SECTION 05120 - STRUCTURAL STEEL

City of San Diego, CWP Guidelines

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NTS: This Section is intended for use only in non-corrosive areas.

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PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing structural steel and related appurtenances.

1.2 RELATED SECTIONS

A. The WORK of the following Section applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 09800 Protective Coating

1.3 STANDARD SPECIFICATIONS

A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the Standard Specifications for Public Works Construction (SSPWC), as specified in Section 01090 - REFERENCE STANDARDS.

1.4 CODES

A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

1. Uniform Building Code

1.5 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the applicable sections of the current editions of the documents indicated apply to the WORK of this Section.

1.	AISC M011	Manual of Steel Construction for Shop and Field Welding
2.	AISC S326	Design, Fabrication and Erection of Structural Steel for Buildings
3.	ASTM A36	Structural Steel
4.	ASTM A53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless, Grade B
5.	ASTM A283	Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars
6.	ASTM A307	Carbon Steel Externally Threaded Standard Fasteners, Grade A

7.	ASTM A320	Alloy-Steel Bolting Materials for Low Temperature Service, Type 304
8.	ASTM A325	High-Strength Bolts for Structural Steel Joints
9.	ASTM A490	Heat-Treated Structural Steel Bolts
10.	ASTM A500	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes, Grade B
11.	ASTM A501	Hot-Formed Welded and Seamless Carbon Streel Structural Tubing
12.	ASTM A666	Austenitic Stainless Steel, Sheet, Strip, Plate and Flat Bar for Structural Applications, Grade A, Type 304
13.	AWS-B3.0	Welding Procedures and Performance Qualifications
14.	AWS-D1.1	Structural Welding Code--Steel
15.	AWS-W1	Welding Metallurgy

1.6 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Shop drawings, including details, dimensions, details of match markings and all information necessary for fabrication.

2. Welding procedures and welder qualifications.

1.7 OWNER'S MANUAL

A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:

1. Certificates that steels comply with the indicated standards.

2. Certificates that welding operators and procedures comply with the indicated requirements.

PART 2 -- PRODUCTS

2.1 MATERIALS

A. Materials for structural steel members and connection, unless otherwise indicated, shall comply with the following:

1.	Standard rolled steel sections	ASTM A36
2.	Pipe columns	ASTM A53, Grade B
3.	Structural steel tubing	ASTM A500, Grade B, or ASTM A501
4.	Structural bars, plates and similar items	ASTM A36 or A283

5.	Stainless steel	ASTM A666, Grade A, Type 316L
6.	Stainless steel bolts, nuts and washers	ASTM A320, Type 316
7.	High strength steel bolts	ASTM A325 or ASTM A490

2.2 FABRICATION

A. Fabrication shall be in accordance with AISC S326 and indicated requirements. All structural steel welding in off-site fabrication shops shall be continuously inspected by a City of San Diego Certified Special Inspector. The continuous inspection will be waived if the work is done in a shop certified by the Council of American Building Officials (CABO), or listed by the International Conference of Building Officials (ICBO) Evaluation Services, Inc.. This shall be at no extra cost to the OWNER.

PART 3 -- EXECUTION

3.1 INSTALLATION

A. General:

1. Structural assemblies and shop and field welding shall meet the requirements of AISC M011 and AISC S326.

2. Measurements and dimensions shall be verified at the site.

3. Bolt holes shall be 1/16 inch larger than the nominal size of bolts. Where thick metals are indicated, holes shall be sub-punched and drilled or reamed.

4. Dissimilar metals shall be protected from galvanic corrosion by means of pressure tapes, coatings or isolators.

5. Bolts shall not be permitted to drift and holes shall not be enlarged to correct misalignment. In the event of mismatching of holes, new materials shall be provided.

6. Structural steel completely encased in concrete shall not be galvanized or painted and shall have a clean surface for bonding to concrete.

7. Damaged structural steel shall be replaced. Use of salvaged, reprocessed, or scrap materials shall not be permitted.

B. **Welding:**

1. Welding shall be performed by operators who have been qualified by tests as prescribed by AWS-W1 Sect. 7, to perform the type of welding indicated. Welding shall comply with AWS Code for Arc Welding in Building Construction, Section 4, Workmanship. Electrodes shall be matching per AWS.

2. Continuous seal welds shall be applied on structural steel designed to be exposed to weather or submerged in water or wastewater. Continuous seal welds shall be applied on both sides of structural steel designed to be submerged in water or wastewater.

C. **Bolted Connections:**

1. Where bolted connections are indicated, they shall comply with AISC Specifications for Framed Beam Connections for bearing type connections. The threaded portion of bolts shall not occur at shear planes.

3.2 CORROSION PROTECTION

A. Unless otherwise indicated, all structural steel, including that used in the fabrication of process equipment, shall be surface prepared and coated in accordance with Section 09800 and shall include the following operations:

1. Exterior and interior edges of flame-cut pieces shall be ground smooth.

2. Sharp edges and punched holes shall be ground smooth.

3. Uneven or rough welds shall be ground smooth.

3.3 TOUCH-UP AND REPAIR

A. After installation, damaged surfaces of shop-primed structural steel shall be cleaned and touched-up with same material used for shop coat.

** END OF SECTION **