

## **DIVISION 5 - STRUCTURAL STEEL**

### **SECTION 05120 - STRUCTURAL STEEL**

#### **PART 1 GENERAL**

##### **1.01 WORK INCLUDED**

- A. Structural steel framing members, structural steel support members, struts, and with required bracing, welds, and fasteners.
- B. Baseplates, shear stud connectors and expansion joint plates.

##### **1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS**

- A. Section 3300.1500: Anchorages cast in concrete.
- B. Section 0400.1200: Anchorages embedded in masonry.

##### **1.03 RELATED WORK**

- A. Section 05210 - Steel Joists.
- B. Section 05311 - Steel Roof Deck: Support framing for small openings in metal deck.
- C. Section 05313 - Steel Floor Deck: Support framing for small openings in metal deck.

##### **1.04 REFERENCES**

- A. ASTM A36 - Structural Steel.
- B. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
- C. ASTM - A325 - High Strength Bolts for Structural Steel Joints.
- D. ASTM A490 - Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.

- E. ASTM - A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- F. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- G. ASTM A572 - High Strength Low Alloy Columbium-Vanadium Steel of Structural Quality.
- H. ASTM A502 - Steel Structural Rivets.
- I. AWS D1.1 - Structural Welding Code.
- J. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- K. FS TT-P-31 - Paint, Oil: Iron Oxide, Ready Mix, Red and Brown.

#### 1.05 SHOP DRAWINGS

- A. Submit shop drawings under provisions of the General Conditions.
- B. Indicate profiles, sizes, spacing, and locations of structural members, connections, attachments and fasteners.
- C. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
- D. Prepare shop drawings under seal of a Professional Structural Engineer registered in State of New York.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Structural Steel Members: ASTM A36.
- B. Structural Tubing: ASTM A500, Grade B.
- C. Bolts, Nuts and Washers: ASTM A325.
- D. Welding Materials: AWS D1.1; type required for materials being welded.

- E. Primer: FS TT-P-31, brown.

## 2.02 FABRICATION

- A. Fabricate structural steel members in accordance with AISC Specification.

## 2.03 FINISH

- A. Clean, prepare, and shop prime structural steel members.

## PART 3 EXECUTION

### 3.01 ERECTION

- A. Erect structural steel in accordance with AISC Specification.
- B. Make provision for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Do not field cut or alter structural members without approval of Architect/Engineer.
- D. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete. Use a primer consistent with shop coat.
- E. All structural steel installations shall be A-36 steel and shall conform to ASTM Specifications. Affidavit to be filed with Building Department upon request.
- F. All structural steel fabrication, erection, and connections shall conform to latest AISC standards and specifications Type 2 construction except as noted.
- G. All field connections to be 3/4" diameter machine bolts unless indicated otherwise. Shop connections to be either machine bolted or welded. All bolts to be A-325 friction type. Connections shall be per Type 1 construction per AISC for portal frames and shall be detailed to develop at least full allowable movement and shear capacity. All remaining steel to have Type 2 connections. A-307 bolts may be used for minor connections when acceptable to engineer.

- H. Steel encased in concrete shall not be painted. All steel surfaces not in contact with concrete shall receive one shop coat of approved paint, and after erection, one field coat. Omit primer paint at welds and high strength bolts.
- I. The structure shall be properly guyed and braced.
- J. Grout under column and beam bearing plates shall be non-shrink, propak or equal.
- K. Provide loose lintels as required for openings in masonry walls and partitions.
- L. Provide holes in shop for bolted blocking, pipe penetrations, etc. Details shall be shown on shop drawings for review by Engineer.