SECTION 05120 - STRUCTURAL STEEL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Structural steel framing members, support members.

B. Base plates, shear stud connectors and expansion joint plates.

1.3 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.

1.4 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. AISC S348 - Specification for Structural Joints Using ASTM A325 or A490 Bolts; 2004.

D. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.

E. ASTM A 108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2007.

F. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2009.

G. ASTM A 514/A 514M - Standard Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding; 2005.

H. ASTM A 992/A 992M - Standard Specification for Structural Steel Shapes; 2006a.

I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.

J. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2008.

1.5 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 cambers and loads.
   4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.6 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual."

B. Comply with Section 10 of AISC "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.

C. Fabricator: Company specializing in performing the work of this section with minimum 5 years of documented experience.

D. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel Angles and Plates: ASTM A 36/A 36M.

B. Steel W Shapes and Tees: ASTM A 992/A 992M.

C. Rolled Steel Structural Shapes: ASTM A 992/A 992M.

D. Steel Plate: ASTM A 514/A 514M.

E. Shear Stud Connectors: Made from ASTM A 108 Grade 1015 bars.

F. Welding Materials: AWS D1.1; type required for materials being welded.

2.2 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

C. Fabricate connections for bolt, nut, and washer connectors.

D. Develop required camber for members.

2.3 FINISH

A. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.

PART 3 EXECUTION

3.1 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. Field weld components and shear studs indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".

E. Do not field cut or alter structural members without approval of Architect/Structural Engineer of Record .

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.2 TOLERANCES

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

B. Maximum Offset From True Alignment: 1/4 inch.

3.3 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01400.

END OF SECTION