



# BXUV.U424

## Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

## BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

[See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States Design Criteria and Allowable Variances](#)

[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada Design Criteria and Allowable Variances](#)

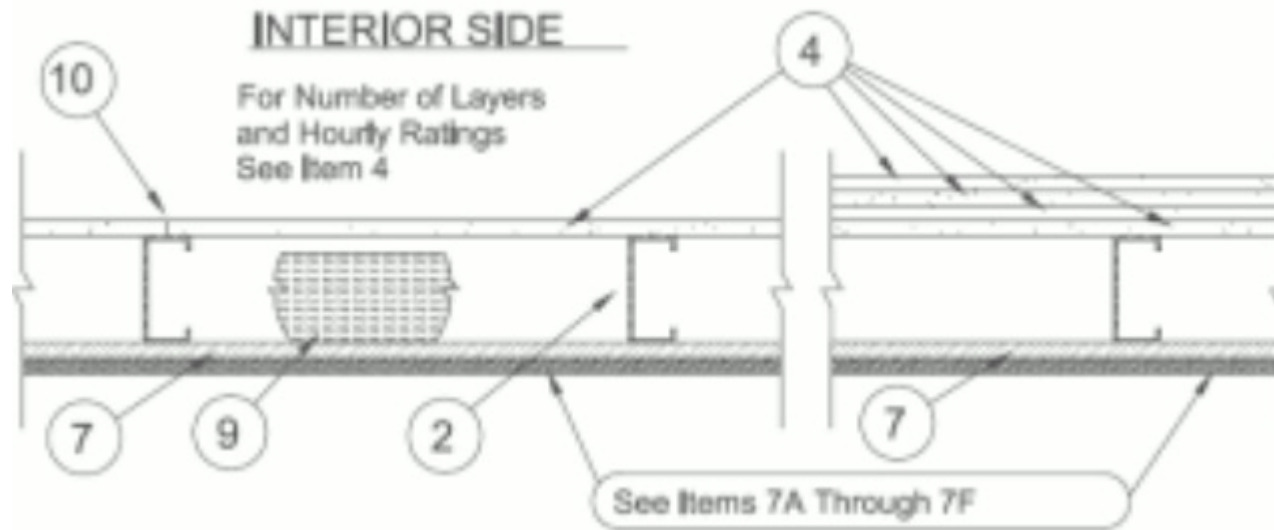
### **Design No. U424**

November 23, 2020

### **(Exposed to Fire on Interior Face Only)**

**Bearing and Non-Load Wall Ratings — 3/4, 1, 1-1/2 or 2 Hr (See Items 4 and 9A)**

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Floor and Ceiling Runners** — (Not shown) — Channel shaped, fabricated from min 0.0329 in. thick, bare metal thickness (No. 20 MSG) corrosion-protected steel, that provide a sound structural connection between steel studs and adjacent assemblies such as floors, ceilings and/or other walls. Attached to floor and ceiling assemblies with steel fasteners spaced not greater than 24 in. OC.
2. **Steel Studs** — Min 0.0329 in. thick, bare metal thickness (No. 20 MSG) corrosion-protected steel studs, min 3-1/2 in. wide, cold formed, designed in accordance with the current edition of the Specification for the Design of Cold-Formed Steel Structural Members by the American Iron and Steel Institute (AISI). All design details enhancing the structural integrity of the wall assembly, including the axial design load of the studs, shall be as specified by the steel stud designer and/or producer, and shall meet the requirements of all applicable local code agencies. The max stud spacing shall not exceed 24 in. OC. (16 in. OC when Item 7B is used). Studs attached to floor and ceiling runners with 1/2 in. long Type S-12 steel screws on both sides of the studs or by welded or bolted connections designed in accordance with the AISI specifications.
- 2A. **Steel Studs** — (For Use With Items 4A, 4B, 4C, and 4D) — Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min width, min 1-1/2 in. flanges and 1/4 in. return, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners.
3. **Lateral Support Members** — (Not shown) — Where required for lateral support of studs, support shall be provided by means of steel straps, channels or other similar means as specified in the design of a particular steel stud wall system.
4. **Gypsum Board\*** — Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs staggered a min of 12 in. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. When used in widths other than 48 in., gypsum panels to be installed horizontally. The thickness and number of layers and percent of design load for the 45 min, 1 hr, 1-1/2 hr, and 2 hr ratings are as follows:

### Wallboard Protection on Interior Side of Wall

Rating	No. of Layers & Thkns of Panel	% of Design Load
45 Min	1 layer, 5/8 in. thick	100
1 hr	2 layers, 1/2 in. thick	100
1-1/2 hr	2 layers, 5/8 in. thick	100
2 hr	3 layers, 1/2 in. thick	100
2 hr	2 layers, 3/4 in. thick	100

**CGC INC** — 1/2 in. thick Type C, IP-X2, IPC-AR, or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, WRX or WRC; 3/4 in. thick Types AR, IP-AR, IP-X3, ULTRACODE, USGX (Joint tape and compound, Item 10, optional for use with Type USGX).

**THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO** — 1/2 in. thick Type C and 5/8 in. thick SCX

**UNITED STATES GYPSUM CO** — 1/2 in. thick Type C, IP-X2, IPC-AR, or WRC; 5/8 in. thick Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SGX, SHX, ULX, WRX, WRC, USGX (Joint tape and compound, Item 10, optional for use with Type USGX); 3/4 in. thick Types AR, IP-AR, IP-X3, ULTRACODE

**USG BORAL DRYWALL SFZ LLC** — 1/2 in. Type C; 5/8 in. Types C, SCX, ULTRACODE, SGX, USGX (Joint tape and compound, Item 10, optional for use with Type USGX)

**USG MEXICO S A DE C V** — 1/2 in. thick Type C, IP-X2, IPC-AR, or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, ULX, WRX or WRC; 3/4 in. thick AR, IP-AR, IP-X3, ULTRACODE, USGX (Joint tape and compound, Item 10, optional for use with Type USGX).

4A. **Gypsum Board\*** — (As an alternate to Item 4 when used as the base layer, For direct attachment only) - Nom 5/8 in. or 3/4 in. may be used as alternate to all 5/8 in. or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 in. or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. See Items 2A, 8. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 12) or Lead Discs or Tabs (see Item 13).

**RAY-BAR ENGINEERING CORP** — Type RB-LBG

4B. **Gypsum Board\*** — (As an alternate to Item 4 when used as the base layer, For direct attachment only). Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or #6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

**NEW ENGLAND LEAD BURNING CO INC, DBA NELCO** — Nelco

4C. **Gypsum Board\*** — (As an alternate to Item 4 when used as the base layer, For direct attachment only) - Nom 5/8 in. may be used as alternate to all 5/8 or 3/4 in. shown in Item 5, Wallboard Protection on Each Side of Wall table. Nom 5/8 or 3/4 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. See Items 2A, Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 12A) or Lead Discs (see Item 13A).

**MAYCO INDUSTRIES INC** — Type X-Ray Shielded Gypsum

4D. **Gypsum Board\*** — (As an alternate to Item 4 when used as the base layer. For direct attachment only). Nom 5/8 in. may be used as alternate to all 5/8 in. shown in Item 4, Wallboard Protection on Each Side of Wall table. Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over 20 MSG steel studs and staggered min 1 stud cavity on opposite sides of studs. See Items 2A, 8. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

**RADIATION PROTECTION PRODUCTS INC** — Type RPP - Lead Lined Drywall

4E. **Gypsum Board\*** — For use with Item 9B, **Batts and Blankets\*** for the 45 minute rating. Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs staggered a min of 12 in. When used in widths other than 48 in., gypsum panels to be installed horizontally. The thickness and number of layers and percent of design load for the 45 min and 90 rating is as follows:

### Wallboard Protection on Interior Side of Wall

Rating	No. of Layers & Thkns of Panel	% of Design Load
45 Min	1 layer, 5/8 in. thick	100
1-1/2 hr	2 layers, 5/8 in. thick	100
2 hr	3 layers, 5/8 in. thick	100

**UNITED STATES GYPSUM CO** — 5/8 in. Type ULIX

4F. **Gypsum Board\*** — As an alternate to Item 4 - For use with Item 9C) — Gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. **Single layer systems:**

Type S-12 steel screws 1 in. long for 5/8 in. thick panels, spaced 7 in. OC. **Two layer systems:** First layer - Type S-12 steel screws 1 in. long for 5/8 in. thick panels, spaced 12 in. OC. Second layer - Type S-12 steel screws 1-7/8 in. long for 5/8 in. thick panels, spaced 12 in. OC with screws offset 6 in. from first layer. The thickness and number of layers and percent of design load for the 45 min and 1-1/2 hr are as follows:

### Wallboard Protection on Interior Side of Wall

Rating	No. of Layers & Thkns of Panel	% of Design Load
45 Min	1 layer, 5/8 in. thick	100
1-1/2 hr	2 layers, 5/8 in. thick	100

**CGC INC** — Type SCX

**THE SIAM GYPSUM INDUSTRY (SONGKHLA) CO** — Type SCX

**UNITED STATES GYPSUM CO** — Type SCX

**USG BORAL DRYWALL SFZ LLC** — Types SCX

**USG MEXICO S A DE C V** — Type SCX

5. **Fasteners** — (Not shown) — Type S-12 steel screws used to attach panels to runners (Item 1) and studs (Item 2) or furring channels (Item 8). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 12 in. OC when panels are applied vertically. **Two layer systems:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. **Three-layer systems:** First layer- 1 in. long for 1/2 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

6. **Building Paper** — (Not shown) — No. 15 asphalt felt or equivalent as required.

7. **Gypsum Sheathing** — For exterior walls, 1/2 or 5/8 in. thick exterior regular gypsum sheathing applied vertically or horizontally, attached to studs and runners with 1 in. long Type S12 steel screws spaced 12 in. OC along studs and runners. One or more of the following exterior facings shall be applied over the gypsum sheathing.

A. **Siding, Brick or Stucco** — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies. When a min 3-3/4 in. thick brick veneer facing is used, the rating is applicable for exposure on either side. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

B. **Cementitious Backer Units\*** — 1/2 or 5/8 in. thick panels, attached to steel studs over gypsum sheathing with 1-5/8 in. long, Type S-12, corrosion resistant, wafer-head steel screws, spaced 8 in. OC. Studs spaced a max of 16 in. OC. Joints covered with glass fiber mesh tape.

**UNITED STATES GYPSUM CO** — Type DCB

C. **Foamed Plastic\*** — Aged expanded polystyrene (EPS) board per ASTM C578, with a nom density not less than 1 pcf, R-value 3.8 min per in. with a flame spread of less than 25 and a smoke developed of less than 450, adhered to the gypsum sheathing (Item 7) or to the cementitious backer units (Item 7B) with USG Exterior Insulation Board Adhesvie. See **Foamed Plastic (BRYX and/or CCVW) Categories** for names of Classified companies.

D. **Foamed Plastic\*** — Polyisocyanurate foamed plastic insulation boards, any thickness, Classified in accordance with BRYX and / or CCVW.

**ATLAS ROOFING CORP** — "EnergyShield Pro Wall Insulation", "EnergyShield Pro 2 Wall Insulation", EnergyShield CGF Pro and EnergyShield Ply Pro

**CARLISLE COATINGS & WATERPROOFING INC** — Type R2+ SHEATHE

**DUPONT DE NEMOURS, INC.** — Type Thermax Sheathing, Thermax Light Duty Insulation, Thermax Heavy Duty Insulation, Thermax Metal Building Board, Thermax White Finish Insulation, Thermax ci Exterior Insulation, Thermax XARMOR ci Exterior Insulation Thermax IH Insulation, Thermax Plus Liner Panel, Thermax Heavy Duty Plus (HDP), TUFF-R™ ci Insulation, Thermax Butler Stylwall Insulation Board and Thermax Morton Heavy Duty Insulation Board

**FIRESTONE BUILDING PRODUCTS CO L L C** — "Enverge™ CI Foil Exterior Wall Insulation" and "Enverge™ CI Glass Exterior Wall Insulation"

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — Type "Xci-Class A", "Xci 286", "Xci Foil (Class A)", "Xci CG", "Xci Foil", "Xci CG NH", "Xci Foil NH"

**RMAX, A BUSINESS UNIT OF SIKA CORPORATION** — Types "TSX-8500", "ECOMAXci FR", "TSX-8510", "ECOMAX xi FR White", "ECOMAXci", "ECOMAXci FR Air Barrier", "Thermasheath-XP", "Thermasheath", "Durasheath", "Thermasheath-3", "Durasheath-3".

**JOHNS MANVILLE** — Type "AP Foil-Faced Foam Sheathing"

E. **Foamed Plastic\*** — Spray applied, foamed plastic insulation, at a minimum of 1 in. thick.

**NCFI POLYURETHANES** — NCFI 11-017, NCFI 11-016, NCFI 11-015

F. **Foamed Plastic\*** — Spray applied, foamed plastic insulation, at a minimum of 1 in. thick.

**BASF CORP** — Enercite® NM, Enercite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, FE137®, FE158®, Spraytite® 158, Spraytite® SP and Spraytite® 81205

G. **Building Units** — Polyisocyanurate foamed plastic composite insulation boards, any thickness, Classified in accordance with BZXX.

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — Type "Xci NB" and "Xci Ply"

**RMAX, A BUSINESS UNIT OF SIKA CORPORATION** — "Thermasheath-SI", "ECOBASeci", "ECOMAXci FR Ply", "ThermaBase-CI", "ECOMAXci Ply" attached to studs with Type S screws long enough to penetrate the studs a minimum of three threads.

**LAMINATORS INC** — Type "Omega ci"

H. **Foamed Plastic\*** — Expanded polystyrene insulation installed to a maximum nominal density of 2.0 lb/ft<sup>2</sup>.

**BASF CORP STYRENIC FOAMS DIV** — Type Neopor "F" Series

8. **Furring Channels** — (Optional, not shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Type FRX-G gypsum panels and Item 4A or 4B.

9. **Batts and Blankets\*** — (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. **See Batts and Blankets (BKNV and/or BZJZ) Categories** for names of Classified companies.

9A. **Foamed Plastic\*** — (Optional) — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, FE137®, FE158®, Spraytite® 158, Spraytite® SP and Spraytite® 81205.

**BASF CORP** — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, FE137®, FE158®, Spraytite® 158, Spraytite® SP and Spraytite® 81205

a. **For Use in Bearing Walls** — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US and Walltite® US-N

b. **For Use in Non-Bearing Walls** — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, FE137®, FE158®, Spraytite® 158, Spraytite® SP and Spraytite® 81205

9B. **Batts and Blankets\*** — Placed in stud cavities, any min. 3-1/2 in. thick glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

9C. **Foamed Plastic\*** — (Optional, As an alternate to Item 9 - For use with Item 4F) — Spray applied, foamed plastic insulation, at any thickness from partial fill to completely filling stud cavity.

**GACO WESTERN L L C** — Types GacoEZSpray F4500, GacoProFill FR6500R, Gaco 052N, GacoOnePass F1850, GacoOnePass Low GWP F1880, and Gaco WallFoam 183M

10. **Joint Tape and Compound** — Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of interior face layer. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of interior face layer. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

11. **Caulking and Sealants\*** — (Optional, not shown) — A bead of acoustical sealant applied around the partition perimeter on interior side for sound control.  
**UNITED STATES GYPSUM CO** — Type AS

12. **Lead Batten Strips** — (Not Shown, For use with Item 4A) — Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 4A) and optional at remaining stud locations. Required behind vertical joints.

12A. **Lead Batten Strips** — (Not Shown, for use with Item 4C) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 6) and optional at remaining stud locations.

13. **Lead Discs or Tabs** — (Not Shown, For use with Item 4A) — Used in lieu of or in addition to the lead batten strips (Item 12) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 4A) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

13A. **Lead Discs** — (Not Shown, for use with Item 4C) — Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades "B, C or D".

14. **Lead Batten Strips** — (Not Shown, For Use With Item 4B) — Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.142 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item or 4B) and optional at remaining stud locations.

15. **Lead Tabs** — (Not Shown, For Use With Item 4B) — 2 in. wide, 5 in. long with a max thickness of 0.142 in. Tabs friction-fit around front face of stud, the stud folded back flange, and the back face of the stud. Tabs required at each location where a screw (that secures the gypsum boards, Item 4B) will penetrate the steel stud. Lead tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead tabs may be held in place with standard adhesive tape if necessary.

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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