

**SECTION 05 43 00
SLOTTED CHANNEL FRAMING**

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This Section specifies the requirements necessary to furnish and install slotted channel framing, accessories, and fasteners as shown on the Contract Drawings.

1.2 RELATED WORK

A. Section 05 50 00 - Metal Fabrications

B. Mechanical & Electrical work

1.3 CONSTRUCTION STANDARDS

A. All work and materials included in this Section shall conform to the following in addition to the Contract Documents:

B. AISI, North American Specification for the Design of Cold Formed Steel Structural Members.

C. MFMA-4, Metal Framing Standards.

D. MFMA-103, Guidelines for the Use of Metal Framing.

1.4 SUBMITTALS

A. Provide all required submittal data in electronic format on CD or DVD media in the format indicated below. The following submittal information is required:

ITEM NO.	SUBMITTAL REQUIREMENT	FORMAT	AS INDICATED
05 43 00-01	In addition to the listed requirements, provide the following: 1. Proposed Submittal Schedule. 2. Proposed Fabrication and Shipment Schedule.	PDF, MS Word, MS Excel	With Bid
05 43 00-02	Shop and erection drawings indicating all types, profiles, sizes, gauges, finish, dimensions, positions, fastening, accessories, etc., for the fabrication and erection of all slotted channel framing designed by the Contractor.	PDF, Autocad .DXF or .DWG	Per Submittal Schedule

1.5 DELIVERY, STORAGE, AND HANDLING

A. Slotted channel shall be delivered to the site in original factory packaging to avoid damage to finish. Bundles should be marked with tags calling out manufacturer, material type, section, gauge, and finish.

1. Upon delivery to the work site, all components shall be protected from the elements by a shelter or other covering prior to installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Thomas & Betts Corporation: Superstrut.
- B. Unistrut Corporation: Unistrut.
- C. Hilti Corporation: Hilti Strut.

2.2 MATERIALS

A. Slotted Channel Framing, Double Channel and Concrete Inserts:

1. Electro-Galvanized, Pre-galvanized, Hot-dipped Galvanized, Zinc Dichromate, Powder Coated: ASTM A569, A570, A653, BS1449.
2. Stainless Steel: ASTM A240 (Type 304 or 316), BS 2989.
3. All steel shall have a minimum yield stress of 33000 psi (280 N/m²).

B. Fittings:

1. Electro-Galvanized, Pre-galvanized, Hot-dipped Galvanized, Zinc Dichromate, Powder Coated: ASTM A36, A575, A576, A635, BS 1449.
2. Stainless Steel: ASTM A240 (Type 304) or ASTM A276 (Type 304), BS 4360.

C. Standard Hex Head Bolts with Hex Nuts: ASTM A307, BS 3692.

D. Standard and Jamb Hex Nuts: ASTM A563, BS EN ISO 4036.

E. Channel Nuts: ASTM A575 Grade M1015, BS 1449.

1. Threads: ANSI B1.1 UNC-2B.
2. Rectangular with rounded ends.
3. Toothed grooves.
4. With springs.

F. Plain Washers: ANSI B18.22.1 Type A-W, BS 4320.

G. Welding Filler Metal: AWS A5.1 or A5.5 E60XX electrodes or AWS A5.18:ER705-6 and BS EN 440.

H. Blind Rivets (back-to-back channel): Low Carbon Steel Grade C-1008.

2.3 ACCESSORIES

- A. Accessories such as closure strips and end caps shall be provided by the channel manufacturer.
- B. Zinc Dichromate Touch-up Paint: Zynolyte Gold Enamel by Aervoe Industries or Rust-Proof Any Way Enamel (Gold) by Aervoe Industries.

2.4 FABRICATION

- A. Channel and Concrete Insert Requirements:
1. Section shall be C type.
 2. Nominal width: 1-5/8 inches (41 mm).
 3. Nominal slot width: 7/8 inch (22 mm).
 4. Nominal thickness: 12 gauge (2.5 mm).
 5. Lips/edges shall be in-turned.
 6. Faces shall be unpunched unless noted otherwise on Drawings.
 7. Insert anchor tabs: 4 inches (200 mm) on center spacing.
 8. Insert depth: 1-3/8 inch (35 mm) minimum unless noted otherwise on Drawings.
 9. To prevent concrete seepage through preformed anchor tab holes, holes shall be completely filled with a metal tab. Tape is not an acceptable alternative and is not allowed.
- B. Minimum Channel Section Properties:
1. 1-5/8-inch-deep single channel (41 mm) - P1000 or equivalent:
 - a. $I_x = 0.185 \text{ in}^4$ (6.10 cm^4).
 - b. $S_x = 0.202 \text{ in}^3$ (2.87 cm^3).
 - c. $A = 0.555 \text{ in}^2$ (3.00 cm^2).
 - d. $r_x = 0.577 \text{ inch}$ (1.43 cm).
 2. 2-7/16-inch-deep single channel (62 mm) - P5500 or equivalent:
 - a. $I_x = 0.520 \text{ in}^4$ (17.91 cm^4).
 - b. $S_x = 0.389 \text{ in}^3$ (5.71 cm^3).
 - c. $A = 0.725 \text{ in}^2$ (4.07 cm^2).
 - d. $r_x = 0.847 \text{ inch}$ (2.10 cm).
 3. 3-1/4-inch-deep single channel (82 mm) - P5000 or equivalent:
 - a. $I_x = 1.094 \text{ in}^4$ (37.49 cm^4).
 - b. $S_x = 0.625 \text{ in}^3$ (9.07 cm^3).
 - c. $A = 0.896 \text{ in}^2$ (5.07 cm^2).
 - d. $r_x = 1.105 \text{ inch}$ (2.72 cm).
 4. 3-1/4-inch-deep back-to-back channel (2 - 1-5/8) (2 - 41 mm) - P1001 or equivalent:
 - a. $I_x = 0.948 \text{ in}^4$ (36.27 cm^4).
 - b. $S_x = 0.583 \text{ in}^3$ (8.76 cm^3).
 - c. $A = 1.114 \text{ in}^2$ (6.70 cm^2).

- d. $rx = 0.851$ inch (2.32 cm).
5. 1-5/8-inch-deep back-to-back channel (2 - 7/8 or 2 - 13/16) (2 - 21 mm) - P3301 or equivalent:
 - a. $I_x = 0.147$ in⁴ (5.64 cm⁴).
 - b. $S_x = 0.181$ in³ (2.73 cm³).
 - c. $A = 0.762$ in² (4.64 cm²).
 - d. $rx = 0.439$ inch (1.10 cm).
6. 6-1/2-inch-deep back-to-back channel (2 - 3-1/4) (2 - 82 mm) - P5501 or equivalent:
 - a. $I_x = 5.578$ in⁴ (242.74 cm⁴).
 - b. $S_x = 1.716$ in³ (29.60 cm³).
 - c. $A = 1.794$ in² (10.85 cm²).
 - d. $rx = 1.870$ inch (6.69 cm).
7. 1-5/8-inch-deep side-to-side channel (2 - 1-5/8) (2 - 41 mm) - P1001A or equivalent:
 - a. $A = 1.114$ in² (6.70 cm²).
8. 1-5/8-inch-deep quad-channel (4 - 1-5/8) (4 - 41 mm) - P1001C41 or equivalent:
 - a. $I_x = 1.860$ in⁴ (77.4 cm⁴).
 - b. $S_x = 1.145$ in³ (18.76 cm³).
 - c. $A = 2.223$ in² (14.34 cm²).

C. $rx = 0.915$ inch (2.3 cm). Built-Up Channel Requirements:

1. Back-to-back channel shall be formed by riveting together two pieces of channel into a single component. Individual sections and rivets shall be finished per Section 2.5 prior to assembly.
2. If riveted channel is not available, individual channels may be welded together into a single component. Spacing of spot welds shall be at a maximum of 4" (200 mm) on center unless otherwise directed. Individual sections shall be finished per Section 2.5 prior to assembly (except powder coated).
3. Strength of rivets or welds shall be shown by manufacturer to meet structural requirements of equivalent single strut.

D. Fitting Requirements:

1. Nominal width: 1-5/8 inches (41 mm).
2. Nominal thickness: 1/4 inch (6 mm).
3. Hole size: 9/16 diameter (14 mm).
4. Hole spacing: 1 7/8 inches (50 mm) on center.
5. Hole end distance: 13/16 inch (20 mm).

E. Half-slot channel requirements:

1. Slot size: 9/16 inch x 1 1/8 inch (14 mm x 28 mm).
2. Slot spacing: 2 inches (50 mm) on center.

F. Slotted channel and strut framing shall conform to the shape and dimensions as shown on the Drawings within the allowable tolerances as defined in MFMA-4 .

G. Cut edges shall be true to line and free from projections.

2.5 FINISHES

- A. Channels, struts, fittings, bolts and nuts shall be hot-dipped galvanized (1.5 mils). Coating shall conform to ASTM A123 OR A153.
- B. Non-metallic Coatings: Note that hardware and fasteners shall be hot-dipped galvanized.

PART 3 - EXECUTION

2.6 EXAMINATION

- A. Verify that substrate surfaces and building framing components are ready to receive work.
- B. Beginning of installation shall mean acceptance of existing conditions and substrates.

3.2 ERECTION AND INSTALLATION

- A. Slotted channel and strut framing shall be located and installed to conform to the Drawings within the allowable tolerances.
 - 1. Plumbness: 1/8 inch in 10 feet (1:960).
 - 2. Levelness: 1/8 inch in 10 feet (1:960).
 - 3. Spacing: plus or minus 1/8 inch (3 mm).
 - 4. Connections and splices not shown on the Drawings shall be subject to prior review by the A/E.
- B. Cutting of slotted channel and strut framing shall be by saw. Flame cutting is not permitted. All exposed cut edges shall be cleaned of all burrs prior to painting and installation.
- C. All materials with exposed cut edges shall be touched-up with an A/E approved coating with no more than 1/4" overlap onto undamaged plated material. All scratches, gouges, drilled holes and blemishes shall be touched-up by an A/E approved coating with no more than 1/4" overlap onto undamaged plated material.
- D. Fabrication (holes, notches, etc.) not shown on the Drawings shall be subject to prior review by A/E.
- E. Connection parts shall be properly drawn together and tight fit, and the bolts tightened to the snug-tight conditions using proper torques in accordance with the manufacturer's written instructions and specifications.
- F. Standard bolt heads and nuts at slots and slotted holes shall be provided with plain washers.

- G. Welding shall be done in a sequence that minimizes distortion and shrinkage.
- H. Column ends bearing upon base plates shall be saw-cut to true surfaces and correct bevels.
- I. All Column base plates shall have full contact when assembled.
- J. All embedded inserts shall be provided with plastic or metal closure strips and steel end caps.
- K. Provide caps on ends of exposed strut, including those below raised access floor.

3.3 FIELD QUALITY CONTROL

- A. Slotted channel and strut framing shall be inspected after installation.
- B. Inspection of welding shall be in accordance with AWS D1.1 and the California Building Code, with all welds visually inspected.
- C. Acceptance of welding inspection results shall be in accordance with AWS D1.1.

END OF SECTION