SECTION 05400

LIGHTGAGE METAL FRAMING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. RELATED DOCUMENTS: Drawings and general provisions of the Contract.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF THE WORK

A. Work specified within this Section includes, but is not necessarily limited to, the following:

1. Provide and install standard stud partition framing for bearing walls as shown on the Drawings.

2. Provide and install miscellaneous stud partition framing for non-bearing walls as shown on the Drawings.

3. Provide and install steel stud system structural framing at walls as noted on the Drawings.

4. Provide and install lateral strap bracing as indicated on the Drawings.

5. Providing and installing miscellaneous fasteners, hat channels, stiffeners, expansion joints, and accessories necessary to complete the work.

1.03 QUALITY ASSURANCE

A. Materials and installation shall conform to recommendations of the following publications:

1. American Iron and Steel Institute Cold-Formed Steel Design Manual, Specification for the Design of Cold-Formed Steel Structural Members.

2. AWS D1.1-Latest Edition "Structural Welding Code" - Steel.

3. AWS D1.3-Latest Edition "Structural Welding Code" - Sheet Steel.

4. ASTM C 954, Standard specification for steel drill screws for the application of gypsum board or metal plaster bases to steel studs from 0.033 in. to 0.112 in. thickness.

5. ASTM C 955, Standard Specification for Load-Bearing Steel Studs, Runners, and Bracing or Bridging, for Screw Application of Gypsum Board and Metal Plaster Bases.

6. ASTM C 1007 Standard Specification for installation of load bearing steel studs and related accessories.

7. Standard Specification for installation of load bearing steel studs and related accessories.

8. ASCE 7-Latest Edition "Minimum Design Loads for Building and Other Structures," (formerly ANSI A58.1).

B. Maximum Allowable Deflections: Deflection limitations, (either horizontal or vertical), include the effect of studs only, not sheathing or facing material. Spans are measured in inches between the attachments to structural steel or concrete.

1. Supporting Masonry or Brick Veneer: 1/600 of span.

2. Supporting other Exterior Veneer Material: 1/360 of span.

3. Interior Partitions: 1/360 of span.

C. Design wind pressures: Wind pressures shall be calculated in accordance with 1999 Boca or ASCE 7-98 for Components and Cladding.

D. Slip Track Tolerances: Where non-bearing light gage framing abuts the structure, provide a slip joint capable of accomodating the vertical movement of the structure. Slip joint gaps shall allow for 1/2" Live Load deflection of the supporting member

1.04 SUBMITTALS

A. The Engineer shall receive all submittals a minimum of two weeks prior to the start of fabrication. The contractor shall have received and approved all submittals prior to review by the Engineer. All review by the Architect, Engineer and Contractor of submittals shall be completed prior to fabrication and installation of any material or product.

B. Product Data: Submit Manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications.

1. Steel Studs

2. Anchors and anchor bolts

3. Self drilling screws

C. Shop Drawings:

1. General: Submit shop drawings prepared under the supervision of a registered professional engineer. Drawings shall include:

a. Stud gages and spacings.

b. Shop Coatings

c. Type, size, quantity, locations and spacings of all anchorages and self drilling screws.

d. Details of attachment to structure and adjacent work.

e. Supplemental strapping, bracing, splices, bridging, hat channels and other accessories required for proper installation.

f. Critical installation procedures.

D. Design Calculations: Submit design calculations prepared under the supervision of a registered professional engineer licensed to practice in the State of Maine, illustrating the design of steel stud wall systems and all necessary stiffeners and bracing.

E. Engineer Stamp: Provide shop drawings and calculations which have been signed and stamped by a structural engineer licensed to practice in the State of Maine.

F. Submit (1) blue line print and (1) reproducible transparency (Sepia) of each shop drawing. Submit (2) copies of design calculations.

PART 2 - PRODUCTS

2.01 FRAMING MEMBERS

A. Steel Studs:

1. Acceptable manufacturers: Dale/Incor, Marino, Dietrich, Superior, Ware or approved alternate.

2. Provide channel-shaped load-bearing studs, channel-shaped joists, runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, stiffeners, fasteners, and other accessories recommended by manufacturer for complete framing system.

3. Steel framing materials shall comply with ASTM A 446, A 570, or A 611, as applicable. Fabricate all components from structural quality sheet steel with the following minimum yield points:

   a. 16 ga. and heavier 50,000 psi

   b. 18 ga., 37,000 psi

   c. 20 ga., 33,000 psi.

4. Manufacture of studs, runners (track), and other framing members shall comply with ASTM C 955.

5. Framing components shall be galvanized per ASTM A 525, minimum G-60 coating.

B. Screws and other attachment devices:

1. Provide a protective coating equivalent to cadmium or zinc plating and shall comply with ASTM A 165 type NS.

2. Self-drilling screws shall comply with the Industrial Fastener Institute Standard for steel self-drilling and tapping screws (IFI-113).

C. Standard Steel Shapes: Standard steel shapes, plates, etc. shall conform to material and finish specifications in Division 5 - Miscellaneous Metals.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Product Storage: Store studs, joists, track etc. on a flat plane. Material damaged (i.e. rusted, dented, bent or twisted) shall be discarded. Protect adhesives and sealants from freezing.

B. Construction Methods: Construction may be either piece-by-piece (stick-built), or by fabrication into panels either on or off site.

C. Material Fit up: All framing components shall be cut squarely or at an angle to fit squarely against abutting members. Members shall be held firmly in position until properly fastened. Prefabricated panels, if used, shall be square and braced against racking.

D. Attachment: Components shall be joined by self-drilling screws, so that connection meets or exceeds required design loads. Wire tying of framing components will not be permitted. Field welding will be permitted only where shown on the drawings or approved by the engineer.

E. Anchorage to Structure: Securely anchor studs and track to floor construction and overhead structure. Provide slip joints where non-bearing vertical studs meet floor or roof structural steel, or as indicated on the drawings.

F. Axially Loaded Studs: Seat axially-loaded studs squarely in track, with stud web and flange abutting track web plumbed or aligned, and securely attached to flanges or web of both upper and

lower tracks. Transversely-loaded studs need not sit squarely in tracks, but must be securely attached to them. Splices in axially-loaded studs will not be permitted.

G. Welding: Shop and field welds shall conform to applicable AWS and AISI standards, and may be fillet, plug, butt or seam type. Touch-up damage to galvanizing caused by welding with zinc-rich paint.

H. Openings: Frame openings larger than 2 ft. square with double studs. Provide suitable reinforcements (double studs, headers, jack studs, cripples, bracing, etc.) at control joint intersections, corners, and other special conditions.

I. Lintels: Lintels supporting masonry veneer shall be secured to studs by screws or power-driven anchors. Method of anchorage shall be sufficient to support veneer with a factor of safety of 3.

J. Tolerances: Finished installation shall be level and plumb within a tolerance of 1/8 inch in 10 feet horizontally and vertically. Maximum deviation from plan or section dimension shall not exceed 1/8 inch. Spacing of studs shall not be more than 1/8 inch from design spacing, providing that cumulative error does not exceed requirements of finishing materials.

3.02 ENGINEER'S REVIEW

A. The Engineer of Record will conduct periodic reviews of the construction for compliance with the provisions of the Specifications and Drawings during the construction period.

B. The General Contractor shall employ a licensed professional engineer to analyze and design modifications and repairs for construction not in conformance with the provisions of the Contract Documents. These modifications and repair details shall be stamped by an engineer licensed to practice in the State of Maine and submitted with calculations for approval by the Engineer of Record. Modifications shall not be made without express written approval.

END OF SECTION

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