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Design & Construction Standards:
TECHNICAL GUIDELINES

Division 05

05 12 00 Structural Steel Framing

05 20 00 Metal Joists

05 30 00 Metal Decking

05 41 00 Structural Metal Stud Framing

05 50 00 Metal Fabrications

FACILITY MANAGEMENT

April 2016

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SPECIAL PERMITTING REQUIREMENTS

- A. Hotwork requirements are identified in the General Conditions of the Contract for Construction.

1.02 QUALITY ASSURANCE

- A. Comply with current recommendations of the American Institute of Steel Construction (AISC).
- B. Structural Steel Fabricator should be AISC certified.

1.03 APPLICATOR QUALIFICATION/CERTIFICATION

- A. Welders to be employed in the work shall have AWS qualification verified within the previous 12 months.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials shall be prepared in accordance with SSPC SP 3 and provided with a shop-applied single coat of primer except:
 - 1. Steel to be encased in concrete
 - 2. Surfaces to be field welded
 - 3. Surfaces to receive fireproofing
- B. Steel exposed to weather (steel lintels and shelf angles for masonry) shall be hot dipped galvanized (ASTM A123).

2.02 ARCHITECTURALLY EXPOSED STRUCTURAL STEEL

- A. Where AESS is used, provide specific finish recommendations. Consider using Rocky Mountain Steel Fabricators Association methods.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Field correction of fabricated items by gas cutting shall not be permitted unless authorized by the Architect.

3.02 TESTING AND INSPECTIONS

- A. Notification: Contractor shall work with the Owner to schedule Owner's inspections and testing.
- B. Owner will provide special inspections as required by the IBC and ACI 360 Chapter N.
- C. Owner will provide testing and inspection services through Owner's testing agent for Owner's information.
- D. Contractor shall provide additional testing to assure compliance with the contract documents, at Contractor's expense.
- E. All test and inspection reports shall be distributed to the Contractor, Owner and Architect as soon as results are available.

END OF SECTION 05 12 00

SECTION 05 20 00

METAL JOISTS

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Meet the latest recommendations and requirements of the Steel Joist Institute (SJI) and American Institute of Steel Construction (AISC).

1.02 SPECIAL PERMITTING REQUIREMENTS

- A. Hotwork requirements are identified in the General Conditions of the Contract for Construction.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Open-web steel joists.
- B. All components including fasteners and hardware by a single manufacturer.
- C. Primer
 - 1. Steel joists and bridging shall be provided with a shop-applied coat of red oxide paint.
 - 2. The following shall not have shop-applied primer, or shall have primer removed prior to final connections.
 - a) Steel joists receiving fireproofing.
 - b) Any component of steel joists to be welded.
- D. Extended ends: Where suspended ceiling is scheduled, extend joist bottom chord to within 6" of wall or column.

PART 3 EXECUTION

3.01 GENERAL

- A. Field modifications are prohibited, except repair of damaged materials.
- B. Damaged materials:
 - 1. Joists shall be judged damaged when they have any twist, warp, kink or other deformation of the joist components.
 - 2. Joists shall be judged damaged when deck installation results in burn-through or other reduction in the cross sectional area of any member of the joist.
 - 3. Damaged materials shall be replaced or repaired as determined appropriate by the A/E.
 - a) Any proposed repair by the Contractor shall be certified by the manufacturer to perform structurally in a manner equal to original manufacturer.
 - b) Repair design shall be submitted to the A/E and Owner for review prior to executing repairs in the field.
 - c) When repairs are complete, manufacturer shall deliver to the A/E and the Owner through the Contractor, a certification stamped by a registered engineer and signed by the manufacturer's duly authorized representative stating that repairs have been appropriately engineered and executed so that the repaired joist will perform equal to an undamaged member.

3.02 TOLERANCES

- A. Specify acceptable tolerances in fabrication and installation of joists including tolerances related to bearing plate contact, joist camber, joist warp or twist, etc.

3.03 TESTING AND INSPECTIONS

- A. Notification: Contractor shall work with the Owner to schedule Owner's inspections and testing.
- B. Owner will provide testing and inspection services through Owner's testing agent for Owner's information.
- C. Contractor shall provide additional testing to assure compliance with the contract documents, at Contractor's expense.
- D. Test and inspection reports shall be distributed to the Contractor, Owner and A/E as soon as results are available.

END OF SECTION 05 20 00

SECTION 05 30 00

METAL DECKING

PART 1 GENERAL

1.01 SPECIAL PERMITTING REQUIREMENTS

- A. Hotwork requirements are identified in the General Conditions of the Contract for Construction.

1.02 QUALITY ASSURANCE

- A. Meet the latest recommendations and requirements of the Steel Deck Institute (SDI).

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel deck
 - 1. Factory galvanized or coated with aluminum zinc alloy.
 - a) Painted primer coat is prohibited.
 - 2. Specify Class G-90 galvanized deck where deck is subject to high humidity (swimming pools, shower rooms, plenums subject to high humidity, etc.).
 - 3. Acoustic deck manufacturers shall have ICC approval.

PART 3 EXECUTION

3.01 TESTING AND INSPECTIONS

- A. Notification: Contractor shall work with the Owner to schedule Owner's inspections and testing.
- B. Owner will provide testing and inspection services through Owner's testing agent for Owner's information.
- C. Contractor shall provide additional testing to assure compliance with the contract documents, at Contractor's expense.
- D. Test and inspection reports shall be distributed to the Contractor, Owner and A/E as soon as results are available.

END OF SECTION 05 30 00

SECTION 05 41 00

STRUCTURAL METAL STUD FRAMING

PART 1 GENERAL

1.01 SUBMITTALS

- A. Shop Drawings, UL and typical bracing details from the manufacturer.
- B. Product Data to include unsupported lengths and gauges.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Ceiling Suspension Main Runners: 1.5" steel channels, .0475 lb. Per foot, cold rolled.
- B. Hanger Wire: ASTM A641, Class 1 zinc coating, soft tempered, 8 gauge.
- C. Furring Members: ASTM C645 25 gauge (0.0179"), hat-shaped, 7/8" deep.
- D. Steel Studs: ASTM C645, 25 gauge (0.0179") x 3 5/8" deep, except as otherwise indicated on the drawings.
 - 1. At door jambs and for tile backing, use 20 gauge (0.0329")
 - 2. Runners: match studs, type recommended by stud manufacturer for floor and ceiling support of studs and for vertical abutment.
- E. Deflection Track: Manufacturer's standard top runner designed to prevent cracking of gypsum board and plaster applied to interior partitions resulting from deflection of the structure above. Flanges have either V-shaped offsets that compress when pressure is applied from construction above or have slots 1 inch o.c. that allow fasteners attached to studs through the slots to accommodate structural movement by slipping.
- F. Bracing shall be the same gauge as studs.
- G. Screws shall be corrosion resistant and self tapping.
- H. Shaft Wall framing members shall be minimum 25 ga. galvanized. Shape, assembly and gauges shall conform with the UL assembly where shafts are required to have a fire-rated construction.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Refer to Division 1 requirements where metal stud erection will occur in occupied buildings.
- B. Install Supplementary framing, fire treated blocking, and bracing to support fixtures, hardware, equipment, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Only brace to structural elements (joist, beams, etc.)
- C. Installation tolerances:
 - 1. Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from plumb and from the plane formed by the faces of adjacent framing.
 - 2. Install steel framing components for suspended ceilings so that cross-furring members are level to within 1/8 inch in 12 feet as measured both lengthwise on each member and transversely between parallel members.
 - 3. Maximum out-of-plumb or line of framing permissible is 1/8" in 12' and 1/4" overall.
 - 4. Maximum out-of-square or designated line permissible is 1/8" in first 15' from corner and maximum 1/4" overall.
- D. Install steel studs 16 inches o.c. unless otherwise indicated.
- E. Stud splicing is prohibited.

- F. Do not connect or support steel framing from ducts, pipes, conduit or metal deck.
- G. Door jambs shall be 20 gauge, doubled, and attached to one another and run full height to structure.
- H. Do not bridge structure.
- I. Coordinate with spray on fire insulation to avoid damage and major repairs.
- J. Install fire safing materials in all deflection tracks in fire rated partitions.

END OF SECTION 05 41 00

SECTION 05 50 00

METAL FABRICATIONS

PART 1 GENERAL

1.01 APPLICATOR QUALIFICATION/CERTIFICATION

- A. All welders to be employed in the work shall have AWS qualification verified within the previous 12 months.

1.02 SPECIAL PERMITTING REQUIREMENTS

- A. Hotwork requirements are identified in the General Conditions of the Contract for Construction.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Specify all materials used in metal fabrications including:
 - 1. Materials.
 - 2. Gauges.
 - 3. Finish (where appropriate).
 - 4. ASTM standards.
 - 5. "Pot metal" (cast zinc) is prohibited.
- B. Trench covers: 3/16" (minimum) checker plate steel.
- C. Stage dressing supports and other overhead open grids: 1" Unistrut.
- D. Grout:
 - 1. Non-shrink, non-metallic.
- E. Primers and protective coatings:
 - 1. Shop-applied.
 - 2. Do not apply primers to or galvanize areas to be welded.

2.02 RAILING FABRICATION

- A. All railings shall terminate with a closure. Provide 90 degree bend and return to walls at all railing ends unless otherwise indicated.
- B. Fabricate inside stair railings to return and connect to adjacent rails at landings.
- C. Railings parallel to walls shall have a 1-1/2" minimum clear dimension between railings and walls.
- D. Provide weep holes at the low point(s) of closed railing systems.

PART 3 PART 3 – EXECUTION

3.01 GENERAL

- A. Remove burrs and rough edges. Hem or tool exposed edges to prevent injury.
- B. Conceal screws and bolts to the greatest extent possible.
- C. Bollard installation:
 - 1. Minimum embedment depth 3'-0" in concrete with 6" of concrete below embedment depth (regardless of embedment depth).
 - 2. Foundation diameter shall be 8" greater than the diameter of bollard to be installed.

END OF SECTION 05 50 00