

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Shop fabricated ferrous metal items, galvanized and prime painted.
 - 2. Walmart furnished fabricated metal items.
- B. Related Requirements:
 - 1. Section 03310 - Structural Concrete and Exterior Concrete Slabs: Grout for setting metal fabrications.
 - 2. Section 05090 - Post-installed Concrete and Masonry Anchors: Mechanical and adhesive anchors drilled into concrete or masonry.
 - 3. Section 06065 - Plastic Materials: Plastic sleeves for steel pipe bollards.
 - 4. Section 09900 - Paints and Coatings: Field painted finishes.

1.2 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A 14.3 - Ladders, Fixed, Safety Requirements.
- C. ASTM International (ASTM):
 - 1. ASTM A 36 - Carbon Structural Steel.
 - 2. ASTM A 53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - 3. ASTM A 123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 4. ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 5. ASTM A 240 - Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - 6. ASTM A 307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - 7. ASTM A 325 - Structural Bolts, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - 8. ASTM A 500 - Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 9. ASTM A 591 - Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 - 10. ASTM A 653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 11. ASTM A 666 - Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 12. ASTM A 992 - Standard Specification for Structural Steel Shapes
 - 13. ASTM A 1008 - Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, Baked Hardenable.
 - 14. ASTM A 1011 - Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- D. American Welding Society (AWS):
 - 1. AWS D1.1 - Structural Welding Code.
 - 2. AWS D1.3 - Structural Welding Code - Sheet Steel.
- E. National Association of Architectural Metal Manufacturers (NAAMM):
 - 1. Metal Finishes Manual for Architectural and Metal Products.
- F. Steel Structures Painting Council (SSPC):
 - 1. SSPC-Paint 20 - Zinc-Rich Coating Type I - Inorganic and Type II - Organic.

2. SSPC-Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand cleaned Steel Type I and Type II.
3. SSPC-SP3 - Power Tool Cleaning
4. SSPC-PA1 - Shop, Field, and Maintenance Painting of Steel.

1.3 SUBMITTALS

- A. Shop Drawings: Submit directly to Architect for Contractor furnished items only.
 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
 2. Include erection drawings, elevations, and details where applicable.
 3. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
 4. Prepare shop drawings under the supervision of a licensed structural Professional Engineer.
- B. Submit Shop Drawings within 10 working days of Contract date.
- C. Section 01330 - Submittal Procedures: Procedures for submittals.

1.4 QUALITY ASSURANCE

- A. Qualifications for Welding Work: Qualify welding operators in accordance with Standard Qualification Procedures as required by AWS D1.1.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Transport, handle, store, and protect products in compliance with the requirements of Section 01600 and manufacturer's recommendations.
- B. Delivery and Handling of Walmart Furnished, Contractor Installed Items:
 1. Product Delivery: Walmart Supplier will deliver products to jobsite. Contact Walmart Supplier to establish product delivery date.
 2. Product Packaging: Products will be packaged in manufacturer's standard packaging on shipping pallets. Installation Drawings will be included with products.
 3. Acceptance at Site: Receive products as specified in Section 01600.
 - a. Verify quantity of products furnished with Bill of Material provided with Walmart furnished products.
 - b. Report discrepancies in product quantity delivered, or damage to products delivered to the Walmart Construction Manager, Walmart Indirect Sourcing at (479) 204-0684 (select option 1) or construction.buyouts@Walmart.com and Walmart Supplier.
 - c. Note product quantity discrepancies and/or product damage on Bill of Materials.
 - d. Upon notification by Contractor, Walmart will arrange for delivery of replacement products.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Wide Flanges: ASTM A 992.
- B. Steel Plates and Shapes other than wide flanges: ASTM A 36.
- C. Bolts, Nuts, and Washers: ASTM A 325 and ASTM A 307.
- D. Cold Rolled Steel Sheet: ASTM A 1008.
- E. Hot Rolled Steel Sheet: ASTM A 1011.

- F. Galvanized Steel Sheets:
 1. Structural: ASTM A 653 Structural Quality, G90.
 2. Galvanized Sheet Steel: ASTM A 591, Class C.
- G. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240 or ASTM A 666, Type 304 or 430 as shown or specified.
- H. Steel Tubing: ASTM A 500, Grade B.
- I. Steel Piping: ASTM A 53.
- J. Welding Materials: AWS D1.1 and AWS D1.3 type required for materials being welded.
- K. Primers:
 1. Shop application and field touch-up: SSPC 25.
 2. Touch-up Primer for Galvanized Surfaces: SSPC 20.
 3. Color: To match primer used on steel roof deck and joists.
- L. Concrete Inserts: Cast steel or malleable bolts, washers, and shims; galvanized.

2.2 FABRICATION

- A. Verify dimensions on site prior to shop fabrication.
- B. Fabricate items with joints tightly fitted and secured.
- C. Fit and shop assemble in largest practical sections, for delivery to site.
- D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.
- E. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- F. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

2.3 FINISHES

- A. Finish metal fabrications after assembly. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Shop prime ferrous-metal items not indicated to be galvanized.
- B. Prime Painting:
 1. Prime paint in shop as scheduled.
 2. Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
 3. Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.
 4. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
 5. Prime paint items scheduled with one coat. Touch up with same primer.
- C. Galvanizing: Hot-dip galvanize items indicated to be galvanized to comply with ASTM A 123 or ASTM A 153 as applicable. Galvanize to minimum 2.0 oz/sq ft zinc coating, exterior items, and those items indicated on Drawings and specified herein, to be galvanized.
- D. Finish Painting: Finish paint after installation as shown on the drawings or specified herein in accordance with Section 09900.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Obtain Walmart Construction Manager approval prior to site cutting or making adjustments not scheduled.
- B. Clean and strip site primed steel items to bare metal where site welding is scheduled.
- C. Make provision for erection loads with temporary bracing. Keep work in alignment.
- D. Use grout specified in Section 03310 for setting metal fabrications.

3.2 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Perform field welding in accordance with AWS D1.1 or D1.3, as applicable. After installation, grind sight-exposed field welds smooth, touch-up welds, scratched, or damaged surfaces with primer.

3.3 SCHEDULE

- A. Provide items as scheduled herein and as indicated on Drawings.
- B. Include related items and systems necessary to complete the Work including anchorages and attachments necessary for installation
- C. Loose Bearing Plates and Lintels: Fabricate to sizes and configuration indicated on Drawings; prime paint finish except for items requiring field welding.
- D. Miscellaneous Framing and Supports: Furnish steel framing and supports. Fabricate welded construction in as large units as possible. Drill and tap for hardware and other items. Include anchors required for building into work of other Sections.
 - 1. Interior: Prime paint finish, gray.
 - 2. Exterior: Galvanized.
- E. Rough Hardware: Custom fabricated bolts, plates, anchors, hanger, dowels, and other miscellaneous steel and iron shapes required for framing, supporting, and anchoring other construction. Galvanized unless otherwise indicated on Drawings.
- F. Steel columns.
 - 1. Interior: Prime paint finish.
 - 2. Exterior: Galvanized.
- G. Miscellaneous Steel Trim: Profiles and sizes as indicated on Drawings; continuous welded joints and smooth exposed edges. Use concealed field splices where possible. Provide cutouts, fittings, and anchorages; coordinate assembly and installation into work of other Sections.
 - 1. Interior: Prime paint finish.
 - 2. Exterior: Galvanized.
- H. Exterior Steel Pipe Bollards (Footing Mounted): ASTM A 53, Type E (electric-resistance welded) or Type S (seamless), Grade B, Schedule 40, height.
 - 1. Size: Height and diameter as shown on the drawings.
 - 2. Fill bollard as indicated on Drawings.
 - 3. Finish:
 - a. Painted Bollards: Field prime and finish coated in accordance with Section 09900.
 - b. Plastic Sleeve Covered Bollards: Galvanized.

4. Plastic Sleeves: Install polyethylene thermoplastic pipe sleeves on bollards as specified in Section 06065 and at locations shown on the drawings.
 5. Installation: Install in concrete footing as shown on the drawings.
- I. Interior Steel Pipe Bollards (Core Drilled): ASTM A 53, Type E (electric-resistance welded) or Type S (seamless), Grade B, Schedule 40.
 1. Size: Height and nominal diameter as shown on the drawings.
 2. Fill bollard as indicated on Drawings.
 3. Finish: Field primed and painted in accordance with Section 09900.
 4. Install as shown on the drawings.
 - J. Door Jambs: Fabricate metal door jambs, as indicated on Drawings, for use at traffic doors and overhead doors. Provide mitered and welded corners, ground smooth. Countersink fasteners, minimum six per jamb.
 - K. Protector Angle: Provide continuous steel angles and fasteners, at locations indicated on Drawings. Fabricate angles for attachment to slab-on-grade with 1/2 inch, minimum 4 inch long expansion bolts at maximum 36 inch o.c.
 - L. Water Heater Support Frame: Fabricate support frame and floor-to-roof steel tube bracing as indicated on Drawings for overhead water heater platform located in Janitor area. Provide welded connections, ground smooth.
 - M. Closure Panel at Refrigerated Cases: Fabricate and install closure panels as shown on Drawings. Fabricate from stainless steel or galvanized steel sheet as shown.

END OF SECTION