SECTION 05120

STRUCTURAL STEEL

PART1 GENERAL

1.01 SECTION INCLUDES

- A. Structural steel framing members, support members.
- B. Base plates, precast concrete imbeds.
- C. Grouting under base plates.
- D. Sprayed on Fireproofing.

1.02 RELATED REQUIREMENTS

- A. Section 05210 Steel Joists.
- B. Section 05310 Steel Deck: Support framing for small openings in deck.
- C. Section 05500 Metal Fabrications: Steel fabrications affecting structural steel work.
- D. Section 07815 Sprayed-On Fireproofing: Fireproof protection to framing and metal deck systems.

1.03 REFERENCE STANDARDS

- A. AISC (MAN) Steel Construction Manual; American Institute of Steel Construction, Inc.; 2005.
- B. AISC S303 Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2005.
- C. ASTM A36/A36M Standard Specification for Carbon Structural Steel; 2008.
- D. ASTM A501 Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2007.
- E. ASTM A529/A529M Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2005 (Reapproved 2009).
- F. ASTM F959 Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners; 2009.
- G. AWS D1.1/D1.1M Structural Welding Code Steel; American Welding Society; 2010.

1.04 SUBMITTALS

- A. See Section 01300 Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections not detailed.
 - 3. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

1.05 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual."
- B. Fabricator: Company specializing in performing the work of this section with minimum three years of documented experience.

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C. Erector: Company specializing in performing the work of this section with minimum three years of documented experience.

PART2 PRODUCTS

2.01 MATERIALS

- A. Steel Angles and Plates: ASTM A36/A36M.
- B. Steel Shapes: ASTM A992 high-strength, carbon-manganese structural steel, Grade 50.
- C. Hot-Formed Structural Tubing: ASTM A500, Grade B, Fy = 96.
- D. High-Strength Structural Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, medium carbon, plain.
- E. Anchor Rods: ASTM A36.
- F. High-Strength Anchor Bolts: ASTM A 325, Type 1 medium carbon, plain.
- G. Load Indicator Washers: Provide washers complying with ASTM F959 at all connections requiring high-strength bolts.
- H. Welding Materials: AWS D1.1; type required for materials being welded.
- I. Shop and Touch-Up Primer: Fabricator's standard, Grey color: complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

2.03 FINISH

- A. Prepare structural component surfaces in accordance with SSPC SP 3. Hand tool cleaning.
- B. Shop prime structural steel members (grey). Do not prime surfaces that will be field welded, in contact with concrete, or high strength bolted.

2.04 SOURCE QUALITY CONTROL

- A. Welded Connections: Visually inspect all shop-welded connections and test at least 20 percent of welds using the following:
 - 1. Magnetic particle inspection performed in accordance with ASTM E709.

PART3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. Erect structural steel in compliance with AISC "Code of Standard Practice for Steel Buildings and Bridges".
- B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, 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 McClellan Blakemore Architects.

- D. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- E. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. Welded Connections: Visually inspect all field-welded connections and test at least 20 percent of welds using the following:
 - 1. Magnetic particle inspection performed in accordance with ASTM E709.

END OF SECTION