

SECTION 05120  
STRUCTURAL STEEL

PART 1 GENERAL

1 01 DIVISION OF RESPONSIBILITIES TERMINOLOGY: **NOT USED**

1.02 SUMMARY: The Contractor shall provide structural steel and accessories as shown on the drawings, as specified in this section, and as needed for a complete installation

1.03 SUBMITTAL: The Contractor shall submit sufficient technical data, and complete shop drawings showing all members, spans, connections and similar data to demonstrate compliance per Section 01340- Submittals.

1.04 QUALITY ASSURANCE:

- A. The steel structure is a non-self-supporting steel frame, and is dependent upon diaphragm action of the metal roof deck and attachment to the masonry walls for stability and resistance to wind and seismic forces. The Contractor shall provide all means and methods of temporary support necessary for stability and resistance to wind and seismic forces, until the steel frame, metal roof deck and all exterior walls are completely installed and are capable of providing support
- B. The Contractor shall provide welding with electric arc process, in accordance with AWS "Code for Arc and Gas Welding in Building Construction" and all local codes having jurisdiction
- C. In addition to complying with pertinent codes and regulations, all structural steel work shall comply with AISC "Specifications for Design, Fabrication, and Erection of Structural Steel for Building", AISC "Code of Standard Practice", and "Specification for Structural Joints Using ASTM A325 or A490 Bolts".
- D. Structural Steel Inspection: **NOT USED**

1 05 DELIVERY, STORAGE, AND HANDLING: Deliver materials to the jobsite property marked to identify the location for which they are intended. Store to maintain identification and prevent damage, off the ground, using pallets or other supports, and to permit easy access for inspection

1.06 WARRANTY: The Contractor shall include a copy of the Steel Erector/ Installer's Warranty for all work provided under the general contract for construction for a term of 1 year after the Date of Substantial Completion, in the Building Maintenance Manuals, submitted per Section 01700-Contract Closeout

PART 2 PRODUCTS

2.01 MATERIALS:

- A. Provide the following where called for on the drawings or otherwise required.
  - 1. Rolled steel shapes, plates and bars: ASTM A36.
  - 2. Cold formed steel plates, etc.: ASTM A283, Grade C.
  - 3. Steel Tubing: ASTM A500/A501, Grade B (Fb = 27,700 psi; E = 24 000, 000 psi).
  - 4. Steel Pipe: ASTM A53, Type E or S, Grade B.
  - 5. Machine Bolts: ASTM A307, Grade A, and ANSI B18.2, square and/or hexagonal heads

- 6 High Strength Bolts: ASTM A325, Type F.
- 7 Arc Welding Electrodes: ASTM A233, E70XX series.

## 2.02 FABRICATION:

- A. Shop fabrication and assembly: Fabricate items of structural steel per AISC specifications and as shown on the approved shop drawings. Provide finish surfaces of members exposed in the final structure free from marking, burrs, and other defects.
- B. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp. Do NOT flame cut holes or enlarge holes by burning.
- C. Thoroughly clean structural steel, removing all loose mill scale, grease, dirt, and foreign matter by scraping or sandblasting. Apply the specified paint to dry film thickness not less than 1.5 mils. Do not paint contact surfaces of high strength bolted members.

2.04 GALVANIZING: Provide per ASTM A123, minimum 1.25 oz. per square foot. Galvanize steel items embedded in concrete slabs and/or as noted on drawings.

2.05 OTHER MATERIALS: Provide other materials, not specifically described but required for a complete and proper installation, as selected by the contractor, subject to approval.

## PART 3 EXECUTION

3.01 SURFACE CONDITIONS: The Contractor shall examine the areas and conditions under which work of this section will be provided, shall correct conditions detrimental to the timely and proper completion of the work, and shall NOT proceed until unsatisfactory conditions are corrected.

## 3.02 ERECTION:

- A. Surveys:
  1. Establish permanent benchmarks necessary for accurate erection of structural steel.
  2. Check elevations of concrete surfaces and locations of anchor bolts and similar items, before erection proceeds.
- B. Temporary shoring and bracing:
  1. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
  2. Provide temporary guylines to achieve proper alignment of the structure for erection.
  3. Remove temporary connections and members when permanent members are in place and final connections are made.
- C. Anchor Bolts:
  1. Furnish and install anchor bolts and other connections required for securing structural steel to adjacent work.
  2. Provide templates and other devices as needed for presetting bolts and other anchors to accurate locations.
- D. Setting bases and bearing plates:
  1. Clean concrete bearing surfaces free from bond reducing materials, and then roughen to improve bond to surface.
  2. Clean the bottom surface of base and bearing plates.

- 3 Set loose and attached base plates and bearing plates for structural members in wedges or other adjusting devices.
- 4 Tighten anchor bolts after supported members have been positioned and plumbed.
- 5 Do not remove wedge or shims but, if protruding, cut off flush with the edge of the base or bearing plate prior to packing with grout.
- 6 Pack non-shrink grout solidly between bearing surfaces and bases or plates to assure that no voids remain. Use non-shrink grout per Section 03300- Cast-In-Place Concrete.
- 7 Finish exposed surfaces, protect installed materials, and allow to cure in strict compliance with the manufacturer's recommendations.

E. Field Assembly:

1. Set structural frames accurately to the lines and elevations indicated.
2. Align and adjust the members forming part of a complete frame or structure before fastening permanently.
3. Clean the bearing surfaces and other surfaces that will be in permanent contact before assembly.
4. Adjust as required to compensate for discrepancies in elevation and alignment.
5. Level and plumb individual members of the structure within specified AISC tolerances.
6. Establish required leveling and plumbing measurements on the mean operating temperature of the structure, making allowances for the difference between temperature at time of erection and the mean temperature at which the structure will be when completed and in service.
7. Comply with AISC specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to welds.

- F. Gas Cutting: Do not use gas cutting torches for correcting fabricating errors in structural framing, except on secondary members where prior approval is obtained. When gas cutting is permitted, finish the gas cut section to a sheared acceptable appearance.

3.03 PAINTING:

- A. Secure all required approvals of welding and connections prior to application of field primer.
- B. Prime coat structural steel and fittings, except galvanized items, with light gray primer on all exposed members.
1. Prepare surfaces by removing loose rust, loose mill scale, spatter, slag and flux deposits. Clean steel in accordance with Steel Structures Painting Council SP-3, "Power Tool Cleaning".
  2. After erection, clean spots and surfaces where paint has been removed, damaged, or burned off, field bolts and other field connections not concealed in the finished work.
  3. Remove dirt, oil and grease.
  4. Apply a spot coat of the approved primer.
  5. Do not apply paint to wet, damp, oily, or improperly prepared surfaces.
  6. Spray apply the primer, filling joints and corners, and covering surfaces with a smooth unbroken film of at least 1.5 dry mils thickness.

END OF SECTION

