



ICC-ES Evaluation Report ESR-2540

Reissued August 2023

This report is subject to renewal August 2025.

DIVISION: 03 00 00—CONCRETE
Section: 03 54 00—Cementitious Underlayment

REPORT HOLDER:

MAXXON CORPORATION

EVALUATION SUBJECT:

MAXXON GYPSUM CONCRETE UNDERLAYMENTS: GYP-CRETE® BASIC, GYP-CRETE® 2000 MULTIFAMILY, GYP-CRETE® RADIANT, GYP-CRETE® HIGH PERFORMANCE, RAPID FLOOR® BASIC, RAPID FLOOR® MULTIFAMILY, RAPID FLOOR® RADIANT; MAXXON CEMENTITIOUS UNDERLAYMENTS: COMMERCIAL® PRO LEVEL-RIGHT, COMMERCIAL® PRO LEVEL-CRETE, DEK C-MENT®, COMMERCIAL® GYP-FIX EZ, COMMERCIAL® EZ CRETE, AND COMMERCIAL® LEVEL EZ

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 *International Building Code®* (IBC)
- 2021, 2018, 2015, 2012 and 2009 *International Residential Code®* (IRC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Sound transmission
- Fire-resistance-rated construction

2.0 USES

Maxxon Gypsum Concrete Underlayments are used as floor toppings and floor leveling agents. The underlayments are used in fire-resistance-rated floor/ceiling assemblies in accordance with IBC Section 703 and IRC Section R302 when installed in accordance with Section 4.1. The underlayments are used in sound-transmission-rated floor/ceiling assemblies in accordance with 2021 and 2018 IBC Section 1206 (2015, 2012, and 2009 IBC Section 1207) and IRC Appendix K when installed and used in accordance with Section 4.2.

Gyp-Crete® Radiant and Rapid Floor® Radiant gypsum concrete poured floor underlayments are used in radiant heating applications using embedded hot water tubes or electric heating cables.

3.0 DESCRIPTION

Gyp-Crete® Basic, Gyp-Crete® 2000 Multifamily, Gyp-Crete® Radiant, Gyp-Crete® High Performance, Rapid Floor® Basic, Rapid Floor® Multifamily, Rapid Floor® Radiant, Commercial® Pro Level-Crete, Commercial® Gyp-Fix EZ, and Commercial® EZ Crete are gypsum concrete, poured floor underlayments. Each product may be used for a variety of applications, and mixed in accordance with the manufacturer’s specifications at various densities between 110 pcf to 130 pcf (1762 kg/m³ to 2082 kg/m³) for minimum 28-day compressive strengths between 1000 psi to 7000 psi (6.9 MPa to 48.3 MPa), based on testing in accordance with ASTM C472 or ASTM C109. Gyp-Crete® Radiant and Rapid Floor® Radiant are used in radiant heating applications in both residential and commercial construction. Commercial® Pro Level-Right and Commercial® Level EZ are a self-leveling, cementitious poured floor underlayment that can be used to level concrete or wood subfloors. Dek C-Ment® is a cementitious underlayment for interior and exterior use on floors supported by code-complying wood frame, steel deck and concrete construction. The shelf-life information is included in the material specification sheets distributed to all Maxxon Corporation authorized applicators.

Maxxon underlayments are used with various Maxxon sound mats (see Table 1) and other products, including Maxxon Reinforcement (MR), Maxxon Floor Primer, and Maxxon Acrylic Primer as components of floor/ceiling assemblies.

4.0 INSTALLATION

Maxxon underlayments must be installed in accordance with the manufacturer’s published installation instructions. The underlayments are mixed with locally supplied sand and water on the jobsite and pumped into place by Maxxon Corporation approved installers. The underlayments must have minimum density and compressive strength as specified in Section 3.0 of this report and the manufacturer’s published installation instructions or, when applicable, as specified for the fire-resistance-rated assemblies described in Section 4.1. The underlayments can be installed over the sound mats listed in Table 1.

4.1 Fire-resistance-rated Floor/Ceiling Assemblies:

4.1.1 1-hour and 2-hour Fire-resistance-rated Floor/Ceiling Assemblies: The 1-hour fire-resistance-rated floor/ceiling assemblies shown in Figures 6 through 9, and the 2-hour fire-resistance-rated floor/ceiling assembly

shown in Figure 10, are based on UL designs. When using these assemblies, all details must be in accordance with the specifications contained in the UL *BXUV GuideInfo*.

4.1.2 1-hour Fire-resistance-rated Floor/Ceiling Assemblies Incorporating Wood Joists: Floor assemblies consisting of nominally 2-by-10-inch wood joists spaced 16 inches (406 mm) on center, with a $\frac{5}{8}$ -inch-thick (15.9 mm) Type X gypsum ceiling board fastened with 1-inch (25.4 mm) Type S screws, spaced 12 inches (305 mm) on center to $1\frac{1}{2}$ -inch-wide (38.1 mm), No. 25 gage [0.021 inch (0.538 mm)] resilient channels, which are fastened to each joist with $1\frac{1}{4}$ -inch (31.8 mm) Type W or S screws, a $\frac{5}{8}$ -inch-thick (15.9 mm) plywood subfloor and minimum $\frac{3}{4}$ -inch-thick (19.1 mm) Maxxon underlayment topping and covered with one of the floor coverings as described in items 1 through 6 below, qualify as 1-hour fire-resistance-rated assemblies.

1. Residential high-grade carpet and cushion: 80-ounce-per-square-yard (2.7 kg/m²), 0.97-inch (25 mm) pile carpet and $\frac{9}{16}$ -inch (14.3 mm) solid urethane-foam pad with reflective silver scrim with or without 3-inch-thick (76 mm) fiberglass insulation in the ceiling cavity.
2. Residential medium-grade carpet and cushion: 50-ounce-per-square-yard (1.7 kg/m²), 0.59-inch (15 mm) pile carpet and $\frac{1}{2}$ -inch (12.7 mm) marbled urethane-foam pad with clear scrim with 3-inch-thick (76 mm) fiberglass insulation in the ceiling cavity.
3. Residential low-grade carpet and cushion: 24-ounce-per-square-yard (0.814 kg/m²), 0.25-inch (6.4 mm) pile carpet and $\frac{9}{16}$ -inch (14.3 mm) marbled foam with clear scrim with or without 3-inch-thick (76 mm) fiberglass insulation in the ceiling cavity.
4. Commercial high-grade carpet and cushion: 58-ounce-per-square-yard (1.97 kg/m²), 0.437-inch (11 mm) pile carpet and 0.265-inch (6.7 mm), 5 pcf (80 kg/m³) prime urethane pad with or without 3-inch-thick (76 mm) fiberglass insulation in the ceiling cavity.
5. Commercial medium-grade carpet and cushion: 48-ounce-per-square-yard (1.63 kg/m²), 0.375-inch (9.5 mm) pile carpet and 0.265-inch (6.7 mm), 4 pcf (64 kg/m³) prime urethane pad with or without 3-inch-thick (76 mm) fiberglass insulation in the ceiling cavity.
6. Commercial low-grade carpet and pad: 22-ounce-per-square-yard (0.746 kg/m²), 0.203-inch (5.2 mm) pile carpet and 0.25-inch (6.4 mm) solid yellow urethane pad with 3-inch-thick (76 mm) fiberglass insulation in the ceiling cavity.

4.2 Sound-transmission-rated Floor/Ceiling Assemblies:

The assemblies pictured in Figures 1 through 5, which feature simplified descriptions of the fire-resistance-rated assemblies detailed in Figures 6 through 10, respectively, have a minimum Sound Transmission Class (STC) of 50 and a minimum Impact Isolation Class (IIC) of 50. The manufacturer-specified minimum poured underlayment depth over sound mats is as described in Table 1 for sound rated assemblies. The sound mat shown in Figures 1 through 5 can be removed from the assembly and have the assembly still maintain its sound rating, if carpet and pad are utilized as the floor covering materials. Table 1 identifies the minimum thickness of the underlayment needed if the sound mat is removed.

The assemblies described in Section 4.1.2 are sound-transmission-rated assemblies with a minimum STC of 50 and a minimum IIC of 50.

Care must be taken during the selection and installation of all building components to achieve the stated sound-transmission ratings. Sound flanking paths such as penetrations or openings in construction assemblies must be sealed, lined, insulated, or otherwise treated to maintain the required ratings in accordance with 2021 and 2018 IBC Section 1206 (2015, 2012, and 2009 IBC Section 1207) or IRC Appendix K, as applicable.

4.3 Alternate One-hour Fire-resistance-rated Construction to Double Wood Floor Assembly Shown in 2021, 2018, 2015 and 2012 IBC Table 721.1(3) (2009 IBC Table 720.1(3)) (Footnote m):

As an alternate to the double wood floor, $\frac{5}{8}$ -inch-thick (15.9 mm) plywood subfloor covered with $\frac{3}{4}$ -inch-thick (19.1 mm) underlayment, with one coat of latex bonder applied to the subfloor prior to installation of the underlayment, is acceptable. The latex bonder liquid latex, 48-50 percent solids diluted 1:1 with water, is applied at a rate of 300 square feet per gallon (7.4 m²/L).

Note: Since Footnote n of IBC Table 721.1(3) [2009 IBC Table 720.1(3)] applies to the assembly described in Footnote m of IBC Table 721.1(3) [2009 IBC Table 720.1(3)], they also apply to the alternate assembly described above.

5.0 CONDITIONS OF USE

The underlayments described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the manufacturer's published instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.
- 5.2 Installation is by applicators authorized by Maxxon Corporation.
- 5.3 For the floor coverings specified in Section 4.1, compliance with the applicable requirements of IBC Section 804 is outside the scope of this report.
- 5.4 Use of Maxxon underlayments as components of fire classified roof coverings is outside the scope of this report.

6.0 EVIDENCE SUBMITTED

- 6.1 Product literature and quality documentation.
- 6.2 Report of fire resistance testing, and engineering analysis based on physical properties of the gypsum concrete underlayments.
- 6.3 Reports of sound transmission testing in accordance with ASTM E492, ASTM E90, ASTM E1007, and ASTM E336; and engineering analysis.
- 6.4 Reports of density and compressive strength testing.

7.0 IDENTIFICATION

- 7.1 The bags of underlayment mix are identified with the Maxxon Corporation name, the product name, the manufacturing plant identifier, the date of manufacture, and the evaluation report number (ESR-2540).
- 7.2 The report holder's contact information is the following:

MAXXON CORPORATION
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(763) 478-9600
www.maxxoncorporation.com

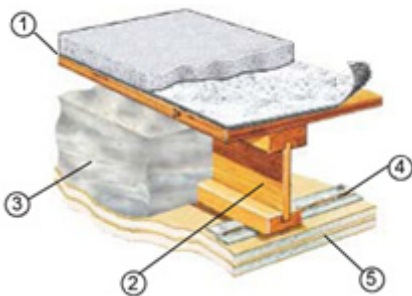
TABLE 1—MINIMUM UNDERLAYMENT DEPTH OVER SOUND MAT¹

SOUND MAT MATERIALS	MINIMUM UNDERLAYMENT DEPTH
Acousti-Mat® 1/8	3/4"
Acousti-Mat® 1/4 or Acousti-Mat® 1/4 Premium	1"
Acousti-Mat® 3/8 or Acousti-Mat® 3/8 Premium	1"
Acousti-Mat® 3/4 or Acousti-Mat® 3/4 Premium (w/ optional reinforcement)	1 1/2"
Acousti-Top®	3/4"
Where no sound mat is installed, minimum depth of underlayment must be as follows:	3/4" over wood, 1" over steel, 1/4" over precast concrete

¹For SI: 1 inch = 25.4 mm.

TABLE 2—FLOOR TOPPING TYPES USED IN ASSEMBLY DESCRIPTIONS

MAXXON STANDARD	MAXXON HIGH STRENGTH	ENCAPSULATED MAT
Gyp-Crete® Basic Gyp-Crete® 2000 Multifamily Gyp-Crete® Radiant Rapid Floor® Basic Rapid Floor® Multifamily Rapid Floor® Radiant	Gyp-Crete® High Performance Commercial® Pro Level-Right Commercial® Pro Level-Crete Dek C-Ment® Commercial® Gyp-Fix EZ Commercial® EZ Crete Commercial® Level EZ	Acousti-Mat® 1/8 Acousti-Mat® 1/4 Acousti-Mat® 1/4 Premium Acousti-Mat® 3/8 Acousti-Mat® 3/8 Premium Acousti-Mat® 3/4 Acousti-Mat® 3/4 Premium Acousti-Top®



1. Flooring system.
 - a. Subflooring topped with Maxxon Standard (any type listed in Table 2) or Maxxon High Strength (any type listed in Table 2) floor topping mixture with optional metal lath, Maxxon Reinforcement, and Encapsulated Mat (any type listed in Table 2).
2. I-Joists.
3. Insulation.
4. Resilient channels.
5. Gypsum board.
6. Finish system (not shown).

FIGURE 1—SOUND RATED ASSEMBLY INCORPORATING I-JOISTS



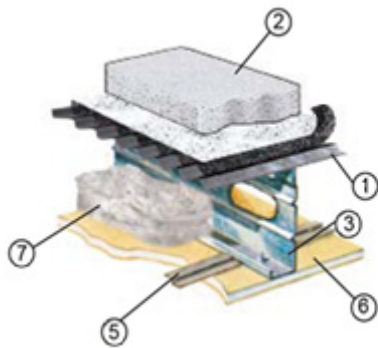
1. Flooring system.
 - a. Subflooring topped with Maxxon Standard (any type listed in Table 2) or Maxxon High Strength (any type listed in Table 2) floor topping mixture with optional metal lath, Maxxon Reinforcement, and Encapsulated Mat (any type listed in Table 2).
2. Trusses.
3. Insulation.
4. Resilient channels.
5. Gypsum board.
6. Finish system (not shown).

FIGURE 2—SOUND RATED ASSEMBLY INCORPORATING TRUSSES



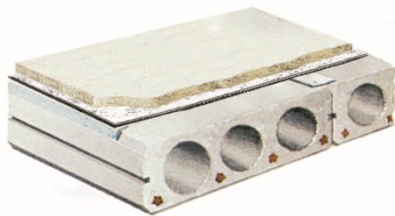
1. Flooring system.
 - a. Subflooring topped with Maxxon Standard (any type listed in Table 2) or Maxxon High Strength (any type listed in Table 2) floor topping mixture with optional metal lath, Maxxon Reinforcement, and Encapsulated Mat (any type listed in Table 2).
2. Cross bridging (not shown).
3. Wood joists.
4. Insulation.
5. Resilient channels.
6. Gypsum board.
7. Battens (not shown).
8. Finish system (not shown).

FIGURE 3—SOUND RATED ASSEMBLY INCORPORATING WOOD JOISTS



1. Steel deck.
2. Floor Subflooring topped with Maxxon Standard (any type listed in Table 2) or Maxxon High Strength (any type listed in Table 2) floor topping mixture with optional metal lath, Maxxon Reinforcement, and Encapsulated Mat (any type listed in Table 2).
3. Steel joists.
4. Joist bridging (not shown).
5. Resilient channels.
6. Gypsum board.
7. Insulation.
8. Finish system (not shown).

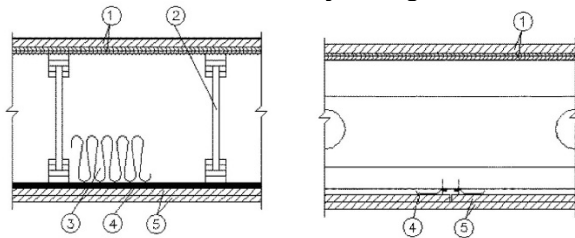
FIGURE 4—SOUND RATED ASSEMBLY INCORPORATING STEEL JOISTS



1. Floor topping.
 - a. Subflooring topped with Maxxon Standard (any type listed in Table 2) or Maxxon High Strength (any type listed in Table 2) floor topping mixture with optional metal lath, Maxxon Reinforcement, and Encapsulated Mat (any type listed in Table 2).
2. Precast concrete units
3. Grouted full length expansion joint.

FIGURE 5—SOUND RATED ASSEMBLY INCORPORATING PRECAST CONCRETE UNITS

Fire Resistance Ratings - ANSI/UL 263 Unrestrained Assembly Rating — 1 Hr.



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

Subflooring — Min 19/32 in. thick T & G wood structural panels installed perpendicular to trusses with joints staggered 4 ft. Plywood or nonveneer APA rated panels secured to trusses with construction adhesive and No. 6d ring shank nails spaced 12 in. OC along each truss. 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.

Finish Flooring* — Floor Topping Mixture — Min 3/4 in. thickness of floor topping mixture depending upon floor mat system as specified above, having a min compressive strength of 1000 psi. Mixture shall consist of 3 to 7 gal of water to 80 lbs of floor topping mixture to 1.0 to 2.1 cu ft of sand.

MAXXON CORP — Type Maxxon Standard and Maxxon High Strength

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding minimum thickness of floor topping over each floor mat material, primers, and use of crack suppression reinforcement.

MAXXON CORP — Type Encapsulated Sound Mat.

Floor Mat Reinforcement — (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional) 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs./sq. yd loose laid over the floor mat material.

2. **Structural Wood Members*** — Min 9-1/2 in. deep "I" shaped wood joists spaced at a max of 19.2 in. OC. Joists shall conform to ICC-ES ESR-1153 Report. Joist top and bottom chords minimum 1-3/8 in. deep by 2.3 in. wide and constructed of either Microllam laminated veneer lumber (LVL) or TimberStrand laminated strand lumber (LSL). Webs constructed of minimum 3/8 in. thick Performance Plus OSB, PS2, Exposure 1. Installation shall be in accordance with manufacturers published literature. Spacing may be increased to 24 in. OC when Batts and Blankets* (Item 3B) is used.

3. **Insulation - Batts and Blankets*** — (Optional) — Glass fiber insulation, secured to the subflooring with staples, or to the wood joists with 0.090 in. diam galv steel wires, or draped over the resilient channel/gypsum panel (or Steel Framing Members/gypsum panel) ceiling membrane. Any thickness of glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.

3A. **Insulation - Loose Fill Material*** — As an alternate to Item 3 — Any thickness of loose fill material bearing the UL Classification Marking for Surface Burning Characteristics, applied within the concealed space, over the resilient or furring channel/gypsum panel or Steel Framing Members/gypsum panel ceiling membrane.

3B. **Insulation - Batts and Blankets*** — (For Use When **Structural Wood Members*** are spaced 24 in OC) — Min. 1 in. thick glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance draped over the resilient channel/gypsum panel (or Steel Framing Members/gypsum panel) ceiling membrane.

4. **Furring Channels** — Resilient channels formed of 25 MSG thick galv steel. Installed perpendicular to the joists, spaced a max of 24 in. OC when no insulation is fitted in the concealed space, or 16 in. OC

when insulation is fitted in the concealed space. Two courses of resilient channel positioned 6 in. OC at gypsum panel butt-joints (3 in. from each end of wallboard). Channels oriented opposite at gypsum panel butt-joints. Channel splices overlapped 4 in. beneath wood trusses. Channels secured to each truss with 1-1/4 in. long Type S screws.

4A. **Alternate Steel Framing Members** — (Not Shown) — As an alternate to Item 4, main runners, cross tees, cross channels and wall angle as listed below.

a. **Main Runners** — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires wrapped and twist-tied on 16d nails driven in to side of joists at least 5 in. above the bottom face.

b. **Cross Tees** — Nom 4 ft long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tees or cross channels used at 8 in. from each side of butted gypsum panel end joints. The cross tees or cross channels may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

c. **Cross Channels** — Nom 4 or 12 ft long, installed perpendicular to main runners, spaced 16 in. OC. When Batts and Blankets (Item 5) are used, cross channels spaced 16 in. OC.

d. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panels.

CGC INC — Type DGL or RX

USG INTERIORS LLC — Type DGL or RX

4B. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 4 and 4A, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to joists. Channels secured to joists 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 the wood joists (Item 2). When wood joists are spaced 19.2 in. OC, clips spaced a max of 38.4 in. OC. When wood joists are spaced 16 or 24 in. OC, clips spaced a max of 48 in. OC. Clips secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 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 #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 5.

PAC INTERNATIONAL LLC — Types RSIC-1, RSIC-1 (2.75)

4C. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to Items 4, 4A, and 4B, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC, perpendicular to joists. When insulation, Items 3, 3A, or 3B is used, the furring channel spacing shall be reduced to 16 in. OC. Channels secured to joists 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 the wood joists (Item 2). When wood joists are spaced 19.2 in. OC, clips spaced a max of 38.4 in. OC. When wood joists are spaced 16 or 24 in. OC, clips spaced a max of

48 in. OC. Genie Clips secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 5.

PLITEQ INC — Type Genie Clip

4D. Alternate Steel Framing Members* — (Not Shown) — As an alternate to Items 4-4B, furring channels and Steel Framing Members as described below.

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in. deep, spaced 24 in OC, perpendicular to joists. When insulation, Items 3, 3A, or 3B is used, the furring channel spacing shall be reduced to 16 in. OC. Channels secured to joists as described in Item b.

b. Steel Framing Members* — Used to attach furring channels (Item a) to the wood joists (Item 2). When wood joists are spaced 19.2 in. OC, clips spaced a max of 38.4 in. OC. When wood joists are spaced 16 or 24 in. OC, clips spaced at 48" OC and secured to the bottom of every joist with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 5.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

4E. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 4.

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 4, perpendicular to the joists. 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 positioned 3 in. OC, 1-1/2 in. on each side of gypsum board (Item 5) end joints, 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 joists, friction- fitted into the channel caddy on the Steel Framing Members (Item 4Ec) 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. Steel Framing Members* — Spaced 48 in. OC. max along joist, and secured to the joist on alternating joists with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.

PAC INTERNATIONAL LLC — Type RSIC-SI-CRC EZ Clip

4F. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 4.

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 4, perpendicular to joists and friction fit into Steel Framing Members (Item 4Fb). 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 positioned 6 in. OC, 3 in. on each side of gypsum board (Item 5) end joints. 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. Steel Framing Members* — Used to attach furring channels (Item 4Fa) to joists. Clips spaced 48 in. OC and secured along joist 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 LLC — Type RSIC-S1-1 Ultra

4G. Steel Framing Members* — (Optional - Not Shown) — Used to attach resilient channels (Item 4) to joists (Item 2). Clips spaced 48 in. OC and secured to joists with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 1-1/2 in. from the butt joint on either side. One edge of the extra channels will extend to an adjacent joist where it is secured with a clip.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

4H. Steel Framing Members* — (Not Shown) As an alternate to Item 4, 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 4. Channels secured to joists 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 joists (Item 2). Clips spaced 48 in. OC. RSIC-1 clips secured to alternating joists 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 LLC — Type RSIC-1

4I. Steel Framing Members* — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to structural members. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 19.2 in. O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the structural members with the screws supplied with the accessory and per the accessory manufacturer's installation instructions. Gypsum Board butt joints staggered minimum 24 in. OC and Gypsum Board screws spaced 8 in. OC (in lieu of 16 in.) when used.

PAC INTERNATIONAL LLC — Type RC-1 Boost

5. Gypsum Board* — Two layers of 1/2 in. or 5/8 in. thick by 4 ft wide gypsum panels, installed perpendicular to resilient channels (Item 4). The base layer of panels screw-attached to the resilient channels with 1 in. long Type S screws spaced 8 in. OC at the butt joints and 16 in. OC in the field of the panel. The face layer screw-attached to the resilient channels with 1-5/8 in. Type S screws spaced 8 in. OC and 1-1/2 in. Type G screws spaced 8 in. OC at the butt joints located mid-span between resilient channels. When **Steel Framing Members (Item 4A)** are used, gypsum board installed with long dimension perpendicular to cross tees. The base layer of panels fastened to cross tees with 1 in. long Type S screws spaced 8 in. OC at the butt joints and 16 in. OC in the field of the panel. The face layer screw-attached to the cross tees with 1-5/8 in. Type S screws spaced 8 in. OC and 1-1/2 in. Type G screws spaced 8 in. OC at the butt joints located mid-span between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 4 ft OC. When **Steel Framing Members (Item 4B)** are used, panels installed with long dimension parallel with joists. Base layer attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the panels. Butted end joints shall be staggered min. 2

ft. within the assembly, and occur midway between the continuous furring channels. Each end of the gypsum panels shall be supported by a single length of furring channel equal to the width of the panel plus 6 in. on each end. The furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the joist with one RSIC-1 clip at each end of the channel. Butted base layer end joints to be offset a minimum of 24 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle-head steel screws spaced 8 in. OC at butted joints and 12 in. OC in the field. Butted end joints to be offset min 12 in. from base layer end joints. Butted side joints of outer layer to be offset min 12 in. from butted side joints of base layer. When **Steel Framing Members (Item 4C)** are used, panels installed with long dimension parallel with joists. Base layer attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the panels. Butted end joints shall be staggered min. 2 ft. within the assembly, and occur midway between the continuous furring channels. Each end of the gypsum panels shall be supported by a single length of furring channel equal to the width of the panel plus 6 in. on each end. The furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the joist with one Genie clip at each end of the channel. Butted base layer end joints to be offset a minimum of 24 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle-head steel screws spaced 8 in. OC at butted joints and 12 in. OC in the field. Butted end joints to be offset min 12 in. from base layer end joints. Butted side joints of outer layer to be offset min 12 in. from butted side joints of base layer. When **Steel Framing Members (Item 4D)** are used, base layer is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the a fore mentioned 3 in. extension of the extra butt joint

channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle-head steel screws spaced 8 in. OC at butted joints and 12 in. OC in the field. Butted end joints to be offset min 12 in. from base layer end joints. Butted side joints of outer layer to be offset min 12 in. from butted side joints of base layer. When **Steel Framing Members (Item 4E)** are used, Two layers of 1/2 in. or 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 5. Adjacent butt joints staggered minimum 48 in. OC. When **Steel Framing Members (Item 4F)** are used, Two layers of 1/2 in. or 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 5. Butt joints staggered minimum 24 in. OC. When **Steel Framing Members (Item 4H)** 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. Outer layer attached as described in Item 5.

AMERICAN GYPSUM CO — 1/2 in. Type AG-C, 5/8 in. Types AGX-1, AG-C or LightRoc

CGC INC — 1/2 in. Type C, IP-X2, IPC-AR; 5/8 in. Type C, SCX, IP-X1, IP-X2, ULIX

GEORGIA-PACIFIC GYPSUM LLC — Types 5, DAPC, TG-C

UNITED STATES GYPSUM CO — 1/2 in. Type C, IP-X2, IPC-AR; 5/8 in. Type C, SCX, IP-X1, IP-X2, ULIX

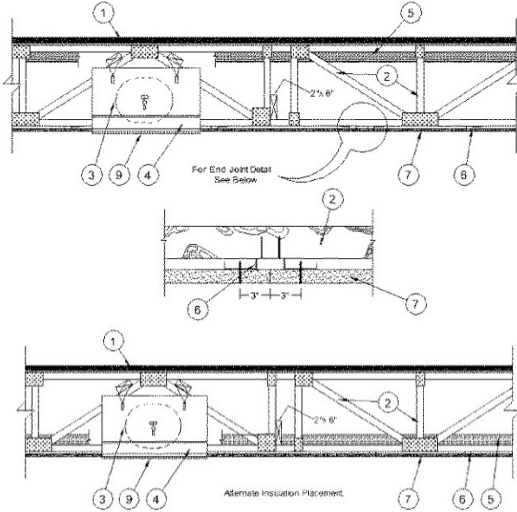
USG MEXICO S A DE C V — 1/2 in. Type C, IP-X2, IPC-AR; 5/8 in. Type C, SCX, IP-X1, IP-X2

6. Finishing System — Fiber tape embedded in compound over joints and exposed nail heads, covered with compound with edges of compound feathered out. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of classified veneer baseboard. Joints reinforced.

*Bearing the UL Classification Mark

FIGURE 6—1-HOUR FLOOR/CEILING ASSEMBLY INCORPORATING WOOD I-JOISTS

**Fire Resistance Ratings - ANSI/UL 263
Unrestrained Assembly Rating — 1 Hr.
Finish Rating — 24 or 25 Min (See Item 5)**



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

Subflooring — Min 15/32 or 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Flooring - Floor Topping Mixture* — Min 3/4 thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat

Floor Mat Reinforcement — (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement — (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

Alternate Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Alternate Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM LLC — Type DS

Alternate Floor Mat Materials* — (As an alternate to the single layer gypsum board) — Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat

Alternate Gypsum Board* — (For use when floor mat is used) Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be

staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L C — Type DS

2. Trusses — Parallel chord trusses spaced a max of 24 in. OC fabricated from nominal 2 by 4 lumber, with lumber oriented vertically or horizontally. Minimum truss depth is 12 in. when dampers are not used and 18 in. when dampers are used. Truss members secured together with minimum 0.036 in. thick galvanized 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 with these points being diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approximately 7/8 in. centers with four rows of teeth per inch of plate width.

3. Air Duct* (Optional) — Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer

4. Ceiling Damper* - (Optional. To be used with Air Duct Item 3.) — For use with min 18 in. deep trusses. Max nom area shall be 324 sq in. Max square size shall be 18 in. by 18 in. Rectangular sizes not to exceed 324 sq in. with a max width of 18 in. Max height of damper shall be 14 in. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521

POTTORFF — Model CFD-521

4A. Alternate Ceiling Damper* — For use with min 18 in. deep trusses. Max nom area shall be 196 sq in. Max square size shall be 14 in. by 14 in. Rectangular sizes not to exceed 196 sq in. with a max width of 26 in. Max height of damper shall be 7 in. Aggregate damper openings shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) not to exceed 144 in.² shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-BT

POTTORFF — Model CFD-521-BT.

4B. Alternate Ceiling Damper* — (Optional. To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max nom area shall be 256 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 17 in. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-IP, RD-521-NP

POTTORFF — Models CFD-521-IP, CFD-521-NP

4C. Alternate Ceiling Damper* — For use with min 18 in. deep trusses. Max nom area shall be 144 sq in. with the length not to exceed 14 in. and the width not to exceed 12 in. Max height of damper shall be 17-7/8 in. Aggregate damper openings shall not exceed 74 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 9) shall be installed in accordance with installation instructions.

C&S AIR PRODUCTS — Model RD-521-90, RD-521-NP90

POTTORFF — Models CFD-521-90, CFD-521-90NP

4D. Alternate Ceiling Damper* — For use with min. 18 in. deep trusses. Max. nom area shall be 349 sq in. Max. overall length and width shall not exceed 18-11/16 in. by 18-11/16 in. with max. 16 in. by 16 in. register opening. Aggregate damper openings shall not exceed 175 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions

provided with the damper. An aluminum or steel grille (Item 9) shall be installed in accordance with installation instructions.

MIAMI TECH INC — Model Series RxCRD, RxCRDS or RxCRPD

4E. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 75 sq in.

with the length not to exceed 8-9/16 in. and the width not to exceed 8-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 38 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

DELTA ELECTRONICS INC — Models CRD2, GBR-CRD, ITG-CRD

4F. Alternate Ceiling Damper* — For use with min 18 in. deep trusses. Max nom area shall be 324 sq in. Max square size shall be 18 in. by 18 in. Rectangular sizes not to exceed 324 sq in. with a max length of 20 in. and a max width of 22 in. Max height of damper

shall be 14 in. Aggregate damper openings shall not exceed 154 sq in. per 100 sq ft of ceiling area. Damper installed in accordance

with the manufacturer's installation instructions provided with the damper. An aluminum or steel grille (Item 9) shall be installed in accordance with installation instructions.

UNITED ENERTECH CORP — Type C-S/R-WT or C-S/R-WTP (Max nom area 324 sq. in.) or C-S/R-WTS or C-S/R-WTPS (Max nom area 162 sq. in.)

4G. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 75 sq in. with the length not to exceed 9-1/4 in. and the width not to exceed 9-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 45 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

DELTA ELECTRONICS INC — Model SIG-CRD

4H. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 131 sq in. with the length not to exceed 11-1/16 in. and the width not to exceed 11-7/8 in. Aggregate damper openings shall not exceed 66 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

DELTA ELECTRONICS INC — Model SMT-CRD

4I. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 103 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 10-1/8 in. Aggregate damper openings shall not exceed 52 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05C5

4J. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 113 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 11-1/8 in. Aggregate damper openings shall not exceed 57 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

BROAN-NUTONE LLC — Model RDFUWT

4K. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 79 sq in. with the length not to exceed 10 in. and the width not to exceed 7-15/16 in. Aggregate damper openings shall not exceed 40 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A metallic grille (Item 9) shall be installed in accordance with installation instructions.

BROAN-NUTONE LLC — Models RDJ1 and RDH

4L. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

BROAN-NUTONE LLC — Model RDMWT

4M. Alternate Ceiling Damper* — Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 9) shall be installed in accordance with installation instructions.

BROAN-NUTONE LLC — Model RDMWT2

4N. Alternate Ceiling Damper* — (Optional, To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max nom 21 in. long by 18 in. wide, fabricated from galvanized steel. Plenum box max size nom 21 in. long by 18 in. wide by 14 in. high (inner

dimension) fabricated from either galvanized steel or min 1 in. thick Listed Duct Board bearing the UL Listing Marking having a min R-

Value of 4.3. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-1WT

4O. Alternate Ceiling Damper* — (Optional, To be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max nom 12 in. long by 12 in. wide with an 8 in. diameter damper, fabricated from galvanized steel. Installed in accordance with the instructions

provided by the manufacturer. Max damper openings not to exceed 72 sq in. per 100 sq ft of ceiling area. .

GREENHECK FAN CORP — Model CRD-2WT

4P. Alternate Ceiling Damper* — (Optional, To be used with Air Duct, Item 3) — For use with min 18 in. deep trusses. Max nom 18 in. long by 18 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 162 sq in. per 100 sq ft of ceiling area.

RUSKIN COMPANY — Model CFD7T, CFD7T-END-BT, CFD7T-90-BT, CFD7T-ST-BT, CFD7T-SB, CFD7T-R6-DB, or CFD7T-IB6

4Q. Alternate Ceiling Damper* — (Optional, To be used with Air Duct, Item 3) — For use with min 18 in. deep trusses. Max 8 in.

diameter damper, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 25 sq in. per 100 sq ft of ceiling area.

RUSKIN COMPANY — Model CFDR7T

4R. Alternate Ceiling Damper* — (Optional, to be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max nom 11-1/8 in. long by 13-5/8 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the

manufacturer. Max damper openings not to exceed 76 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-310WT

4S. Damper* — (Optional, to be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max nom 12-3/8 in. long by 14-1/2 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 90 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-320WT

4T. Alternate Ceiling Damper* — (Optional, to be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max 12 in. diameter damper within max 15 in. by 15 in. register box with max 12 in. by 12 in. register opening fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 72 sq. in. per 100 sq. ft. of ceiling area.

Damper assembly installed in accordance with the manufacturer's installation instructions.

RUSKIN COMPANY — Model CFD7T-SR

4U. Alternate Ceiling Damper* - (Optional, to be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Maximum 20 in. long by 18 in. wide by 2-1/8 in. high, fabricated from galvanized steel. Plenum box maximum size nom. 21 in. long by 18 in. wide by 16 in. high fabricated from either galvanized steel or Classified Air Duct Materials bearing the UL Class 0 or Class 1 rigid air duct material. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.

NAILOR INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DFP, 0763

SAFE AIR DOWCO — 0455, 0455A, 0456, 0456D, 0457, 0457D, 0457-DB, 0457-CB, 0463-FB, 0463-EB, 0463-GB, 0463

4V. Alternate Ceiling Damper* — (Optional, to be used with Air Duct Item 3) — For use with min 18 in. deep trusses. Max nom 10-3/8 in. long by 10-3/8 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 54 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-300WT

5. Batts and Blankets* - (Optional With Items 7 and 7B; Required With Item 7A) — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. When the resilient channels (Item 6) or furring channels (Item 6A) 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 (Item 6) or furring channels (Item 6A) are spaced a max of 12 in. OC or when the Steel Framing Members (Item 6B) are used, 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 or furring channels (or Steel Framing Members) and gypsum panel membrane. When **Steel Framing Members** (Item 6C) are used, max 3-1/2 in. thick insulation shall be draped over the furring channels (Item 6Ca) and gypsum board ceiling membrane, and friction-fitted between trusses and Steel Framing Members (Item 6Cd). The finished rating has only been determined when the insulation is secured to the subflooring.

5A. Fiber, Sprayed* — (Dry Dense Packed 100% Borate Formulation) — As an alternate to Item 5 — When used, the resilient channel and gypsum board attachment is modified as specified in Items 6 and 7 and wire mesh (Item 10) shall be attached to the furring channels to facilitate installation of the material. The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft³, in accordance with the application instructions supplied with the product. When Item 5A (Fiber, Sprayed) is used, two layers of gypsum board required as described in Item 7. Not evaluated for use with Item 6B, 6C or 6D.

U S GREENFIBER LLC — INS735, INS745, INS765LD & INS770LD to be used with dry application only.

5B. Fiber, Sprayed* — (Loose Fill 100% Borate Formulation) — As an alternate to Items 5 and 5A — The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a minimum dry density of 0.5 lb/ft³ and at a max thickness of 3-1/2 in., in accordance with the application instructions supplied with the product. Wire mesh (Item 10) shall be attached to the furring channels to facilitate installation of the material. When Item 5B (Fiber, Sprayed) is used, two layers of gypsum board required as described in Item 7. Not evaluated for use with Item 6B, 6C or 6D.

U S GREENFIBER LLC — INS735, INS745, INS765LD & INS770LD to be used with dry application only.

6. Resilient Channels — Resilient channels, formed of 25 MSG thick galv steel, spaced 16 in. OC perpendicular to trusses. When insulation (Items 5, 5A, 5B) is draped over the resilient channel/gypsum board ceiling membrane, the spacing shall be reduced to 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 board end joint as shown in the above illustration. Additional channels shall extend 6 in beyond each side edge of board.

6A. Steel Framing Members* — (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. or 2-23/32 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to trusses. When batt insulation (Items 5) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC. 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 and RSIC-1 (2.75) clips secured to alternating trusses with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-Si-X secured with No. 10 x 3-1/2 in. screws. RSIC-V and RSIC-V (2.75) clips secured to alternating trusses with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. RSIC-1, RSIC-Si-X, and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 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. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.

PAC INTERNATIONAL LLC — Types RSIC-1, RSIC-V, RSIC-Si-X, RSIC-1 (2.75), RSIC-V (2.75).

6B. Alternate Steel Framing Members — (Not Shown) — As an alternate to Items 6 and 6A, main runners, cross tees, cross channels and wall angle as listed below.

a. Main Runners — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires wrapped and twist-tied on 16d nails driven in to side of trusses at least 5 in. above the bottom face.

b. Cross Tees or Channels — Nom 4 ft long cross tees, with 15/16 in. or 1-1/2 in. wide face, or nom 4 ft long cross channels, with 1- 1/2 in. wide face, either spaced 16 in. OC, installed perpendicular to the main runners. Additional cross tees or channels used 8 in. from each side of butted gypsum board end joints. The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

c. Wall Angle or Channel — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.

CGC INC — Type DGL or RX.

USG INTERIORS LLC — Type DGL or RX.

6C. Steel Framing Members* — (Not Shown) — As an alternate to Items 6, 6A and 6B.

a. Furring Channels — Hat-shaped furring channels, 7/8 in. deep by 2-5/8 in. wide at the base and 1-1/4 in. wide at the face, formed from No. 25 ga. galv steel, spaced max. 16 in. OC perpendicular to trusses and Cold Rolled Channels (Item 6Cb). Furring channels secured to Cold Rolled Channels at every intersection with a 1/2 in. pan head self-drilling screw through each furring channel leg. Ends of adjoining channels overlapped 4 in. and tied together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap. Supplemental furring channels at base layer and outer layer gypsum board butt joints are not required. Batts and Blankets draped over furring channels as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 7.

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 6Cd). Adjoining lengths of cold rolled channels lapped min. 6 in. 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. 6 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the truss (Item 2) at the top and bottom of the blocking at each Steel Framing Member (Item 6Cd) location.

d. **Steel Framing Members*** — Hangers spaced 48 in. OC. max along truss, and secured to the Blocking (Item 6Cc) on alternating trusses with a single 5/16 in. by 2 in. hex head lag bolt or four #6 1-1/4 in. drywall screws through mounting hole(s) on the hanger bracket. The two 1/4 in. long steel teeth on the hanger are embedded in the side of the blocking. Hanger positioned on blocking and leveling bolt height adjusted such that furring channels are flush with bottom of trusses before gypsum board installation. Spring gauge of hanger chosen per manufacturer's instructions.

KINETICS NOISE CONTROL INC — Type ICW.

6D. **Steel Framing Members*** — (Not Shown) — As an alternate to Items 6, 6A, 6B and 6C.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to wood structural members. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the furring channel spacing shall be reduced to 12 in. OC. 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 AWG 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, and secured to the bottom chord of alternating trusses with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. When insulation, Items 5 or 5A is applied over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 24 in. OC and secured to consecutive trusses. Furring channels are friction fitted into clips. 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. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7. Two layers of gypsum board required as described in Item 7. Not evaluated for use with Item 5B.

KINETICS NOISE CONTROL INC — Type Isomax.

6E. **Steel Framing Members*** — (Optional, Not Shown) — Used as an alternate method to attach min. 1/2 in. deep resilient channels (Item 6) to wood trusses (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the bottom chord of each wood truss with a min. 1-3/4 in. long Type S bugle head steel screw through the center hole of the clip and the resilient channel flange. Adjoining resilient channels are overlapped 4 in. under trusses. The clip flange is opened slightly to accommodate the two overlapped channels. Additional clips required to hold resilient channel that supports the gypsum board butt joints, as described in Item 7.

KEENE BUILDING PRODUCTS CO INC — Type RC Assurance.

6F. **Steel Framing Members** — (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, 2-3/8 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to trusses. When batt insulation (Items 5) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC. 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. GenieClips secured to alternating joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. When insulation, Items 5 is applied over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 24 in. OC and secured to consecutive trusses. Furring channels are friction fitted into clips. 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. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7. Not evaluated for use with Item 5A or 5B.

PLITEQ INC — Type GENIECLIP

6G. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to items 6-6F, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to trusses. When batt insulation (Items 5) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the joists with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in item 7B.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

6H. **Alternate Steel Framing Members*** — (Not Shown) — As an alternate to items 6-6G, furring channels and Steel Framing Members as described below.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-1/2 in. wide by 7/8 in. deep, spaced 16 in. OC, perpendicular to trusses. When batt insulation (Items 5) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC. Channels secured to trusses as described in Item b.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the trusses with one 2-1/2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in item 7B.

REGUPOL AMERICA — Type SonusClip

6I. **Resilient Channels** — For Use With Item 7C - 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 5C is applied over the resilient channel/gypsum panel ceiling membrane.

6J. **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 6Jd) 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 6Jd) 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 LLC — Type RSIC-SI-CRC EZ Clip

6K. **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 6Kc). 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 6Kc) location with 16d nails or minimum 2-1/2 in. screws.

c. **Steel Framing Members*** — Used to attach furring channels (Item 6Ka) 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 LLC — Type RSIC-S1-1 Ultra

6L. **Steel Framing Members*** — (Optional - Not Shown) — Used to attach resilient channels (Item 6) to trusses (Item 2). Clips spaced 48 in. OC and secured to trusses with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 1-1/2 in. from the butt joint on either side. One edge of the extra channels will extend to an adjacent truss where it is secured with a clip.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

6M. **Steel Framing Members*** — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to structural members. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 24 in.

O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum

board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the structural members with the screws supplied with the accessory and per the accessory manufacturer's installation instructions. Gypsum Board butt joints staggered minimum 24 in. OC and Gypsum Board screws spaced 8 in. OC when used.

PAC INTERNATIONAL LLC — Type RC-1 Boost

6N. **Resilient Channels** — For use with American Gypsum Co. Type AG-C gypsum board only. Resilient channels, formed of 25 MSG thick galv steel, spaced 16 in. OC perpendicular to trusses. When insulation (Items 5, 5A, 5B) is applied over the resilient channel/gypsum board ceiling membrane, the spacing may remain at 16 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 board end joint as shown in the above illustration. Additional channels shall extend 6 in beyond each side edge of board.

6O. **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. 2-23/32 in. wide by 7/8 in. When there is no insulation installed in the concealed space the furring channels are spaced 24 in. OC max perpendicular to trusses. When insulation (Item 5) is secured to the underside of the subfloor the furring channels are spaced 16 in. OC max. When insulation (Item 5) is applied over the furring channel/gypsum panel ceiling membrane, the furring channels are spaced 12 in. OC max. Channels secured to trusses as described in Item 6Ob. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 7.

b. **Steel Framing Members*** — Used to attach furring channels (Item 6Oa) to trusses (Item 2). Clips spaced 48 in. OC max with No. 8 x 2- 1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clips

7. **Gypsum Board*** — Nom 5/8 in. thick, 48 in. wide gypsum board. When resilient channels (Item 6) are used, gypsum board installed with long dimension perpendicular to resilient channels. Gypsum board secured with 1 in. long Type S bugle head screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from end joints. End joints secured to both resilient channels as shown in end joint detail. When batt insulation (Item 5) is draped over the resilient channel/gypsum board ceiling membrane, screws spacing shall be 8 in. OC. **When Steel Framing Members* (Item 6A, 6F, 6O)** are used, gypsum board installed with long dimension perpendicular to furring channels and side joints of sheet located beneath joists. Gypsum board secured to furring channels with 1 in. long Type S bugle head screws spaced 12 in. OC in the field. Butted end joints shall be staggered min 2 ft within the assembly, and occur between the continuous furring channels. At butted end joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two furring channels shall be spaced approximately 3-1/2 in. OC and be attached to underside of the joist with one clip at each end of the channel. Screw spacing along the end joint shall be 8 in. OC. **When Steel Framing Members (Item 6J)** 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 6K)** 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.

AMERICAN GYPSUM CO — Type AG-C

CGC INC — Types C, IP-X2, IPC-AR

CERTAINTED GYPSUM INC — Type LGFC-C/A

GERTIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C

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

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

7A. Gypsum Board* — Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to resilient channels. Gypsum board secured with 1-1/8 in. long Type S bugle head screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. End joints secured to both resilient channels as shown in end joint detail. When Item 7A is used, the insulation must be used and must be draped over the resilient channel/gypsum board.

NATIONAL GYPSUM CO — Types eXP-C, FSW-G, FSW-C, FSK-G, FSK-C

7B. Gypsum Board* — Nom 5/8 in. thick, 48 in. wide gypsum panels. When resilient channels (Item 6) are used, gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. When insulation (Items 5 or 5A) is applied over the resilient channel/gypsum panel ceiling membrane screw spacing shall be reduced to 8 in. OC. End joints secured to both resilient channels as shown in end joint detail. When **Steel Framing Members (Item 6A, 6O)** 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 to underside of the truss with one clip at each end of the channel. When **Steel Framing Members* (Item 6B)** are used, gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Panels fastened to cross tees with 1 in. long Type S bugle-head screws spaced in the field and 8 in. OC along end joints. Panels fastened to main runners with 1 in. long Type S bugle-head screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 4 2 ft OC. When **Fiber, Sprayed (Items 5A or 5B)** is used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels. Base layer gypsum board secured with 1 in. long Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. End joints secured to both resilient channels as shown in end joint detail. Outer layer gypsum board secured with 1-5/8 in. long Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Outer layer shall be finished as described in Item 8. When both **Steel Framing Members (Item 6A) and Fiber, Sprayed (Items 5A or 5B)** are used, furring channels spaced 12 in. OC and two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimension perpendicular to furring channels. Base layer secured to furring channels with nom 1 in. long Type S bugle head screws spaced 8 in. OC along butted end joints and in the field of the board. 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 board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two support furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the underside of the truss with one clip at each end of the channel. Outer layer secured to furring channels using 1-5/8 in. long Type S screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min. of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min. 18 in. from butted side joints of base layer. When **Steel Framing Members (Item 6C)** are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels (Item 6Ca). Base layer attached to the furring channels using 1 in. long Type S bugle head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. Butted end joints centered on the continuous furring channels. Butted base layer end joints to be offset a min of 16 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints centered on the continuous furring channels and offset a min of 16 in.

from butted end joints of base layer. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer. When **Steel Framing Members (Item 6D)** are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels. Base layer attached to the furring channels using 1 in. long Type S bugle-head steel screws spaced 12 in. OC in the field of the board. 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 board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two furring channels shall be spaced approximately 4 in. OC, and be attached to underside of the truss with one Isomax clip at each end of the channel. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle-head steel screws spaced 12 in. OC in the field. The end of the outer layer boards at the butt joint shall be attached to the base layer boards with 1-5/8 in. long Type G screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min 18 in. from butted side joints of base layer. Outer layer shall be finished as described in Item 8. When **Steel Framing Members (Item 6F)** are used, two layers of nom 5/8 in. thick, 4 ft wide are installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels using 1 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Butted end joints shall be staggered minimum 2 ft. within the assembly. Additional furring channels constructed as per Item 6F shall be used to support each end of each gypsum board. These additional furring channels shall be attached to underside of the truss with Genie clips as described in Item 6F. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field. The outer layer boards at the butt joint shall be attached to the base layer boards with No. 10, 1-1/2 in. long drywall screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 24 in. from base layer end joints. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer. When **Steel Framing Members (Item 6G)** are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the a fore mentioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel. When **Steel Framing Members (Item 6H)** are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, an additional single length of furring channel shall be installed and be spaced approximately 3 in. from the butt joint (6 in. from the continuous furring channels) to support the floating end of the gypsum board. Each of these shorter sections of furring channel shall extend one truss beyond the width of the gypsum panel and be attached to the adjacent trusses with one SonusClip at every truss involved with the butt joint.

CERTAINTED GYPSUM INC — Type C

CGC INC — Types C, IP-X2, IPC-AR

CERTAINTED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM LLC — Types 5, DAPC, TG-C

PABCO BUILDING PRODUCTS LLC, DBA PABCO GYPSUM — Type C

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

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

7C. **Gypsum Board*** — (As an alternative to Items 7 and 7B, For use with Items 5C and 6I) — Nom 5/8 in. thick, 48 in. wide gypsum

board, installed and secured as described in Items 7 and 7B but with max screw spacing 8 in. OC. When used with insulation (Batts and Blankets* or Fiber Sprayed*) that is installed over the resilient channel/Gypsum Board* ceiling membrane, the resilient channels may remain at 16 in. OC and not need to be reduced to 12 in. OC.

CGC INC — Type ULIX

UNITED STATES GYPSUM CO — 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 gypsum board.

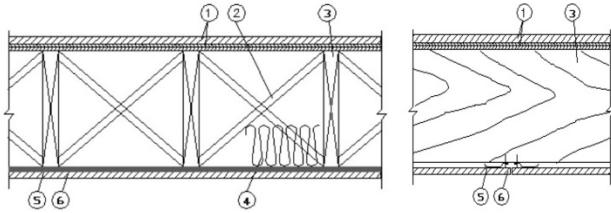
9. **Grille** — Grille, installed in accordance with the installation instructions provided with the ceiling damper.

10. **Wire Mesh** — (Not shown) — For use with Item 5A and 5B — 1 in. 20 gauge galvanized poultry netting installed between the furring channels and gypsum board. The poultry netting is attached with washers and 1/2 in. wafer head screws, spaced 24 in. OC., to the furring channels. The **Fiber, Sprayed (Item 5A or 5B)** is installed through cut-openings in the poultry netting, in-between trusses. The cut-openings in the poultry netting shall be staggered at a maximum of 6 ft.

*Bearing the UL Classification Mark

FIGURE 7—1-HOUR FLOOR/CEILING ASSEMBLY INCORPORATING WOOD TRUSSES

Fire Resistance Ratings - ANSI/UL 263 Unrestrained Assembly Rating — 1 Hr



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

Subflooring — Nom 15/32 in. thick wood structural panels installed perpendicular to the joists with end joints staggered. Plywood or panels secured to joists with construction adhesive and No. 6d ringed shank nails, spaced 12 in. OC along each joist. 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.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

Floor Mat Materials* - (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat.

Floor Mat Reinforcement - (Optional) Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with each floor mat material.

Metal Lath — (Optional) 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material. Floor topping thickness shall be min 1-1/2 in.

Fiber Glass Reinforcement — (Optional) 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs./sq. yd loose laid over the floor mat material.

Alternate Subflooring — Min 15/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Alternate Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM LLC — Type DS

Alternate Floor Mat Materials* — (As an alternate to the single layer gypsum board) — Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat.

Alternate Gypsum Board* — (For use when floor mat is used) — Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM LLC — Type DS

2. Cross Bridging — 1 by 3 in.

3. Wood Joists — 2 by 10 in., spaced 16 in. OC, firestopped. Spacing may be increased to 24 in. OC when Item 7, Battens, are used.

4. 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 the resilient channels (Item 5) or furring channels (Item 5B) 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 (Item 5) or furring channels (Item 5B) are spaced a max of 12 in. OC or when the Steel Framing Members (Item 5A) are used, 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 (or Steel Framing Members) and gypsum panel membrane.

4A. Loose Fill Material* or Sprayed Fiber* — As an alternate to Item 4, when the resilient channels (Item 5) or furring channels (Item 5B) are spaced a max of 12 in. OC or when the Steel Framing Members (Item 5A) are used - Any loose fill material bearing the UL Classification Marking for Surface Burning Characteristics. There is no limit in the overall thickness of insulation.

5. Resilient Channels — Nom 1/2 in. deep by 2-3/8 in. wide at the base and 1-3/8 in. wide at the face, formed from 0.020 in. thick galv steel. Installed perpendicular to the wood joists, spaced a max of 24 in. OC (16 in. OC when Item 6A, Type ULIX is used) when no insulation is fitted in the concealed space. Otherwise, the spacing shall be as specified under Item 4, 4A or 6B. Two courses of resilient channel positioned 6 in. OC at gypsum panel butt-joints (3 in. from each end of panel). Channels oriented opposite at panel butt-joints. Channel splices overlapped 4 in. beneath wood trusses. Channels secured to each truss with 1-1/4 in. long Type S screws.

5A. Alternate Steel Framing Members — (Not Shown) — As an alternate to Item 5, main runners, cross tees, cross channels and wall angle as listed below.

a. Main Runners — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires wrapped and twist-tied on 16d nails driven in to side of joists at least 5 in. above the bottom face.

b. Cross Tees — Nom 4 ft long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tees or cross channels used at 8 in. from each side of butted gypsum panel end joints. The cross tees or cross channels may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

c. Cross Channels — Nom 4 or 12 ft long, installed perpendicular to main runners, spaced 16 in. OC.

d. Wall Angle or Channel — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panels.

CGC INC — Type DGL or RX

USG INTERIORS LLC — Type DGL or RX

5B. Alternate Steel Framing Members* — (Not Shown) — As an alternate to Items 5 and 5A, furring channels and Steel Framing Members as described below.

a. Furring Channels — Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, installed perpendicular to the wood joists, spaced a max of 24 in. OC (16 in. OC when Item 6A, Type ULIX is used) when no insulation is fitted in the concealed space. Otherwise, the spacing shall be as specified under Item 4, 4A or 6B. Channels secured to joists 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 the wood joists (Item 2). RSIC-1 and RSIC-1 (2.75) clips secured to consecutive joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to consecutive joists with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction-fitted into clips. RSIC-1 and RSIC-V clips

for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2- 23/32 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 #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum panel butt joints, as described in Item 8.

PAC INTERNATIONAL LLC — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

5C. Alternate Steel Framing Members* — (Not Shown) — As an alternate to Items 5, 5A and 5B, furring channels and Steel Framing Members as described below.

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, installed perpendicular to the wood joists, spaced a max of 24 in. OC (16 in. OC when Item 6A, Type ULIX is used) when no insulation is fitted in the concealed space. When insulation, Item 4 is applied over the resilient channel/gypsum panel ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC (16 in. OC when Item 6B, Type FSLX is used). Channels secured to joists 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 the wood joists (Item 2). GenieClips secured to consecutive joists with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. When insulation, Item 4, is applied over the resilient channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 12 in. OC and secured to consecutive trusses. Furring channels are friction-fitted into clips. 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 #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum panel butt joints, as described in Item 6. Not evaluated for use with item 4A.

PLITEQ INC — Type GENIECLIP

5D. Alternate Steel Framing Members* — (Not Shown) — As an alternate to items 5-5C, furring channels and Steel Framing Members as described below.

a. Furring Channels — Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in. deep, installed perpendicular to the wood joists, spaced a max of 24 in. OC (16 in. OC when Item 6A, Type ULIX is used) when no insulation is fitted in the concealed space. When insulation, Item 4 is applied over the resilient channel/gypsum panel ceiling membrane, the resilient channel spacing shall be reduced to 12 in. OC (16 in. OC when Item 6B, Type FSLX is used). Channels secured to joists as described in Item b.

b. Steel Framing Members* — Used to attach furring channels (Item a) to the wood joists (Item 2). Clips spaced at 48" OC and secured to the bottom of the joists with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. When insulation, Item 4, is applied over the resilient channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 12 in. OC and secured to consecutive trusses. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 6.

STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

5E. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 5.

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 5, perpendicular to the joists. 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 6), 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 joists, friction-fitted into the channel caddy on the Steel Framing Members (Item 5Ec) 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. Steel Framing Members* — Spaced 48 in. OC. max along joist, and secured to the joist on alternating joists with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.

PAC INTERNATIONAL LLC — Type RSIC-SI-CRC EZ Clip

5F. Steel Framing Members* — (Optional, Not Shown) — As an alternate to Item 5.

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 5, perpendicular to joists and friction fit into Steel Framing Members (Item 5Fb). 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 6). 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. Steel Framing Members* — Used to attach furring channels (Item 5Fa) to joists. Clips spaced 48 in. OC and secured along joist 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 LLC — Type RSIC-S1-1 Ultra

5G. Steel Framing Members* — (Optional - Not Shown) — Used to attach resilient channels (Item 6) to joists (Item 3). Clips spaced 48 in. OC and secured to joists with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 1-1/2 in. from the butt joint on either side. One edge of the extra channels will extend to an adjacent joist where it is secured with a clip.

KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

5H. Steel Framing Members* — (Optional, Not Shown) — Used as an alternate method to attach resilient channels to structural members. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 16 in.

O.C. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the structural members with the screws supplied with the accessory and per the accessory manufacturer's installation instructions. Gypsum Board butt joints staggered minimum 24 in. OC and Gypsum Board screws spaced 8 in. OC (in lieu of 12 in.) when used.

PAC INTERNATIONAL LLC — Type RC-1 Boost

6. **Gypsum Board*** — Nom 5/8 in. thick, 48 in. wide gypsum panels. When resilient channels (Items 5) are used, gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 12 in. OC and located a min of 1/2 in. from side joints and 3 in. from end joints. End joints secured to both resilient channels as shown in end joint detail. When **Steel Framing Members (Item 5B, 5C)** 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 panels. 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 to underside of the joist with one clip at each end of the channel. When **Steel Framing Members (Item 5A)** are used, gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Panels fastened to cross tees with 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field and 8 in. OC along end joints. Panels fastened to main runners with 1 in. long Type S bugle-head steel screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. End joints of panels staggered on adjacent panels not less than 12 in. When **Steel Framing Members (Item 5D)** are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the a fore mentioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel. When **Steel Framing**

Members (Item 5E) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 6. Adjacent butt joints staggered minimum 48 in. OC. When **Steel Framing Members (Item 5F)** are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 6. Butt joints staggered minimum 24 in. OC.

CGC INC — Types C, IP-X2, IPC-AR

GEORGIA-PACIFIC GYPSUM LLC — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Type FSW-C, eXP-C, FSK-C, FSMR-C

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

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

6A. **Gypsum Board*** (As an alternative to Item 6) — Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Item 6 with max screw spacing 8 in. OC.

CGC INC — ULIX

UNITED STATES GYPSUM CO — ULIX

6B. **Gypsum Board* (As an alternative to Item 6)** — When used, Resilient Channels (Item 5) or Furring Channels (Item 5B) spaced max 16 in. OC and Batts and Blankets (Item 4) draped over the Resilient Channels (or Steel Framing Members). May also be used with item 4A at same channel spacing. Nom 5/8 in. thick, 48 in. wide gypsum board, installed and secured as described in Item 6 with max screw spacing of 8 in. OC. Butted

end joints staggered minimum 8 ft. OC.

NATIONAL GYPSUM CO — Type FSLX

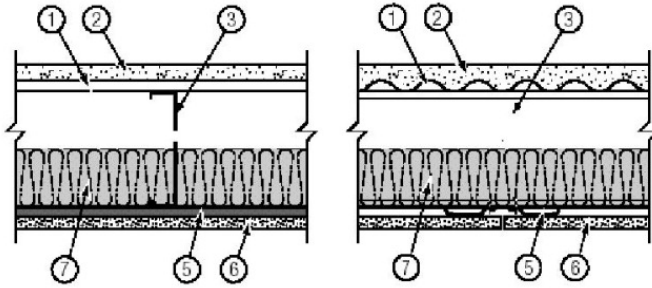
7. **Battens** — Nom 6 by 22-1/2 by 5/8 in. thick pieces of gypsum board (Item 6) centered under subfloor joints and fastened with staples spaced 7 in. OC along each edge. Staples formed of 16 SWG (0.062 in. thick) steel with 1-1/8 in. legs and 1/2 in. crown, driven flush with gypsum board batten strips. The battens and staples are optional when the finish flooring consists of **Floor Topping Mixture***.

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 gypsum panels.

*Bearing the UL Classification Mark

FIGURE 8—1-HOUR FLOOR/CEILING ASSEMBLY INCORPORATING WOOD JOISTS

Fire Resistance Ratings - ANSI/UL 263
Unrestrained Assembly Rating — 1 or 2 Hr. (see Item 5A)



1. Steel Deck — Min 9/16 in. deep, 22 MSG galv corrugated fluted steel deck. Overlapped one corrugation at each side and attached to each joist with 3/4 in. long #10-16 TEK screws 10 in OC max.

1A. Structural Cement-Fiber Units* — Not Shown — (As an alternate to Item 1) — Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be perpendicular to joists with end joints staggered a min of 2 ft and centered over the joists. Panels secured to steel joists with 1-5/8 in. long No. 8 self-drilling, self-countersinking steel screws spaced a max of 12 in. OC in the field with a screw located 1 in. and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the side edges of the panel.

UNITED STATES GYPSUM CO — Types STRUCTO-CRETE, USGSP

1B. Units, Partition Panel* — (As an alternate to Item 1 for a 1 hour rating only) — (For use with Item 7A) — Steel faced panels. Panels secured to top chord of steel joists with #8, 1-5/8 in. cement board Grabber screws spaced 6 in. OC.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Sure-Board® Series 200S

2. Floor Topping Mixture* — Compressive strength of 3000 psi min. Minimum thickness to be 1 in. as measured from the top plane of the deck or the top plane of the Floor Mat Material*. Refer to manufacturer's instructions accompanying the material for specific mix design. When a steel stud partition wall is installed on top of the floor, the floor topping mixture may be poured to the required thickness prior to the installation of floor runners to the floor, or the floor topping mixture may be poured to the specified thickness after the attachment of the floor runners to floor and placement of the steel studs into the floor runners provided there is sufficient height of the legs of the floor runners to accommodate attachment of the gypsum board wall.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

2A. Alternate Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 2000 psi, applied over Structural Cement Fiber Units (Item 1A). Refer to manufacturer's instructions accompanying the material for specific mix design. When a steel stud partition wall is installed on top of the floor, the floor topping mixture may be poured to the required thickness prior to the installation of floor runners to the floor, or the floor topping mixture may be poured to the specified thickness after the attachment of the floor runners to floor and placement of the steel studs into the floor runners provided there is sufficient height of the legs of the floor runners to accommodate attachment of the gypsum board wall.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

2B. Floor Mat Materials* — (Optional) - Floor mat material loose laid over the crests of the steel deck. Flutes of the steel deck to be filled with Floor Topping Mixture (item 2) prior to the application of the Floor Mat Materials*. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat.

2C. Floor Mat Reinforcement* — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement. **Metal Lath** — (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd

loose laid over the floor mat material. **Fiber Glass Reinforcement** — (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

3. Steel Joists — C-shaped, galvanized steel sections, 9-1/4 in. min depth with 1-7/8 in. min. flanges and 1/2 in. min. stiffening flanges. The web of each joist may be provided with maximum 6-1/4 in. high by 9 in. long oval knockouts at the joist mid-depth. Knockouts spaced 48 in. OC minimum. The minimum coated steel thickness shall be 0.055 in. The minimum yield strength of the steel shall be 50 ksi. Joists spaced max 24 in. OC. Joists attached to joist rim with three 3/4 in. long self-drilling #10-16 TEK screws through tab to the outside of the web. At joist rim splices bearing on supports, joists rims are connected using an overlapping section of a 12 in. long splice plate (a joist piece), with four 3/4 in. long self-drilling #10-16 TEK screws to each rim piece.

4. Joist Bridging — Not Shown — Installed immediately after joists are erected and before construction loads are applied. The bridging consists of min 1-1/4 in. deep, 2-3/4 in. wide and 21-3/4 in. long, formed galvanized steel installed in a staggered formation a maximum of every 8' along the joist span. Bridging secured to joist bottom flange with one 3/4 in. long self-drilling #10-16 TEK screw at each end tab. Minimum coated steel thickness for bridging is 0.048 in. Solid blocking must be provided in the two end joist bays and a maximum of 8 ft. OC (every 4 joist spaces). Solid blocking consisting of cut to length joist sections secured to the joists with clips. Clips are min 4 in. by 1-1/2 in. by 7 in. long, 0.054 in. thick, 50 ksi yield strength and secured with two 3/4 in. long self-drilling #10-16 TEK screws per leg.

5. Resilient Channels — 1/2 in. deep, 2-1/4 in. wide formed of 26 MSG galv steel with a 1 in. fastening surface, spaced 12 in. OC perpendicular to joists. Channel splices overlapped 5 in. beneath steel joists. Channels secured to each joist with 1/2 in. Type S-12 pan head screws. Channels oriented opposite at wallboard butt joints (spaced 6 in. OC) as shown in the above illustration.

5A. Alternate Steel Framing Members — (Not Shown) — For 1 Hr Rating Only. — As an alternate to Item 5, main runners, cross tees, cross channels and wall angle as listed below:

a. Main Runners — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires inserted through holes drilled through web of joists and twist-tied.

b. Cross Tees — Nom 4 ft long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tees or cross channels used at 8 in. from each side of butted gypsum panel end joints. The cross tees or cross channels may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

c. Cross Channels — Nom 4 or 12 ft long, installed perpendicular to main runners, spaced 16 in. OC.

d. Wall Angle or Channel — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.

CGC INC — Type DGL or RX

USG INTERIORS LLC — Type DGL or RX

5B. Alternate Steel Framing Members — (Not Shown) — As an alternate to Item 5, main runners, cross tees, and wall angle as listed below. Steel framing members shall be suspended min 5 in. below bottom of structural steel members:

a. Main Runners — Nom 12 ft long, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC for 1 Hr and 2 Hr Rating. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires inserted through holes drilled through web of joists and twist-tied. The main runners may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

b. Cross Tees — Nom 4 ft long, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tee required at each gypsum board end joint with butted end joint centered between cross tees spaced 8 in. OC. The cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall Angle or Channel** — Painted or galv steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.

ARMSTRONG WORLD INDUSTRIES INC — Type DFR-8000

5C. **Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Item 5 — Furring channels and Steel Framing Members as described below:

a. **Furring channels** — Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 12 in. OC, perpendicular to joists. Channel secured to joists 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. Additional channels shall be positioned so that the distance from the end of the board to the center of the first channel is 3 in. and from the board end to the center of the next channel is 12 in.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to joists (Item 3). Clips spaced 48 in. OC and secured to the bottom chord of joists with min 1-5/8 in. long No. 8 self-drilling, self-tapping, bugle, flat or hex head screw through the center grommet. Furring channels are friction fitted into clips. Additional clips required to hold furring channel that supports the gypsum board butt joints.

PLITEQ INC — Type Genie Clip

5D. **Alternate Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Items 5 to 5C, furring channels and Steel Framing Members as described below.

a. **Furring channels** — Formed of No. 25 MSG galv steel, 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 12 in. OC, perpendicular to joists. Channels secured to joists 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 the steel joists (Item 3). Clips spaced a max of 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to alternating joists 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. RSIC-1 (2.75) clips for use with 2-23/32 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. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 6.

PAC INTERNATIONAL LLC — Types RSIC-1 or RSIC-1 (2.75)

6. **Gypsum Board*** — Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient/furring channels and side joints centered between joints. Gypsum panels secured with 1 in. long Type S bugle-head screws. Screws provided 1-1/2 and 4 in. and from side edges of the board 8 in. OC in the field. When **Steel Framing Members (Item 5C or 5D)** are used, the butt joints in the gypsum board shall be supported by two furring channels. The two furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to underside of the joist with one RSIC-1, RSIC-1 (2.75) or Genie clip at each end of the channel.

AMERICAN GYPSUM CO — Type AG-C

CGC INC — Types C, IP-X2, IPC-AR, ULIX

GEORGIA-PACIFIC GYPSUM LLC — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Type FSW-C, FSK-C

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

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

6A. **Gypsum Board*** — When **Steel Framing Members (Item 5A)** are used. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Panels fastened to cross tees with 1 in long Type S bugle-head screws spaced 8 in. OC in the field and along end joints. Panels fastened to main runners with 1 in. long Type S bugle-head screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 2 ft OC.

AMERICAN GYPSUM CO — Type AG-C

CGC INC — Types C, IP-X2, IPC-AR, ULIX

GEORGIA-PACIFIC GYPSUM LLC — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Type FSW-C, FSK-C

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

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

6B. **Gypsum Board*** — When **Steel Framing Members (Item 5B)** are used. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered between cross tees spaced 8 in. OC. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide pieces of gypsum board are to be laid atop the cross tee flanges and centered over each butted end joint location. The backer strips are to be secured to the flanges of the cross tees at opposite corners of the backer strip to prevent the backer strips from being uplifted during screw-attachment of the gypsum board sheets. Gypsum board fastened to cross tees with drywall screws spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. The butted end joints are to be secured to the backer strip with No. 10 by 1-1/2 in. long Type G laminating screws located 1 in. from each side of the butted end joint and spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board.

AMERICAN GYPSUM CO — Type AG-C

CGC INC — Types C, IP-X2, IPC-AR, ULIX

GEORGIA-PACIFIC GYPSUM LLC — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Type FSW-C, FSK-C

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

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

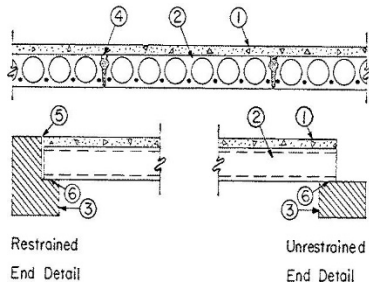
7. **Batts and Blankets*** — Mineral wool or glass fiber insulation, min 3-1/2 in. thick, bearing the UL Classification Marking for Surface Burning Characteristics. Insulation fitted in the concealed space, draped over the resilient channels.

7A. **Batts and Blankets*** — (As an alternate to Item 7 for a 1 hour rating only) — (Required with Item 1B) — Mineral wool or glass fiber insulation, min 6 in. thick, bearing the UL Classification Marking for Surface Burning Characteristics. Insulation fitted in the concealed space, draped over the resilient channels.

8. **Joint System** — Not Shown — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints.

*Bearing the UL Classification Mark

Fire Resistance Ratings - ANSI/UL 263
Restrained Assembly Ratings — 2 Hr.
Unrestrained Assembly Rating — 1 1/2 Hr.



1. Finish Flooring — Floor Topping Mixture* — Min. 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Type Maxxon Standard and Maxxon High Strength

Floor Mat Materials* (Optional) — Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

2. Precast Concrete Units* — Nom 8, 10, 12 or 14 in. thick units. Normal weight aggregate. Cross section similar to the above illustration.

BOCCELLA PRECAST LLC

HOLLOWCORE INC

SMYRNA READY MIX CONCRETE, LLC

3. End Details — Restrained and unrestrained.

4. Joint — Clearance between slabs at bottom, full length, 1/16 in. min., 5/16 in. max, grouted full length with sand-cement grout (3500 psi min compressive strength) to a max depth of 4 1/2 in. This depth may be maintained by placing a compressible material in the bottom of the joint before applying grout.

Note: — A 3/4-in. lateral expansion joint to be provided the full length and depth of the slabs every 14 ft. Expansion should be obtained with noncombustible, compressible material, for example, 24 sheets of 1/16 in. thick ceramic fiber paper (total thickness equals 1-1/2 in.).

5. End Clearance — Clearance for expansion at each end of slabs shall be equal to (3/16 +or- 1/16 in.) L/17 in., where "L" is equal to length of span in feet.

6. Min Bearing — 1-1/2 in.

*Bearing the UL Classification Mark

FIGURE 10—2-HOUR FLOOR/CEILING ASSEMBLY INCORPORATING PRECAST CONCRETE UNITS