



## BXUVC.U413 Fire-resistance Ratings

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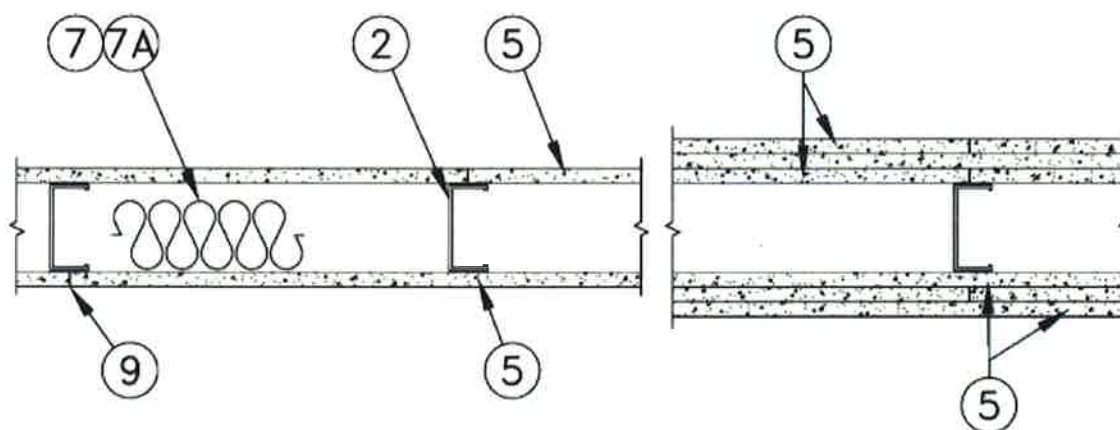
### BXUVC - Fire-resistance Ratings

[See General Information for Fire-resistance Ratings](#)

### Design No. U413

November 10, 2015

Assembly Rating - 3/4, 1, 1-1/2 or 2 h (See Items 5 & 7)



**Bearing Wall**

1. **Floor and Ceiling Runners** — (Not Shown) — Channel shaped runners, fabricated from min 0.83 mm bare metal thickness (20 MSG) galvanized steel, min 92 mm deep with 32 mm flanges. Attached to floor and ceiling assemblies with steel fasteners spaced not greater than 610 mm OC.

2. **Steel Studs** — Min 0.83 mm bare metal thickness (20 MSG) galvanized steel studs, min 92 mm deep by 41 mm wide with 13 mm returns, designed in accordance with the current edition of North American Specification for the Design of Cold-Formed Steel Structural Members [CSA Standard S136]. 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 610 mm OC. Studs attached to floor and ceiling runners with 13 mm long Type S-12 steel screws on both sides of the studs or by welded or bolted connections designed in accordance with CSA-S136 specifications.

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2A. **Steel Studs** — (As an alternate to Item 2. For use with Item 5A) — Min 0.83 mm bare metal thickness (20 MSG) galvanized steel studs, min 92 mm deep by 41 mm wide with 13 mm returns, designed in accordance with the current edition of North American Specification for the Design of Cold-Formed Steel Structural Members [CSA Standard S136]. Studs spaced a max of 406 mm OC. Studs attached to floor and ceiling runners with 13 mm long Type S-12 steel screws on both sides of the studs.

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2B. **Steel Studs** — (As an alternate to Items 2 and 2A, For Use With Item 5B) — Min 0.83 mm bare metal thickness (20 MSG) galvanized steel studs, min 92 mm deep by 41 mm wide with 13 mm returns. Braced at mid-height and designed in accordance with the current edition of North American Specification for the Design of Cold-Formed Steel Structural Members [CSA Standard S136]. 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 610 mm OC. Studs attached to floor and ceiling runners with 13 mm long Type S-12 steel screws on both sides of the studs or by welded or bolted connections designed in accordance with CSA- S136 specifications.

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**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. Wood Structural Panel Sheathing** — (Optional, for use with Item 5 only) — (Not Shown) — 1220 mm wide, 11 mm thick oriented strand board (OSB) or 12 mm thick structural 1 sheathing (plywood), manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, and staggered one stud space from wallboard joints. Attached to studs with flat-head self-drilling tapping screws with a min. head diam. of 7 mm at maximum 152 mm OC. in the perimeter and 305 mm OC. in the field. When used, fastener lengths for gypsum panels increased by min. 13 mm.

The maximum loading on the steel studs to be evaluated with the steel studs braced at mid-height and not braced by the plywood sheathing.

**5. 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 need not be staggered when load is reduced to 90 percent of max stud capacity. When load is at 100 percent, horizontal edge joints and horizontal butt joints on opposite sides of studs staggered a min of 305 mm. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 305 mm. When used in widths other than 1220 mm, gypsum panels to be installed horizontally. The thickness and number of layers and percent of design load for the ¾ hr, 1 hr, 1-1/2 hr, and 2 hr ratings are as follows:

**Wallboard Protection on Each Side of Wall**

Rating	No. of Layers & Thickness of Wallboard Panel	% of Design Load
3/4 hr	1 layer, 12.7 mm thick	100
1 hr	1 layer, 15.9 mm thick	100
1-1/2 hr	2 layers, 12.7 mm thick	100
2 hr	2 layers, 15.9 mm thick	100
2 hr@	2 layers, 15.9 mm thick	100
2 hr	3 layers, 12.7 mm thick	100
2 hr	2 layers, 19 mm thick	100

@ Rating applicable when Batts and Blankets (Item 7) are used.

**CGC INC** — 12.7 mm thick Types IP-X2, IPC-AR, C or WRC; 15.9 mm thick Types SCX, SHX, WRX, IP-X1, AR, C, IP-AR, IP-X2, IPC-AR, ULX, or WRC; 19 mm thick Types AR, IP-AR, IP-X3, ULTRACODE

**5A. Gypsum Board** — (As an alternate to Item 5 when used as the base layer on one or both sides of wall. For direct attachment only, not to be used with Item 4) — Nom 15.9 mm or 19 mm thick boards may be used as alternate to all 15.9 mm or 19 mm thick boards shown in Item 5. Wallboard Protection on Each Side of Wall. The nom 15.9 mm or 19 mm 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 1, 2A, 8, 8A (a), 8B (a). Wallboard secured to studs with 32 mm long Type S-12 steel screws spaced 204 mm OC at perimeter and 305 mm 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

**5B. Gypsum Board** — (As an alternate to Items 5 and 5A) — Nom 15.9 mm thick gypsum panels with square edges, applied horizontally or vertically. For the 1 hour single layer system - when the gypsum board panels are installed horizontally the joints are to be staggered by a minimum of 305 mm on opposite sides of assembly, they are to be secured on each side of the studs with 32 mm long Type S-12 bugle head steel screws spaced 204 mm OC to the top and bottom tracks and in the field with screws 25 mm and 102 mm from the horizontal joints. When the gypsum board panels are installed vertically all vertical joints must be centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to studs with 32 mm long Type S-12 steel screws spaced 204 mm OC to the top and bottom tracks and in the field with screws 25 mm and 102 mm from the perimeter. For the 2 hour double layer system - when the gypsum board panels are installed horizontally the joints need not be staggered on opposite sides of assembly. Base layer secured on each side of the studs with 32 mm long Type S-12 bugle head steel screws spaced 406 mm OC to the top and bottom track and in the field with screws beginning 25 mm and 204 mm from the horizontal joints. Face layer horizontal joints staggered 204 mm from base layer joints and secured with 42 mm long Type S-12 bugle head steel screws spaced 406 mm OC to the top and bottom tracks and in the field with screws beginning 25 mm and 204 mm from the horizontal joints. Face layer screws offset 204 mm from base layer screws. When the gypsum board panels are installed vertically all vertical joints must be centered over studs and staggered min 1 stud cavity on opposite sides of studs. Face layer gypsum boards secured to studs with 32 mm long Type S-12 steel screws spaced 406 mm OC with screws 51 mm and 406 mm from the perimeter. Base layer gypsum boards secured to studs with 32 mm long Type S-12 steel screws spaced 406 mm OC with screws 38 mm and 204 mm from the perimeter. Face layer screws offset 204 mm from base layer screws.

**CGC INC — Type USGX**

6. **Fasteners** — (Not Shown) — For use with Item 5 - Type S-12 steel screws used to attach panels to runners (Item 1) and studs (Items 2, 2A, 2B) or furring channels (Item 8). **Single layer systems:** 25 mm long for 12.7 mm and 15.9 mm thick panels or 32 mm long for 19 mm thick panels, spaced 204 mm OC when panels are applied horizontally, or 305 mm OC when panels are applied vertically. **Two layer systems:** First layer - 25 mm long for 12.7 mm and 15.9 mm thick panels or 32 mm long for 19 mm thick panels, spaced 406 mm OC. Second layer - 42 mm long for 12.7 mm and 15.9 mm thick panels or 57 mm long for 19 mm thick panels, spaced 406 mm OC with screws offset 204 mm from first layer. **Three-layer systems:** First layer - 25 mm long for 12.7 mm thick panels, spaced 610 mm OC. Second layer - 42 mm long for 12.7 mm thick panels, spaced 610 mm OC. Third layer - 57 mm long for 12.7 mm thick panels, spaced 305 mm OC. Screws offset min 152 mm from layer below.

7. **Batts and Blankets** — (Required as indicated under Item 5) — Nom 50 mm thick mineral wool batts, friction fitted between studs and runners. See **Batts and Blankets (BZJZC) Categories** for names of Classified companies.

7A. **Batts and Blankets\*** — (Optional, Not Shown) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the ULC Classification Marking for Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets (BKNVC and/or BZJZC) Categories** for names of Classified companies.

8. **Furring Channels** — (Optional on one or both sides, not shown, for single or double layer systems) — Resilient furring channels fabricated from min 0.45 mm (25 MSG) corrosion-protected steel, spaced vertically a max of 610 mm OC. Flange portion attached to each intersecting stud with 12.7 mm long Type S-12 pan-head steel screws. Not for use with gypsum panels under Item 5A.

8A. **Steel Framing Members (Not Shown)** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 8, furring channels and Steel Framing Members as described below:

a. **Furring Channels** — Formed from 0.45 mm (25 MSG) galv steel, 65 mm or 69 mm wide by 22 mm deep, spaced max. 610 mm OC, perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with gypsum panels under Item 5A.

b. **Steel Framing Members** — Used to attach furring channels to studs (Item 2). Clips spaced max. 1220 mm OC., and secured to studs with minimum No. 8 x 38 mm, self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 65 mm wide furring channels. RSIC-1 (2.75) clip for use with 69 mm wide furring channels.

**PAC INTERNATIONAL L L C** — Types RSIC-1, RSIC-1 (2.75)

8B. **Steel Framing Members (Not Shown)** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 8, furring channels and Steel Framing Members as described below:

a. **Furring Channels** — Formed from 0.45 mm (25 MSG) galv steel, 60 mm wide by 22 mm deep, spaced max. 610 mm OC, perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 6. Not for use with gypsum panels under Item 5A.

b. **Steel Framing Members** — Used to attach furring channels to studs (Item 2). Clips spaced max 1220 mm OC., and secured to studs with minimum No. 8 x 38 mm, self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.

**PLITEQ INC** — Type GENIECLIP

9. **Joint Tape and Compound** — Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 50 mm wide, embedded in first layer of compound over all joints of outer layers. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

10. **Siding, Brick or Stucco** — (Optional, Not Shown) — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies. 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.

11. **Caulking and Sealants** — (Optional, Not Shown) — A bead of acoustical sealant applied around the partition perimeter for sound control.

12. **Lead Batten Strips** — (Not Shown, For Use With Item 5A) — Lead batten strips, min 38 mm wide, max 3050 mm long with a max thickness of 3.2 mm. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 25 mm 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 US Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 5A) and optional at remaining stud locations. Required behind vertical joints.

13. **Lead Discs or Tabs** — (Not Shown, For Use With Item 5A) — Used in lieu of or in addition to the lead batten strips (Item 12) or optional at other locations - Max 19 mm diam. by max 3.2 mm thick lead discs compression fitted or adhered over steel screw heads or max 12.7 mm by 32 mm by max 3.2 mm thick lead tabs placed on gypsum boards (Item 5A) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the US Federal specification QQ-L-201f, Grade "C".

**14. Wall and Partition Facings and Accessories\*** — (Optional, Not Shown) — For use with Item 1, Items 2 to 2B, Item 3, Item 5, Item 6, Item 7A, Item 8 and Item 9. For a maximum fire rating of 1 hour. On one side of the wall, over the first layer of Gypsum Board (Item 5), install RefleXor membrane with the gold side facing outwards. Membrane installed with T50 staples spaced 305 mm on center in both directions as per manufacturer's instructions, seams in membrane to be overlapped by 50 mm. When RefleXor membrane is used an additional layer of Gypsum Board identical to the one used in the first layer and as specified in Item 5 shall be installed over the membrane. Additional layer of Gypsum Board to be installed through the membrane to the stud as specified in Item 5 except the fastener length shall be increased by a minimum of 16 mm. Install Batts and Blankets in the stud cavity as per Item 7A. On the other side of the wall prior to the installation of the Gypsum Board install Resilient Channels as per Item 8. Over the Resilient Channels install 19 mm thick SONO pan panel secured to the Resilient Channels with drywall screws and washers spaced at 406 mm OC on the perimeter of the panel and 204 mm OC in the field of the panel. Over the SONOpan panel install the same Gypsum Board as specified in Item 5 with the fastener length increased by minimum 19 mm. Not evaluated or intended as a substitute for the required layer(s) of ULC Classified Gypsum Board.

**MSL** — RefleXor membrane, SONOpan panel

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