UL Product iQ®

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. M522

May 08, 2020

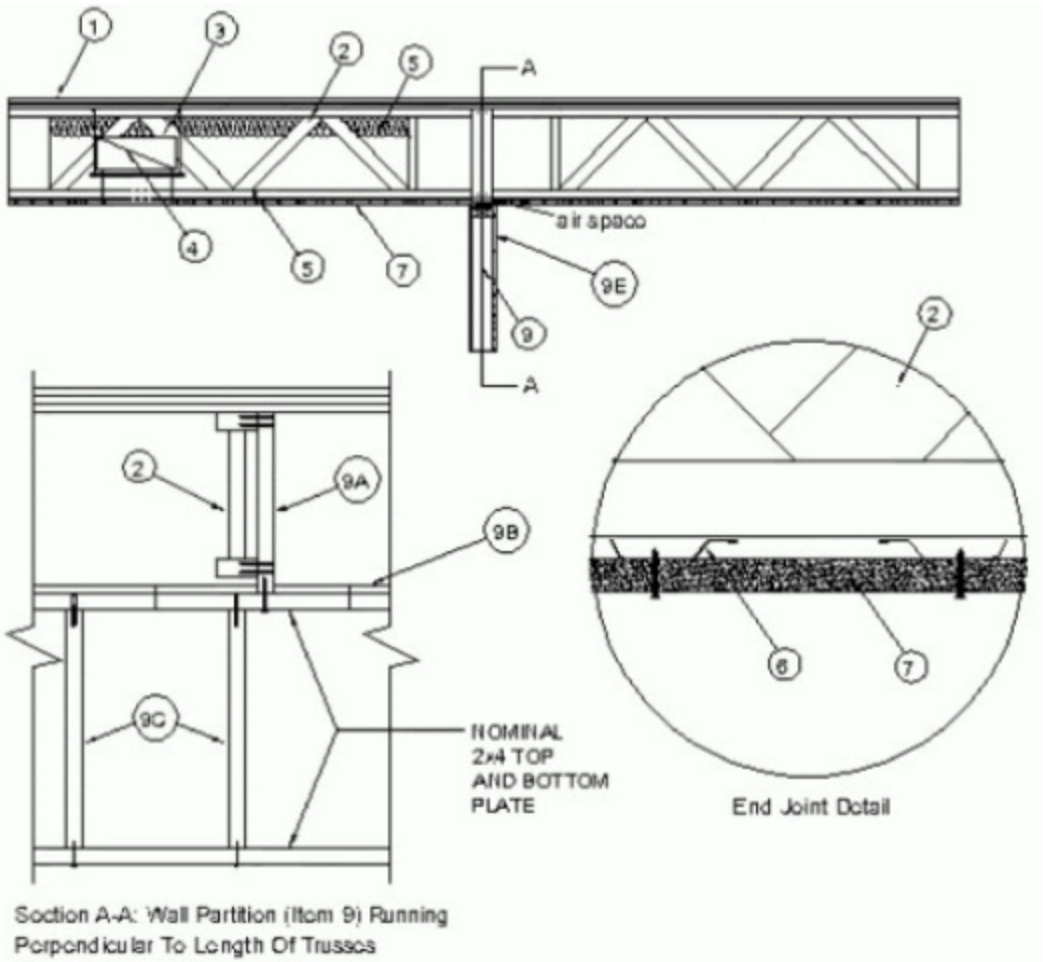
Unrestrained Assembly Rating — 1 Hr

Finish Rating — 28 Min

Restricted Load Condition — See Item 2

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



Section A-A: Wall Partition (Item 9) Running Perpendicular To Length Of Trusses

1. **Flooring System —** The flooring system shall consist of one of the following:

System No. 1

Subflooring — Min 23/32 in. thick plywood with T & G edges along the 8 ft sides and exterior glue, or oriented strand board (OSB), min grade "C-D" or "Sheathing", or APA Rated Sheathing marked Exposure 1 or exterior glue and conforming to PS-1, PS-2 or APA specifications PRP-108. Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered 4 ft. Plywood or APA rated panels secured with construction adhesive and No. 6d nails or 6d pneumatic nails spaced 12 in. OC. Adhesive applied in 1/4 in. diam beads on top of joists and to T & G grooved edges of plywood or panel. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier - (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Floor Mat Materials* - (Optional) — Floor mat material loose laid over the subfloor. Floor topping thickness shall be as specified under Floor Topping Mixture.
UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* - (Optional) — Nom 3/8 in. thick floor mat material loose laid over the subfloor. Floor topping thickness shall be as specified under Floor Topping Mixture.
GRASSWORX L L C — Type SC50

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture installed having a min compressive strength of 1200 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
UNITED STATES GYPSUM CO — Type LRK

USG MEXICO S A DE C V — Type LRK

System No. 2

Subflooring — Min 23/32 in. thick plywood with T & G edges along the 8 ft sides and exterior glue, or oriented strand board (OSB), min grade "C-D" or "Sheathing", or APA Rated Sheathing marked Exposure 1 or exterior glue and conforming to PS-1, PS-2 or APA specifications PRP-108. Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered 4 ft. Plywood or APA rated panels secured with construction adhesive and No. 6d nails or 6d pneumatic nails spaced 12 in. OC. Adhesive applied in 1/4 in. diam beads on top of joists and to T & G grooved edges of plywood or panel. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier - (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Floor Mat Materials* - (Optional) — Min 3/8 in. to max 3/4 in. thick floor mat material loose laid over the subfloor. Floor topping thickness shall be as specified under Floor Topping Mixture.
UNITED STATES GYPSUM CO — Levelrock Brand Sound Reduction Mat

Alternate Floor Mat Materials* - (Optional) — — Nom 1/4 in. thick floor mat material loose laid over the subfloor. Floor topping thickness shall be as specified under Floor Topping Mixture.

UNITED STATES GYPSUM CO — Levelrock Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* - (Optional) — — Nom 3/8 in. thick floor mat material loose laid over the subfloor. Floor topping thickness shall be as specified under Floor Topping Mixture.

GRASSWORX L L C — Type SC50

Finish Flooring - Floor Topping Mixture* — — Min 1/2 in. thickness of floor topping mixture having a min compressive strength of 3000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

UNITED STATES GYPSUM CO — Type HSLRK

USG MEXICO S A DE C V — Type HSLRK

2. **Trusses —** — Parallel chord trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Min truss depth is 12 in. when no **Ceiling Damper*** is used and 18 in. when a **Ceiling Damper*** is used. Truss members secured together with min 0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approx. 7/8 in. centers with four rows of teeth per inch of plate width. Live load limited to 75% of total capacity.

3. **Air Duct (Optional) —** — Min No. 22 MSG (0.029 in. thick) galv steel duct with max cross-sectional area of 108 sq in. and wrapped with min 1/2 in. thick foil-faced insulation. Area of individual duct opening not to exceed 144 sq in. Max dimensions of opening 12 in. Total area of duct openings not to exceed 57 sq in. per each 100 sq ft of ceiling area. Duct supported by No. 16 ga. cold rolled steel channels, spaced a max of 41 in. OC. Channels secured to trusses with 1/4 x 3 in. eyebolts and 0.106 in. thick galv steel hanging wire. Eyebolts secured into side of top chord of trusses.

4. **Damper (Optional. To be used with Air Duct Item 3.) —** Min. 0.070 in. thick, No. 14 MSG galv steel, sized to overlap duct opening min 2 in. Damper protected on both sides with 1/16 in. thick ceramic fiber paper attached to the steel and held open with **Fusible Link** (Bearing the UL Listing Mark).

4A. **Alternate Ceiling Damper* - (Not Shown) —** As an alternate to Item 4, ceiling damper installed in insulated steel duct drop in accordance with the manufacturers installation instructions provided with the damper.

See **Ceiling Dampers** (CABS) category for names of manufacturers.

5. **Batts and Blankets* —** (Optional) - Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. When no insulation is installed in the concealed space resilient channels (Item 6) are spaced 24 in. OC. When the resilient channels (Item 6) are spaced 16 in. OC, the insulation shall be a max of 3-1/2 in. thick, and shall be secured against the subflooring with staples at 12 in. OC or held suspended in the concealed space with 0.090 in. diam galv steel wires attached to the wood trusses at 12 in. OC. When the resilient channels are spaced a max of 12 in. OC, there is no limit in the overall thickness of insulation, and the insulation can be secured against the subflooring, held suspended in the concealed space or draped over the resilient channels and gypsum panel membrane. The finished rating has only been determined when the insulation is secured to the subflooring. The finish rating when Batts and Blankets are used has not been determined

5A. **Loose Fill Material* —** (Optional) - As an alternate to Item 5, when the resilient channels (Item 6) are spaced a max of 12 in. OC - Any loose fill material bearing the UL Classification Marking for Surface Burning Characteristics. There is no limit in the overall thickness of insulation. The finished rating when loose fill material is used has not been determined

5B. **Cavity Insulation - Batts and Blankets* or Loose Fill Material* —** (As described above) in Items 5 and 5A — (For Use with Item 7A, Not Shown) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 6A)/gypsum board (Item 7A) ceiling membrane.

6. **Resilient Channels —** Formed from min 25 MSG galv steel installed perpendicular to the trusses. When insulation (Item 5) is secured to the underside of the subfloor, the resilient channels are spaced 16 in. OC.. When insulation (Items 5 or 5A) is applied over the resilient channel/gypsum panel ceiling membrane, the resilient channels are spaced 12 in. OC. Channels secured to each truss with 1-1/4 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint as shown in the above illustration. Additional channels shall extend min 6 in. beyond each side edge of panel.

6A. **Resilient Channels —** For Use With Item 7A - Formed from min 25 MSG galv steel installed perpendicular to trusses and spaced 16 in. OC. Channels secured to each truss with 1-5/8 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint. Additional channels shall extend min 6 in. beyond each side edge of panel. Insulation, Item 5B is applied over the resilient channel/gypsum panel ceiling membrane.

6B. **Steel Framing Members* —** (Optional, Not Shown) — As an alternate to Item 6.

a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to the trusses. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 7), each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels —** 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Bd) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Bd) location with 16d nails or minimum 2-1/2 in. screws.

d. **Steel Framing Members* —** Spaced 48 in. OC. max along truss, and secured to the truss on alternating trusses with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.
PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

6C. **Steel Framing Members* —** (Not Shown) — As an alternate to Item 6.

a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced as indicated in Item 6, perpendicular to trusses and friction fit into Steel Framing Members (Item 6Cc). Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 7). Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 6Cc) location with 16d nails or minimum 2-1/2 in. screws.

c. **Steel Framing Members* —** Used to attach furring channels (Item 6Ca) to trusses. Clips spaced 48 in. OC and secured along truss webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.
PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

6D. **Steel Framing Members* —** (Optional, Not Shown) As an alternate to Item 6, furring channels and Steel Framing Members* as described below:

a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-9/16 in. wide by 7/8 in. deep, spaced as described in item 6 perpendicular to joists. Channels secured to trusses as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC. RSIC-1 clips secured to alternating trusses with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clips for use with 2-9/16 in. wide furring channels. Adjoining channels are overlapped as described in Item a. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.
PAC INTERNATIONAL L L C — Type RSIC-1

7. **Gypsum Board* —** Nom 5/8 in. thick, 48 in. wide gypsum board installed with long dimension perpendicular to resilient channels. Gypsum board secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC along butted end joints and in the field. Screws located a min of 1/2 in. from side joints and 3 in. from the end joints. End joints secured to both pieces of resilient channel as shown in end joint detail. When encountering nonbearing wall partition system (Item 9), gypsum board is to fit tightly against structural member.

When **Steel Framing Members** (Item 6B) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 6C) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 7. Butt joints staggered minimum 24 in. OC.

When **Steel Framing Members** (Item 6D) are used, gypsum panels installed with long dimensions perpendicular to furring channels. Panels attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and in the field of the panel. Butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. Each end of each gypsum panel shall be supported by a single length of furring channel equal to the width of the gypsum panel plus 6 in. on each end. The two support furring channels shall be spaced approximately 3-1/2 in. OC, and be attached with one clip at each end of the channel.

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR

USG BORAL DRYWALL SFZ LLC — Type C

7A. **Gypsum Board* —** For use with Items 5B and 6A. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Finish Rating with this ceiling system is 20 min.

CGC INC — Type ULIX

UNITED STATES GYPSUM CO — Type ULIX

8. **Finishing System - (Not Shown) —** Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of the gypsum board.

9. **Wall Partition System —** Nonbearing wall partition installed parallel or perpendicular to the trusses and shall consist of the following:

9A. **Wall Support Members —** Nom 2 x 4 in. wall support member attached vertically with two 10d nails secured through side of top and bottom chords of trusses and spaced max 48 in. OC. Nom 2 x 4 shall project 1-7/16 in. below bottom chord of truss. See Section A-A for more details.

9B. **Wall Fireblocking Members —** Top and bottom of wall to be effectively fireblocked with one 2 x 4 in. plate at each location. Nom 2 x 4 in. top plate fastened to bottom of wall support members with two 10d nails at each stud. Nom 1 x 4 in. top plate nailed to top of 2 x 4 in. top plate in between each wall support member with two 10d nails spaced 16 in. OC and located between wood studs (Item 9C). See Section A-A for more details.

9C. **Wall Studs —** Min nom 2 x 4 in. studs spaced max 16 in. OC. Studs attached to 2 x 4 in. top and bottom plates with two No. 8 by 3 in. long wood screws or two10d nails located at top and bottom of each stud. See Section A-A for more details.

9D. **Batts and Blankets* —** (Optional, Not Shown) - Max 3-1/2 in. thickness of unfaced glass fiber insulation friction fit into the cavity. Max width of insulation to be 15 in. Any glass fiber insulation bearing the UL Classification Marking for Surface Burning Characteristics and/or Fire Resistance and having a min density of 0.5 pcf may be used.

See **Batts and Blankets** (BKNV) category in the Building Materials Directory or **Batts and Blankets** (BZJZ) category in the Fire Resistance Directory for names of manufacturers.

9E. **Gypsum Board —** One layer of nom 1/2 in. thick by 48 in. wide board, installed vertically or horizontally. Gypsum board secured to the wood studs (Item 8C) using 1-1/4 in. long Type S bugle-head screws. Screws spaced a max of 8 in. OC along joints and in the field. Screws located a min of 1/2 in. from side and end joints. Vertical joints located over studs. Top of gypsum board to fit tightly against gypsum board of the ceiling.

9F. **Finishing System (Not Shown) —** Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of the gypsum board.

10. **Discrete Products Installed in Air-handling Spaces* —** — Automatic Balancing Valve/Damper (Not Shown - Optional) — For use with item 4A. Valve/Damper to be provided with ducted installation with steel duct per damper manufacturer's instructions. Automatic Balancing Valve/Damper shall be installed within duct such that it is not directly above the ceiling radiation damper.

METAL INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

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

Last Updated on 2020-05-08