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Designation: C754 – 11

# StandardSpecification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products[1]

This standard is issued under the fixed designation C754; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

## 1. Scope*

1.1 This specification covers the minimum requirements for the installation of interior nonstructural steel framing and furring members designed to receive screw-attached gypsum panel products. The steel framing and furring members covered in this specification are limited to those complying with Specification C645.

1.2 Details of construction for a specific assembly to achieve the required fire resistance, sound or acoustic rating shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing, sound or acoustic laboratories.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

## 2. Referenced Documents

2.1 *ASTM Standards:*[2]

A641/A641M Specification for Zinc–Coated (Galvanized) Carbon Steel Wire

A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

A1008/A1008M Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

C11 Terminology Relating to Gypsum and Related Building Materials and Systems

C645 Specification for Nonstructural Steel Framing Members

C840 Specification for Application and Finishing of Gypsum Board

2.2 *AISI Standard:*[3]

AISI COSP Code of Standard Practice for Cold-Formed Steel Structural Framing - 2006 Edition

2.3 *ICC-ES Document*[4]

ICC-ES-AC86 Acceptance Criteria for Steel Studs and Gypsum-Board Interior Nonload-Bearing Walls—Complete Construction—AC86—Approved July 1995 (Editorially revised September 2005) (Formerly ICBO AC86 dated July 1995)

## 3. Terminology

3.1 *Definitions*—Terms shall be as defined in Terminology C11.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *channel, n*—the material described in 4.3 to which furring members are attached.

3.2.2 *cross furring, n*—furring member attached perpendicular to main runners or framing members.

3.2.3 *cross furring member, n*—a member installed perpendicularly to the main beams designed to receive screw attached gypsum panel products.

3.2.4 *direct furring, n*—furring members attached directly to the structural members of the building.

3.2.5 *framing member, n*—metal studs, runners (track), and rigid furring channels designed to receive screw attached gypsum panel products.

3.2.6 *furred ceiling, n*—a ceiling in which the rigid furring channels and studs are attached directly to the structural members of the building.

3.2.7 *furring, v*—preparing a wall or ceiling with framing or furring members to provide a level surface or airspace.

[1] This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American Iron and Steel Institute (AISI), 1140 Connecticut Ave., NW, Suite 705, Washington, DC 20036, http://www.steel.org.

[4] Available from ICC Evaluation Services, Inc., 5360 Workman Mill Road, Whittier, CA 90601, www.icc-es.org.

***A Summary of Changes section appears at the end of this standard**

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3.2.8 *furring member, n*—metal studs, rigid furring channels, or channels used either as direct furring or as cross furring.

3.2.9 *grid suspension system, n*—a ceiling system composed of modular interlocking steel components designed to receive screw-attached gypsum panel products.

3.2.10 *main beam, n*—the main support member of a grid suspension system that receives cross furring members.

3.2.11 *main runner, n*—the channel or stud that is attached to or suspended from the structural members of the building.

3.2.12 *runner (track), n*—a member designed to receive the ends of metal studs, attached directly to the structural members of the building.

3.2.13 *suspended ceiling, n*—a ceiling in which the main runners and cross furring are suspended below the structural members of the building.

## 4. Materials and Manufacture

4.1 *Studs, Runners, Rigid Furring Channels, and Grid Suspension Systems*—see Specification C645.

4.2 *Tie Wire and Hanger Wire*—Zinc-coated (galvanized) soft-annealed steel, or of a material and size having equivalent corrosion resistance and strength. Wire diameters (uncoated) specified herein correspond with United States steel wire gauge numbers as follows:

| Diameter[A] | | Wire Gauge (U.S. Steel Wire Gauge) |
|---|---|---|
| in. | mm | |
| 0.0348 | 0.88 | No. 20 |
| 0.0410 | 1.04 | No. 19 |
| 0.0475 | 1.21 | No. 18 |
| 0.0540 | 1.37 | No. 17 |
| 0.0625 | 1.59 | No. 16 |
| 0.0800 | 2.03 | No. 14 |
| 0.0915 | 2.32 | No. 13 |
| 0.1055 | 2.68 | No. 12 |
| 0.1205 | 3.06 | No. 11 |
| 0.1350 | 3.43 | No. 10 |
| 0.1483 | 3.77 | No. 9 |
| 0.1620 | 4.12 | No. 8 |

[A] Allowable variations in diameter shall be in accordance with tolerances as established in Specification A641/A641M.

4.3 *Channels*—Channels shall be cold-formed from steel with a minimum 33 000 psi (228 MPa) yield strength and 0.0538 in. (1.37 mm) minimum bare steel thickness. Channels shall have a protective coating conforming to Specification A653/A653M–G40 or shall have a protective coating with an equivalent corrosion resistance, and shall have the following minimum weights in lb per 1000 linear ft (kg/m):

| Size | | Weight | | Flange Width | |
|---|---|---|---|---|---|
| in. | (mm) | lb/1000 ft | (kg/m) | in. | (mm) |
| ¾ | (19) | 277 | (0.412) | ½ | (13) |
| 1½ | (38) | 414 | (0.616) | ½ | (13) |
| 2 | (51) | 506 | (0.753) | ½ | (13) |
| 2½ | (64) | 597 | (0.888) | ½ | (13) |

4.4 *Grid Suspension System:*

4.4.1 *Main Beam*—Formed from cold-rolled steel "T" sections, indexed with slots to receive ends of cross furring members, and with stamped couplings at each end for the purpose of splicing.

4.4.2 *Cross Furring Members*—Formed from cold-rolled steel, designed to permit screw attachment of gypsum panel products, and formed with an end configuration that permits mechanical interlock with the indexed slots of the main beam.

4.5 *Rod and Flat Hangers*—Formed from steel conforming to Specification A1008/A1008M. When specified, rod and flat hangers shall be protected with zinc coating or another equally rust-inhibiting coating.

## 5. Installation of Metal Framing

5.1 *Tolerances:*

5.1.1 Spacing of studs and furring members shall be not more than ±⅛ in. (3 mm) from the spacing shown in Tables 1 and 2. Any cumulative error shall be not more than ±⅛ in.

5.2 *Runner (Track) Installation:*

5.2.1 *General*—Runners shall be aligned accurately at the floor and ceiling and securely anchored approximately 2 in. (50 mm) from the runner ends, not more than 24 in. (610 mm) on center. Runners shall be secured with fasteners at partition corners. One runner shall extend to the end of the corner and the other runner shall butt to it and be gapped to allow clearance for the gypsum panel product thickness. Runners shall not be mitered.

5.2.2 *Runners to Concrete Slabs*—Shall be fastened with concrete stub nails, expansion anchors, shielded screws, or power-driven fasteners not exceeding 24 in. (610 mm) on center.

5.2.3 *Runners to Wood*—Shall be fastened with screws providing not less than 1 in. (25 mm) penetration or nails providing 1½ in. (38 mm) penetration into the wood.

5.2.4 *Runners to Suspended Ceilings*—Shall be fastened with "Molly"-type expandable fasteners, toggle bolts, clamps, or screws into channels, splines, "T" runners, or other members.

5.3 *Stud Installation:*

5.3.1 *Stud Height and Spacing Limitations:*

5.3.1.1 Maximum framing spacing determined by gypsum panel product thickness shall be in accordance with Table 1.

5.3.1.2 Stud heights shall be not greater than those shown in Tables 3-5.

5.3.1.3 Studs shall engage both the floor and ceiling runners. The gap between the end of a stud and the web of the top and bottom runner shall be not more than ¼ in. (6 mm).

5.3.1.4 Where conditions require that a partition be constructed with compensation for vertical structural movement, the gap between the end of a stud and the adjacent runner shall be designed by an architect or engineer.

5.3.2 *Location:*

5.3.2.1 Studs shall be positioned vertically and shall be spaced not more than the maximum framing spacing allowed for the finish specified. Studs located adjacent to door and window frames, partition intersections, and corners shall be anchored to runner flanges by screws, or by crimping at each stud and runner flange.

5.3.2.2 At the junction of through and abutting partitions, a stud shall be located not more than 2 in. (50 mm) away from the intersection in the abutting partition from the through

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**TABLE 1 Maximum Framing Spacing**

NOTE 1—Where a conflict exists in spacing between base and face layers, the closer spacing shall govern.

| Gypsum Panel Product Thickness | | Location | Application | Maximum Spacing, oc | | |
|---|---|---|---|---|---|---|
| | | | | | Two Layers | |
| Base Layer, in. (mm) | Face Layer, in. (mm) | | | One Layer Only, in. (mm) | Fasteners Only, in. (mm) | Adhesive Between Layers, in. (mm) |
| ⅜ (9.5) | . . . | ceilings | perpendicular | 16 (406)[A] | 16 (406)[A] | 16 (406)[A] |
| | ⅜ (9.5) | ceilings | perpendicular | NA | 16 (406) | 16 (406) |
| | ⅜ (9.5) | ceilings | parallel | NA | NR | 16 (406) |
| ½ (12.7) | . . . | ceilings | perpendicular | 24 (610)[A] | 24 (610)[A] | 24 (610)[A] |
| | . . . | ceilings | parallel | 16 (406)[A] | 16 (406)[A] | 16 (406)[A] |
| | ⅜ (9.5) | ceilings | perpendicular | NA | 16 (406) | 24 (610) |
| | ⅜ (9.5) | ceilings | parallel | NA | NR | 24 (610) |
| | ½ (12.7) | ceilings | perpendicular | NA | 24 (610) | 24 (610) |
| | ½ (12.7) | ceilings | parallel | NA | 16 (406) | 24 (610) |
| ⅝ (15.9) | . . . | ceilings | perpendicular | 24 (610)[A] | 24 (610)[A] | 24 (610)[A] |
| | . . . | ceilings | parallel | 16 (406)[A] | 16 (406)[A] | 16 (406)[A] |
| | ⅜ (9.5) | ceilings | perpendicular | NA | 16 (406) | 24 (406) |
| | ⅜ (9.5) | ceilings | parallel | NA | NR | 24 (610) |
| | ½ or ⅝ (12.7 or 15.9) | ceilings | perpendicular | NA | 24 (610) | 24 (610) |
| | ½ or ⅝ (12.7 or 15.9) | ceilings | parallel | NA | 16 (406) | 24 (406) |
| ¼ (6.4) | . . . | walls | parallel | NR | 16 (406)[A] | 16 (406)[A] |
| | ⅜ (9.5) | walls | NR | NR | NR | NR |
| | ½ or ⅝ (12.7 or 15.9) | walls | perpendicular or parallel | NA | 16 (406) | 16 (406) |
| ⅜ (9.5) | . . . | walls | perpendicular or parallel | 16 (406)[A] | 16 (406)[A] | 24 (610)[A] |
| | ⅜ or ½ or ⅝ (9.5 or 12.7 or 15.9) | walls | perpendicular or parallel | NA | 16 (406) | 24 (610) |
| ½ or ⅝ (12.7 or 15.9) | . . . | walls | perpendicular or parallel | 24 (610)[A] | 24 (610)[A] | 24 (610)[A] |
| | ⅜ or ½ or ⅝ (9.5 or 12.7 or 15.9) | walls | perpendicular or parallel | NA | 24 (610) | 24 (610) |

Perpendicular—perpendicular to framing members
Parallel—parallel to framing members
NA—not applicable
NR—not recommended
oc—on center

[A] Denotes framing spacing for base layer in two-layer application.

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**TABLE 2 Spans and Spacings of Horizontal Furring Members**

| Type of Furring | Maximum[A] Spacing c to c,[B] in. (mm) | Maximum Span, ft (mm) |
|---|---|---|
| Rigid Furring Channel | 24 (610) | 4 (1220) |
| 1⅝ in. (41 mm) stud (erected with open side up and against support) | 24 (610) | 5 (1520) |
| 2½ in. (64 mm) stud (erected with web vertical to support)[C] | 24 (610) | 6 (1830) |
| 3⅝ in. (92 mm) stud (erected with web vertical to support)[C] | 24 (610) | 8 (2440) |

[A] Consult Table 1 for maximum spacing as determined by gypsum panel product thickness.
[B] c to c—center to center
[C] A6 in. (150 mm) length of same size stud or track shall be nested to form a "box" at each saddle tie.

partition (see Fig. 1), and not more than 2 in. (50 mm) from partition corners and other construction. A stud shall be located adjacent to all door and borrowed light frames. Studs shall be securely anchored to the jamb anchor clips on each door frame or borrowed light frame by bolt or screw attachment. A header shall be formed over metal door and borrowed light frames with a cut-to-length section of runner placed horizontally with the flanges cut and web bent vertically at each end, and securely attached to the adjacent vertical studs. A cut-to-length stud shall be positioned at the location of vertical joints over the header extending to the ceiling runner. Additional cut to length studs required to comply with framing spacing in accordance with Table 1 shall also be added over the header, extending to the ceiling runner.

5.3.2.3 At partition corners, a stud shall be installed so that it forms the outside corner. Following application of a single layer of gypsum panel product to this stud, a second stud shall be installed in the abutting runner and the web shall be screw attached through the gypsum panel product into the flange of the first stud (see Fig. 2). A three-stud conventional corner shall be permitted (see Fig. 3).

5.4 *Chase Wall Partitions:*

5.4.1 A double row of runners and studs as specified in 5.2 and 5.3 shall be installed. Height shall be in accordance with 5.3.1.2.

5.4.2 Where a gypsum panel product is used as bracing between chase walls, a gap of not more than 20 in. (508 mm) between rows of studs shall be permitted.

5.4.3 Horizontal cross braces to opposite studs shall be installed not more than 4 ft (1220 mm) on center vertically. Horizontal cross braces shall be either of the following:

5.4.3.1 Gypsum panel product gussets 12 in. (305 mm) deep attached to the stud webs with three screws.

**TABLE 3 Maximum Stud Height,[A] ft-in. (mm), Single Layer ½-in. (12.7-mm) Thick Gypsum Board,[B] Vertical Application,[C] on Each Side of Minimum 0.0179-in. (0.455-mm) Base Metal Thickness Steel Studs Spaced 12-in. (305-mm), 16-in. (406-mm), and 24-in. (610-mm) o.c.[D,E,F]**

| Stud Depth, in. (mm), *Industry Designator*[G] | Deflection Limit | Maximum Stud Height ft-in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Framing Spaced 12 in. (305 mm) o.c. Lateral Pressure | | | Framing Spaced 16 in. (406 mm) o.c. Lateral Pressure | | | Framing Spaced 24 in. (610 mm) o.c. Lateral Pressure | | |
| | | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) |
| 1-⅝ (41.3) *162S125-18* | L/120 | 11-2 (3400) | 9-9 (2970) | 8-10 (2690) | 10-7 (3230) | 8-10 (2690) | 8-4 (2540) | 9-9 (2970) | 8-0 (2440) | *H* |
| | L/240 | 8-10 (2690) | *H* | *H* | 8-4 (2540) | *H* | *H* | 7-11 (2410) | *H* | *H* |
| | L/360 | *H* | *H* | *H* | *H* | *H* | *H* | *H* | *H* | *H* |
| 2-½ (63.5) *250S125-18* | L/120 | 15-1 (4600) | 12-4 (3760) | 10-9 (3280) | 13-3 (4040) | 10-10 (3300) | 9-5 (2870) | 11-10 (3610) | 9-8 (2950) | 8-5 (2570) |
| | L/240 | 11-11 (3630) | 10-5 (3180) | 9-6 (2900) | 11-3 (3430) | 9-10 (3000) | 8-11 (2720) | 10-7 (3230) | 9-3 (2820) | 8-5 (2570) |
| | L/360 | 10-5 (3180) | 9-1 (2770) | *H* | 9-10 (3000) | 8-7 (2620) | *H* | 9-3 (2820) | 8-1 (2460) | *H* |
| 3-½ (88.9)[I] *350S125-18* | L/120 | 17-8 (5380) | 14-3 (4340) | 12-5 (3780) | 15-4 (4670) | 12-5 (3780) | 10-9 (3280) | 13-9 (4190) | 11-0 (3350) | 9-5 (2870) |
| | L/240 | 15-4 (4670) | 13-3 (4040) | 12-0 (3660) | 14-4 (4370) | 12-5 (3780) | 10-9 (3280) | 13-5 (4090) | 11-0 (3350) | 9-5 (2870) |
| | L/360 | 13-3 (4040) | 11-7 (3530) | 10-5 (3180) | 12-4 (3760) | 10-10 (3300) | 9-9 (2970) | 11-7 (3530) | 10-1 (3070) | 9-1 (2770) |
| 4 (101.6) *400S125-18* | L/120 | 19-6 (5940) | 15-9 (4800) | 13-8 (4170) | 17-2 (5230) | 13-10 (4220) | 11-11 (3630) | 15-1 (4600) | 12-1 (3680) | 10-5 (3180) |
| | L/240 | 16-5 (5000) | 14-4 (4370) | 13-0 (3960) | 15-4 (4670) | 13-4 (4060) | 11-11 (3630) | 14-2 (4320) | 12-1 (3680) | 10-5 (3180) |
| | L/360 | 14-4 (4370) | 12-6 (3810) | 11-4 (3450) | 13-4 (4060) | 11-8 (3560) | 10-6 (3200) | 12-4 (3760) | 10-9 (3280) | 9-9 (2970) |
| 6 (152.4) *600S125-18* | L/120 | 22-10 (6960) | 18-7 (5660) | 16-2 (4930) | 19-9 (6020) | 16-2 (4930) | 14-0 (4270) | 16-9 (5110) | 13-5 (4090) | 11-5 (3480) |
| | L/240 | 22-1 (6730) | 18-7 (5660) | 16-2 (4930) | 19-9 (6020) | 16-2 (4930) | 14-0 (4270) | 16-9 (5110) | 13-5 (4090) | 11-5 (3480) |
| | L/360 | 19-4 (5890) | 16-9 (5110) | 15-0 (4570) | 17-11 (5460) | 15-7 (4750) | 13-10 (4220) | 16-9 (5110) | 13-5 (4090) | 11-5 (3480) |

[A] Based on tests conducted with gypsum board attached with screws spaced 12 in. (305 mm) o.c. to framing members.
[B] Maximum stud heights are also applicable to walls sheathed with gypsum board greater than ½ in. (12.7 mm) thick and multiple layers of gypsum board.
[C] Application per Specification C840.
[D] Limiting heights based on ICC-ES "Acceptance Criteria for Steel Studs and Gypsum-Board Interior Nonload-Bearing Walls—Complete Construction—AC86—Approved July 1995 (Editorially revised September 2005)."
[E] Runner flanges need not be fastened to studs except as required by 5.3.2.1.
[F] ICC-ES-AC86 utilized a 0.75 load reduction factor (for strength determination only) to determine the heights as shown in the table.
[G] The *Industry Designator* defines the cold formed steel framing member.
Example: *350S125-18:*
350 designates the member web depth in 100ths of an in., 350 = 3.50 in. (88.9 mm).
*S* designates the type of member, *S* = stud.
125 designates the member flange width in 100ths of an in., 125 = 1.25 in. (32 mm).
18 designates the member base metal thickness in mils, 18 = .0179 in. (0.455 mm).
[H] Data not available.
[I] Also applicable to 3-⅝ in. (92.1 mm) stud depth, *362S125-18*.

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5.4.3.2 A stud or runner with the web screw attached to the wall stud web with not less than two screws.

5.5 *Rigid Furring Channel Installation, Direct Attachment to Masonry or Concrete*—The furring member shall be attached to masonry or concrete surfaces, either vertically or horizontally. Spacing shall be determined by gypsum panel product thickness in accordance with Table 1. For furring positioned horizontally, the center line of the furring members closest to the floor and ceiling shall be attached not more than 3 in. (76 mm) from the floor and ceiling lines. The furring member shall be secured with fasteners occurring on alternated flanges and spaced 24 in. (610 mm) on center.

5.6 *Resilient Furring Channel Installation to Steel and Wood Members:*

5.6.1 Resilient furring channel shall be installed to wall framing members with the mounting flange of the resilient furring channel down, except at the floor where the attachment flange shall be permitted to be installed with the flange up to accommodate fastening to the framing members (See Fig. 4). In the case of two-legged resilient furring channel only the lower attachment flange shall be attached the the wall framing members.

5.6.2 For wall framing members, the first (lowest) row of resilient furring channel shall be not more than 2 in. (50 mm) off of the floor (as measured from the floor to the center of the face of the resilient channel) and the highest row of resilient furring channel shall be not more than 6 in. (150 mm) from the ceiling (as measured from the ceiling to the center of the face of the resilient channel). For ceiling framing members the first row and the last row of resilient furring channel shall be located not more than 6 in. (150 mm) from the adjacent wall.

5.6.3 The resilient furring channel shall be positioned with the slotted hole(s) directly over the framing member (See Fig. 4). The resilient furring channel shall be attached to the framing member with Type-S × ⅜ in. (10 mm) pan head framing screws using the screw hole provided in the mounting flange.

NOTE 1—If no screw hole is provided or located at the framing member, drill through the mounting flange to attach the resilient furring channel to the member.

5.6.4 Resilient furring channel members shall be spliced either by "nesting" the ends of the resilient furring channel members directly over the framing member and screwing through the mounting flange into the framing members or by

**TABLE 4 Maximum Stud Height,[A] ft-in. (mm), Single Layer ½-in. (12.7-mm) Thick Gypsum Board,[B] Vertical Application,[C] on Each Side of Minimum 0.0296-in. (0.752-mm) Base Metal Thickness Steel Studs Spaced 12-in. (305-mm), 16-in. (406-mm), and 24-in. (610-mm) o.c.[D,E,F]**

| Stud Depth, in. (mm), *Industry Designator*[G] | Deflection Limit | Maximum Stud Height ft-in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Framing Spaced 12 in. (305 mm) o.c. Lateral Pressure | | | Framing Spaced 16 in. (406 mm) o.c. Lateral Pressure | | | Framing Spaced 24 in. (610 mm) o.c. Lateral Pressure | | |
| | | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) |
| 1-⅝ (41.3) *162S125-30* | L/120 | 12-5 (3780) | 10-10 (3300) | 9-11 (3020)) | 11-6 (3510) | 10-1 (3070) | 9-2 (2790) | 10-5 (3180) | 9-2 (2790) | 8-3 (2520) |
| | L/240 | 9-11 (3020) | H | H | 9-2 (2790) | H | H | 8-3 (2520) | H | H |
| | L/360 | H | H | H | H | H | H | H | H | H |
| 2-½ (63.5) *250S125-30* | L/120 | 16-8 (5080) | 14-7 (4450) | 13-2 (4010) | 15-4 (4670) | 13-4 (4060) | 12-1 (3680) | 13-9 (4190) | 11-11 (3630) | 10-9 (3280) |
| | L/240 | 13-2 (4010) | 11-6 (3510) | 10-5 (3180) | 12-1 (3680) | 10-6 (3000) | 9-6 (2900) | 10-9 (3280) | 9-4 (1930) | 8-6 (2590) |
| | L/360 | 11-6 (3510) | 10-0 (3050) | 9-1 (2770) | 10-6 (3000) | 9-2 (2790) | 8-4 (2540) | 9-4 (1930) | 8-1 (260) | 7-4 (2240) |
| 3-½ (88.9)[I] *350S125-30* | L/120 | 21-8 (6610) | 18-1 (5770) | 17-1 (5210) | 19-11 (6070) | 17-5 (5310) | 15-8 (4780) | 17-9 (5410) | 15-6 (4720) | 14-0 (4270) |
| | L/240 | 17-1 (5210) | 14-10 (4520) | 13-5 (4090) | 15-8 (4780) | 13-7 (4140) | 12-3 (3730) | 14-0 (4270) | 12-0 (3660) | 10-10 (3300) |
| | L/360 | 14-10 (4520) | 12-20 (3910) | 1-8 (3560) | 13-7 (4140) | 11-9 (3580) | 10-7 (3230) | 12-0 (3660) | 10-5 (3180) | 9-4 (1930) |
| 4 (101.6) *400S125-30* | L/120 | 24-0 (7320) | 20-11 (6380) | 19-0 (5790) | 22-0 (6710) | 19-3 (5870) | 17-6 (5330) | 19-8 (6000) | 17-1 (5250) | 14-9 (4500) |
| | L/240 | 19-0 (5790) | 16-6 (5030) | 14-11 (4550) | 17-6 (5330) | 15-2 (4620) | 13-8 (4170) | 15-7 (4750) | 13-5 (4090) | 12-1 (3680) |
| | L/360 | 16-6 (5030) | 14-4 (4370) | 12-11 (2940) | 15-2 (4620) | 13-1 (3990) | 11-10 (3610) | 13-5 (4090) | 11-7 (3530) | 10-5 (3180) |
| 6 (152.4) *600S125-30* | L/120 | 32-1 (9780) | 28-0 (8530) | 24-7 (7490) | 29-2 (8890) | 24-9 (7540) | 21-5 (6530) | 25-1 (7650) | 20-6 (6250) | 17-9 (5410) |
| | L/240 | 25-6 (7770) | 22-3 (6780) | 20-3 (6170) | 23-2 (7060) | 20-3 (6170) | 18-4 (5590) | 20-3 (6170) | 17-8 (5380) | 16-0 (4880) |
| | L/360 | 22-3 (6780) | 19-5 (5910) | 17-6 (5330) | 20-3 (6170) | 17-8 (5380) | 15-10 (4830) | 17-8 (5380) | 15-5 (4700) | 13-8 (4170) |

[A] Based on tests conducted with gypsum board attached with screws spaced 12 in. (305 mm) o.c. to framing members.
[B] Maximum stud heights are also applicable to walls sheathed with gypsum board greater than ½ in. (12.7 mm) thick and multiple layers of gypsum board.
[C] Application per Specification C840.
[D] Limiting heights based on ICC-ES "Acceptance Criteria for Steel Studs and Gypsum-Board Interior Nonload-Bearing Walls—Complete Construction—AC86—Approved July 1995 (Editorially revised September 2005)."
[E] Runner flanges need not be fastened to studs except as required by 5.3.2.1.
[F] ICC-ES-AC86 utilized a 0.75 load reduction factor (for strength determination only) to determine the heights as shown in the table.
[G] The *Industry Designator* defines the cold formed steel framing member.
Example: *350S125-30:*
350 designates the member web depth in 100ths of an in., 350 = 3.50 in. (88.9 mm).
*S* designates the type of member, *S* = stud.
125 designates the member flange width in 100ths of an in., 125 = 1.25 in. (32 mm).
30 designates the member base metal thickness in mils, 30 = .0296 in. (0.752 mm).
[H] Data not available.
[I] Also applicable to 3-⅝ in. (92.1 mm) stud depth, *362S125-30*.

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butting the resilient furring channel members over the framing member and screwing through the mounting flange into the stud members. A gap of not less than 1/16 in. (2 mm) shall be left between the members. When nesting the ends of the members, an additional screw attaching the mounting flanges of the resilient furring channels to each other at the ends of each of the nested resilient furring channels shall be installed.

5.6.5 Gypsum panel products shall be attached to the resilient furring channel using screws and ensuring that the screw does not make contact with the framing member.

5.7 *Resilient Furring Channel Installation to Wood Members:*

5.7.1 Resilient furring channel shall be installed to wall framing members with the mounting flange of the resilient furring channel down, except at the floor where the mounting flange shall be permitted to be installed with the flange up to accommodate fastening to the framing members (See Fig. 4). In the case of two-legged resilient furring channel only the lower mounting flange shall be attached to the wall framing members.

5.7.2 For wall framing members, the first (lowest) row of resilient furring channel shall be not more than 2 in. (50 mm) off of the floor (as measured from the floor to the center of the face of the resilient channel) and the last (highest) row of resilient furring channel shall be not more than 6 in (150 mm) from the ceiling (as measured from the ceiling to the center of the face of the resilient channel). For ceiling framing members the first row and the last row of resilient furring channel shall be located not more than 6 in. (150 mm) from the adjacent wall.

5.7.3 The resilient furring channel shall be positioned with the slotted hole(s) directly over the framing member (See Fig. 4). The resilient furring channel shall be attached to the framing member with Type-W or Type-S screws (minimum 1¼ (32 mm) long) screws using the screw hole provided in the mounting flange.

NOTE 2—If no screw hole is provided or located at the framing member, drill through the mounting flange to attach the resilient furring channel to the member.

5.7.4 Resilient furring channel members shall be spliced either by "nesting" the ends of the resilient furring channel members directly over the framing member and screwing through the mounting flange into the framing members or by butting the resilient furring channel members over the framing member and screwing through the mounting flange into the stud members. A gap of not less than 1/16 in. (2 mm) shall be left

**TABLE 5 Maximum Stud Height[A] , ft-in. (mm), Single Layer ½-in. (12.7-mm) Thick Gypsum Board,[B] Vertical Application,[C] on Each Side of Minimum 0.0329-in. (0.836-mm) Base Metal Thickness Steel Studs Spaced 12-in. (305-mm), 16-in. (406-mm), and 24-in. (610-mm) o.c.[D,E,F]**

| Stud Depth, in. (mm), *Industry Designator*[G] | Deflection Limit | Maximum Stud Height ft-in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Framing Spaced 12 in. (305 mm) o.c. Lateral Pressure | | | Framing Spaced 16 in. (406 mm) o.c. Lateral Pressure | | | Framing Spaced 24 in. (610 mm) o.c. Lateral Pressure | | |
| | | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) | 5 psf (240 Pa) | 7.5 psf (360 Pa) | 10 psf (480 Pa) |
| 1-⅝ (41.3) *162S125-33* | L/120 | 13-0 (3960) | 11-4 (3450) | 10-4 (3150) | 12-1 (3680) | 10-7 (3230) | 9-8 (2950) | 11-0 (3350) | 9-7 (2920) | 8-9 (2670) |
| | L/240 | 10-4 (3150) | 9-0 (2740) | [H] | 9-8 (2950) | 8-5 (2570) | [H] | 8-9 (2670) | 7-8 (2340) | [H] |
| | L/360 | 9-0 (2740) | [H] | [H] | 8-5 (2570) | [H] | [H] | 7-8 (2340) | [H] | [H] |
| 2-½ (63.5) *250S125-33* | L/120 | 17-9 (5410) | 15-6 (4720) | 13-11 (4240) | 16-5 (5000) | 14-4 (4370) | 12-10 (3910) | 14-10 (4520) | 13-0 (3960) | 11-7 (3530) |
| | L/240 | 13-11 (4240) | 12-1 (3680) | 10-11 (3330) | 12-10 (3910) | 11-2 (3400) | 10-0 (3050) | 11-7 (3530) | 10-0 (3050) | 8-11 (2720) |
| | L/360 | 12-1 (3680) | 10-6 (3200) | 9-5 (2870) | 11-2 (3400) | 9-8 (2950) | 8-8 (2640) | 10-0 (3050) | 8-7 (2620) | 7-8 (2340) |
| 3-½ (88.9)[I] *350S125-33* | L/120 | 22-6 (6860) | 19-8 (5990) | 17-10 (5440) | 20-8 (6300) | 18-1 (5510) | 16-5 (5000) | 18-6 (5640) | 16-2 (5840) | 14-9 (4500) |
| | L/240 | 17-10 (5440) | 15-6 (4720) | 14-1 (4290) | 16-5 (5000) | 14-3 (4340) | 12-11 (3940) | 14-9 (4500) | 12-9 (3890) | 11-7 (3530) |
| | L/360 | 15-6 (4720) | 13-7 (4140) | 12-4 (3760) | 14-3 (4340) | 12-6 (3810) | 11-4 (3450) | 12-9 (3890) | 11-2 (3400) | 10-1 (3070) |
| 4 (101.6) *400S125-33* | L/120 | 25-1 (7650) | 21-11 (6680) | 19-11 (6070) | 23-1 (7040) | 20-2 (6150) | 18-4 (5590) | 20-9 (6320) | 18-1 (5510) | 16-5 (5000) |
| | L/240 | 19-11 (6070) | 17-4 (5280) | 15-8 (4780) | 18-4 (5590) | 15-11 (4850) | 14-5 (4390) | 16-5 (5000) | 14-3 (4340) | 12-10 (3910) |
| | L/360 | 17-4 (5280) | 15-0 (4570) | 13-7 (4140) | 15-11 (4850) | 13-9 (4190) | 12-6 (3810) | 14-3 (4340) | 12-4 (3760) | 11-2 (3400) |
| 6 (152.4) *600S125-33* | L/120 | 33-9 (10290) | 29-6 (8990) | 26-9 (8150) | 30-10 (9400) | 27-0 (8230) | 24-6 (7470) | 27-2 (8280) | 23-10 (7260) | 19-1 (5820) |
| | L/240 | 26-9 (8150) | 23-5 (7140) | 21-3 (6480) | 24-6 (7470) | 21-4 (6500) | 19-5 (5920) | 21-7 (6580) | 18-10 (5740) | 17-3 (5260) |
| | L/360 | 23-5 (7140) | 20-6 (6250) | 18-7 (5660) | 21-4 (6500) | 18-9 (5720) | 17-0 (5180) | 18-10 (5740) | 16-7 (5050) | 15-0 (4570) |

[A] Based on tests conducted with gypsum board attached with screws spaced 12 in. (305 mm) o.c. to framing members.
[B] Maximum stud heights are also applicable to walls sheathed with gypsum board greater than ½ in. (12.7 mm) thick and multiple layers of gypsum board.
[C] Application per Specification C840.
[D] Limiting heights based on ICC-ES "Acceptance Criteria for Steel Studs and Gypsum-Board Interior Nonload-Bearing Walls—Complete Construction—AC86—Approved July 1995 (Editorially revised September 2005)."
[E] Runner flanges need not be fastened to studs except as required by 5.3.2.1.
[F] ICC-ES-AC86 utilized a 0.75 load reduction factor (for strength determination only) to determine the heights as shown in the table.
[G] The *Industry Designator* defines the cold formed steel framing member.
Example: *350S125-33:*
350 designates the member web depth in 100ths of an in., 350 = 3.50 in. (88.9 mm).
*S* designates the type of member, *S* = stud.
125 designates the member flange width in 100ths of an in., 125 = 1.25 in. (32 mm).
33 designates the member base metal thickness in mils, 33 = .0329 in. (0.836 mm).
[H] Data not available.
[I] Also applicable to 3-⅝ in. (92.1 mm) stud depth, *362S125-33*.

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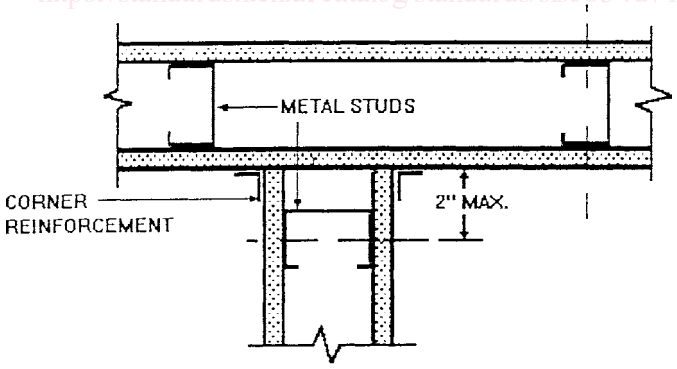


**FIG. 1 Abutting Partition Detail**

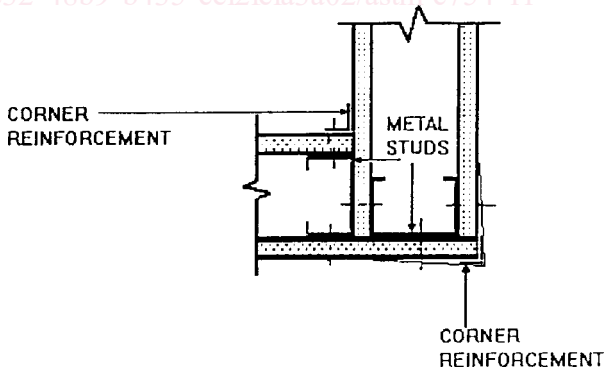


**FIG. 2 Partition Corner Detail**

between the members. When nesting the ends of the members, an additional screw attaching the mounting flanges of the resilient furring channels to each other at the ends of the nested resilient furring channels shall be installed.

5.7.5 Gypsum panel products shall be attached to the resilient furring channel using screws and ensuring that the screw does not make contact with the framing member.

5.8 *Wall Furring-Bracket System:*

5.8.1 Adjustable wall furring brackets with serrated edges facing upward shall be attached to masonry or concrete walls in the following spacing pattern: 48 in. (1220 mm) on center vertically, 6 in. (152 mm) maximum from floor and ceiling, 36 in. (910 mm) on center horizontally, 4 in. (100 mm) maximum from columns or other abutting construction, and as required above and below windows. Each bracket shall be fastened through the hole nearest to the serrated edges.