safety Requirements
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel
- H. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-coated Welded and Seamless
- I. ASTM A123/A123M - Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products
- J. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- K. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Carbon Steel Plates
- L. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
- M. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- N. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- O. ASTM B26B26M - Standard Specification for Aluminum-Alloy Sand Castings
- P. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings
- Q. ASTM B177/B177M - Standard Guide for Engineering Chromium Electroplating
- R. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- S. ASTM B210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes
- T. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod and Wire
- U. ASTM B221 - Standard Specification for Aluminum-and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes
- V. AWS A2.4 - Standard Symbols for Welding, Brazing, Nondestructive Examination
- W. AWS D1.1/D1.1M - Structural Welding Code Bundled Set B
- X. FBC - Florida Building Code
- Y. SSPC - Steel Structure Painting Council - Steel Structures Painting Council

1.3 SUBMITTALS FOR REVIEW

- A. Section 01 33 00 - Submittals Procedures
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size, and

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type of fasteners, and accessories.

1. Include erection drawings, elevations, and details.

C. Indicate welded connections using standard AWS A2.0 welding symbols.

1. 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 01 33 00, 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/A36M

B. Steel Tubing: ASTM A500/A500M, Grade B

C. Plates: ASTM A283/A283M

D. Pipe: ASTM A53/A53M, Type E or S, Grade B, Schedule 40 minimum

E. Bolts, Nuts, and Washers: ASTM A325 or A307 galvanized to ASTM A153/A153M 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/B26M, Alloy

F. Aluminum-Alloy Die Castings: ASTM B85/B85M, Alloy

G. Bolts, Nuts and Washers: Stainless steel

H. Welding Materials: AWS D1.1/D1.1M; 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.

1. Make exposed joints butt tight, flush, and hairline.

2. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Provide flush countersunk screws or bolts unobtrusively located consistent with design of component except as noted otherwise

F. Supply components required for anchorage of fabrications.

1. Fabricate anchors and related components of same material and finish as fabrication, except as 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"

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- 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 where field welding is required.
- D. Prime paint items with one coat.
- E. Structural Steel Members:
 - 1. Galvanize after fabrication to ASTM A123/A123M.
 - 2. Provide minimum 1.25 oz/sq ft galvanized coating.
- F. Non-structural Items:
 - 1. Galvanize after fabrication to ASTM A123/A123M.
 - 2. Provide minimum 1.25 oz/sq ft galvanized coating.
- G. Chrome Plating: ASTM B177/B177M, 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 required items for casting 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: 1/4" per story, non-cumulative
- B. Maximum Offset from True Alignment: 1/4"
- C. Maximum Out-of-Position: 1/4"

END OF SECTION