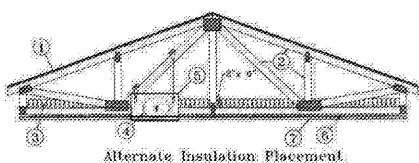
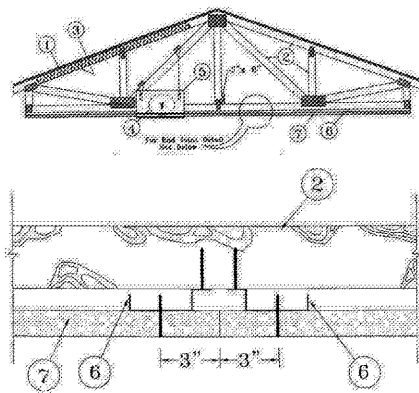


Design No. P522  
April 29, 2014

Unrestrained Assembly Rating --- 1 Hr  
Finish Rating --- 25 Min (See Items 3 or 3A)

Load Restricted for Canadian Applications --- See Guide R333.3

When used in Canada it is required that all materials included within the UL design are also eUL certified.



- 1. Roofing System --- Any UL Class A, B or C Roofing System (TGFU) or Prepared Roof Covering (TRWC) acceptable for use over non 15/32 in. thick wood structural panels, min. grade "C-27" or "Shedding". Non 15/32 in. thick wood structural panels secured to trusses with 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. Construction adhesive may be used with either the nails or staples.
- 2. Trusses --- Priced or parallel chord wood trusses, spaced a max of 24 in. OC, fabricated from non 2 by 4 timbers, with lumber oriented vertically or horizontally. Truss members secured together with min. 0.0356 in. thick gals 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 panels), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approximately 7/8 in. centers with four rows of teeth per inch of plate width. Where the truss intersects with the interior face of the exterior walls, the min truss depth shall be 5-1/4 in. with a min roof slope of 3:12 and a min. area in the plane of the truss of 21 sq ft. Where the truss intersects with the interior face of the exterior walls, the min truss depth may be reduced to 3 in. if the batts and blankets (Item 3) are used as shown in the above illustration (Alternate Insulation Placement) and are firmly pocketed against the intersection of the bottom chords and the plywood sheathing.
- 3. Batts and Blankets\* --- (Optional) --- Required when Item 6B is used --- Glass fiber insulation, secured to the wood structural panels with staples spaced 12 in. OC or to the trusses with 0.090 in. diam galv steel wires spaced 12 in. OC. Any glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance, having a min density of 0.5 per ft. As an option, the insulation may be fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. When Steel Framing Members (Item 6B) are used, max 3-1/2 in. thick insulation shall be draped over the furring channels (Item 6B) and gypsum board ceiling membrane, and friction-fitted between the trusses and Steel Framing Members (Item 6B). The finished rating has only been determined for the insulation is secured to the decking.
- 3A. Fiber, Sprayed\* --- As an alternate to Item 3 (Insulation) for use with trusses, any thickness of spray-applied cellulose insulation having a min density of 0.5 lb/ft<sup>3</sup>.

applied with water, over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Fiber, Sprayed is applied with water in accordance with the application instructions supplied with the product. The finish rating when Fiber Sprayed is used has not been determined. Alternate application method: The fiber is applied without water or adhesive in accordance with the application instructions supplied with a minimum density of 0.5 lb/ft<sup>3</sup> over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Alternate application method: The fiber is applied without water or adhesive to a minimum density of 1.5 lb/ft<sup>3</sup> behind netting (Item 9) stapled to the rafters. The netting is stapled at both lower edges of the rafters creating a cavity to accept the cellulose fiber.

U.S. GREENFIBER L.L.C. --- DNR7356, IN5745 for use with wet or dry application. IN5101D, IN5151D, IN5414LD, IN5735, IN5745, IN5765D, and IN5770D are to be used for dry application only.

4. Air Duct\* --- Any UL Class E or Class 1 flexible air duct installed in accordance with the instructions provided by the ducter manufacturer.

5. Ceiling Damper\* --- Max room area, 324 sq in. Max square size, 18 in. by 18 in. rectangular sizes not to exceed 124 sq in. with a max width of 18 in. Max damper height is 7 in. Installed in accordance with the manufacturer's installation instructions provided with the damper. Max damper openings not to exceed 162 sq in. per 100 sq ft of ceiling area.

C&S AIR PRODUCTS --- Model RD-521

POTTOFF --- Model CFD-521

5A. Alternate Ceiling Damper\* --- Max room area, 196 sq in. Max square size, 14 in. by 14 in. Rectangular sizes not to exceed 196 sq in. with a max width of 26 in. Max overall damper height is 7 in. Installed in accordance with the manufacturer's installation instructions provided with the damper. Max damper openings not to exceed 98 sq in. per 100 sq ft of ceiling area.

C&S AIR PRODUCTS --- Model RD-521-BT

POTTOFF --- Model CFD-521-BT

6. Furring Channels --- Resilient channels formed of 25 MSG thick galv steel. Installed perpendicular to the trusses (Item 2), spaced a max of 16 in. OC when no insulation (Item 3 or 3A) is fitted in the concealed space, or a max of 12 in. OC when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane. Two courses of resilient channel positioned 6 in. OC at wallboard butt-joints (3 in. from each end of wallboard). Channels oriented opposite at wallboard butt-joints. Channel splices overlapped 4 in. beneath wood trusses. Channels secured to each truss with 1-1/4 in. long Type 5 screws.

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 24 in. OC perpendicular to trusses when no insulation (Items 3 or 3A) is fitted in the concealed space or 12 in. OC when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane. 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 trusses (Item 2). Clips spaced 48 in. OC. RSC-1 and RSC-1 (2.75) clips secured to wood trusses with 2-1/2 in. screws dry wall screw through the center grommet hole. Furring channels are friction fitted into clips (RSC-1 and RSC-1 (2.75) clips) for use with 2-1/2 in. screws dry wall screw through the center grommet hole. Furring channels are friction fitted into clips (RSC-1 and RSC-1 (2.75) clips) for use with 2-1/2 in. screws dry wall screw through the center grommet hole. Furring channels are friction fitted into clips (RSC-1 and RSC-1 (2.75) clips) for use with 2-1/2 in. screws dry wall screw through the center grommet hole. Furring channels are friction fitted into clips (RSC-1 and RSC-1 (2.75) clips) for use with 2-1/2 in. screws dry wall screw through the center grommet hole.

PAC INTERIORS LLC --- Type DGL or RX, RSC-1 (2.75), RSC-V (2.75)

6B. Steel Framing Members\* --- (Not Shown)\* --- As an alternate to Items 6 and 6A, a Furring Channels --- The 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 of No. 25 galv steel, spaced max 16 in. OC perpendicular to trusses and Cold Rolled Channels (Item 6B). Furring channels secured to Cold Rolled Channels at every intersection with 7/8 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 of base layer and outer layer gypsum board butt joints are not required. Batts and Blankets draped over furring channels as described in Item 3. Two layers of gypsum board attached to furring channels as described in Item 7.

c. Cold Rolled Channels --- 1-1/2 in. by 1/2 in. formed from No. 16 galv steel, positioned parallel and perpendicular to trusses, friction-fitted into the channel cavity on the Steel Framing Members (Item 6B). 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.

d. Blocking --- Where truss design does not permit direct, full contact of the hanger bracket, a piece of rigid 2 by 4 in. lumber (blocking), min. 6 in. long to permit full contact of the hanger bracket, is secured vertically to the side of the truss (Item 2) to the top and bottom of the blocking at each Steel Framing Member (Item 6B) location.

e. Steel Framing Members\* --- Hangers spaced 48 in. OC, run along truss, and secured to the blocking (Item 6B) on alternating trusses with a single 3/16 in. by 2 in. hex head lag bolt or four 6/16 in. dry wall screws through mounting holes on the hanger bracket. The two 3/4 in. long steel teeth on the hanger are embedded in the side of the blocking. Hanger positioned on

blocking and leveling both 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.

6C. Steel Framing Members\* --- (Not Shown)\* --- As an alternate to Items 6, 6A and 6B, a. Furring Channels --- Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, installed perpendicular to wood structural members. Channels spaced a max of 24 in. OC when no insulation (Item 3 or 3A) is fitted in the concealed space or a max of 12 in. OC when insulation (Item 3 or 3A) is fitted in the concealed space. Channels secured to trusses as described in Item 6A. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire near each end of overlap.

b. Steel Framing Members\* --- Used to attach furring channels (Item a) to trusses (Item 2). Clips secured to the bottom chord of each truss (24 in. OC) with one No. 8 by 2-1/2 in. long coarse drywall screw through center grommet. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described in Item 6A. 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 channels that supports the gypsum board butt joints, as described in Item 7.

PLITEQ INC --- Type Genie Clip

6D. Steel Framing Members\* --- (Not Shown)\* --- As an alternate to Items 6, 6A, 6B and 6C, a. Main Runners --- Installed perpendicular to trusses --- Nom 10 or 12 R long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft OC. Main runners hung a min of 2 in. from bottom chord of trusses with 12 SWG galv steel wire. Wires located a max of 48 in. OC.

b. Cross tees or channels --- Nom 4 ft long, 1-5/16 in. or 1-1/2 in. wide face or cross channels, nom 4 ft long, 1-1/2 wide face, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tees or channels used at 8 in. from each side of batted 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 angles or channels --- Used to support steel framing member ends and for secure attachment of the gypsum wallboard --- Min 0.016 in. thick painted or galvanized steel angle with 1 in. legs or min. 0.046 in. thick painted or galvanized steel channel with a 1 by 1-1/2 by 1 in. profile, attached to walls on perimeter of ceiling with fasteners 16 in. OC.

CGC INC --- Type DGL or RX.

USG INTERIORS LLC --- Type DGL or RX.

Alternate Steel Framing Members\* --- (Not Shown)\* --- As an alternate to Items 6, 6A, 6B, 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 trusses. When insulation (Item 3 or 3A) is used, the furring channel ending is secured to 12 in. OC. Channels secured to joints as described in Item 6.

b. Steel Framing Members\* --- Used to attach furring channels (Item a) to the wood trusses (Item 2). Clips spaced 48 in. OC and secured to the bottom of the trusses with one No. 10 x 2-1/2 coarse drywall screw through the center hole. Furring channels are then friction fitted into ends of channels are overlapped 6 in. and secured with four No. 8 x 1-1/2 Self-Drilling screws (2 on each side 1 in. and 4 in. from overlap edge). Additional clips are required to hold the Gypsum Board joints and side joints as described in Item 7.

STUDCO BUILDING SYSTEMS --- RESILMOUNT Sound Isolation Clips - Type A217 or A217R

6E. Steel Framing Members\* --- (Not Shown)\* --- As an alternate to Items 6 through 6D: Not for use with Items 3 or 3A. Main runners nom 12 R long, spaced 72 in. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with batted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

USG INTERIORS LLC --- Type DGL or RX

7. Gypsum Board\* --- One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses. Attached to the resilient channels using 1 in. long Type 8 hanger screws. Screws spaced a max of 12 in. OC along batted end-joints and in the field when no insulation (Item 3 or 3A) is fitted in the concealed space, or a max of 8 in. OC along batted end-joints and in the field when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane. Gypsum board butt joints shall be staggered min. 2 ft within the assembly, and occur between the main furring channels. At the gypsum board butt joints, each end of the gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board on no each end. The furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the trusses with one clip at each end of the channel. Screw spacing along the butt joint to attach the gypsum board to the furring channels shall be 8 in. OC. Second (outer) layer of gypsum board required when furring channels (Item 6A, a) are spaced 24 in. OC and insulation is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane. Outer layer of gypsum board attached to the furring channels using 1-5/8 in. long Type 8 hanger

When Steel Framing Members\* (Item 6A or 6C) are used, sheets installed with long dimension perpendicular to furring channels and side joints of sheet located beneath trusses. Gypsum board screws are driven through channel spaced 12 in. OC in the field when no insulation (Item 3 or 3A) is fitted in the concealed space, or 8 in. OC in the field when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane. Gypsum board butt joints shall be staggered min. 2 ft within the assembly, and occur between the main furring channels. At the gypsum board butt joints, each end of the gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board on no each end. The furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the trusses with one clip at each end of the channel. Screw spacing along the butt joint to attach the gypsum board to the furring channels shall be 8 in. OC. Second (outer) layer of gypsum board required when furring channels (Item 6A, a) are spaced 24 in. OC and insulation is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane. Outer layer of gypsum board attached to the furring channels using 1-5/8 in. long Type 8 hanger

screws spaced 8 in. OC at batted joints and 12 in. OC in the field. Batted end joints of outer layer to be offset a minimum of 8 in. from base layer end joints. Batted side joints of outer layer to be offset minimum 18 in. from batted side joints of base layer.

When Steel Framing Members\* (Item 6B) are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimension perpendicular to furring channels (Item 6B). Base layer attached to the furring channels using 1 in. long Type 8 hanger steel screws spaced 8 in. OC along batted end joints and 12 in. OC in the field of the board. Batted end joints centered on the continuous furring channels. Batted 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 8 hanger steel screws spaced 8 in. OC at batted end joints and 12 in. OC in the field. Batted end joints centered on the continuous furring channels and offset a min of 16 in. from batted joints of base layer. Batted side joints of outer layer to be offset min 16 in. from batted side joints of base layer.

When Steel Framing Members\* (Item 6C) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimension perpendicular to furring channels (Item 6C). Gypsum board secured to furring channels with nom 1 in. long Type 8 hanger steel screws spaced 8 in. OC in the field of the board. Gypsum board batted end joints shall be staggered min 16 in. in. 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, spaced approximately 2 in. in from joint. Screw spacing along the gypsum board joint shall be 8 in. OC. Butt joint furring channels shall be supported with a RESILMOUNT Sound Isolation Clip secured to underside of every truss in the field over the butt joint. Over all gypsum board joints, approximately 1 in. of furring channel shall be installed parallel to trusses (Item 2) between the furring channels. Side furring channels shall be attached to underside of the joist with one clip spaced approximately 2 in. from each end of the approximately 20 in. long furring channel. Both Gypsum Boards at side joints fastened into 1 with screws spaced 8 in. OC, approximately 1/2 in. from joint edge.

When alternate Steel Framing Members\* (Item 6D) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimension (side joints) perpendicular to the 6 ft long cross tees with batted end joints spaced min 4 ft and centered between cross tees which are spaced 8 in. OC. Gypsum board butt joints may occur beneath or between main runners. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide piece of gypsum board are to be installed to hold down the cross tees and centered over each batted 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 hold down clips to prevent the backer strips from being pulled during construction of the gypsum board sheets. Gypsum board fastened to cross tees with 1 in. long screws spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. The batted end joints are to be secured to the backer strip with No. 10 by 1-1/2 in. long Type G hanger screws spaced 1 in. from each side of the batted end joint and spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board.

CGC INC --- Types C or IP-X2, IPC-AR.

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

USG MEXICO S A DE CV --- Types C, IP-X2, IPC-AR.

7A. Gypsum Board\* --- For use with Steel Framing Members (Item 6D) when Batts and Blankets\* (Item 3) are not used --- One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to the main runners. Gypsum board fastened to each cross tee or channel with five wallboard screws, with one screw located at the end of the cross tee or channel, one screw located 12 in. from end on each side of the cross tee or channel mid span and one screw located 1-1/2 in. from each gypsum board side joint. Except at wallboard end joints, wallboard screws shall be located on alternating sides of cross tee flange. At gypsum board end joints, gypsum board screws shall be located 1/2 in. from the joint. Gypsum board fastened to main runners with wallboard screws 1/2 in. from side joints, midway between intersections with cross tees or channels (16 in. OC). End joints of adjacent gypsum board sheets shall be staggered no less than 32 in. Gypsum board sheets screw attached to leg of wall angle with wallboard screws spaced 12 in. OC. Joints treated as described in Item 7. For use with Steel Framing Members\* (Item 6D) when Batts and Blankets\* (Item 3) are used --- Ratings limited to 1 Hour - 5/8 in. thick, 4 ft wide, installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Fastened to cross tees with 1 in. long steel gypsum board screws spaced 8 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long gypsum board screws spaced midway between cross tees. Screws along sides and ends of boards spaced 8 in. OC from each edge. End joints of the sheets shall be staggered with spacing between joints on adjacent boards not less than 4 ft OC.

CGC INC --- Type C or IP-X2.

UNITED STATES GYPSUM CO --- Type C or IP-X2.

USG MEXICO S A DE CV --- Type C or IP-X2.

8. Finishing 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. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board. Alternate Ceiling Membrane\* --- Not Shown.

9. Netting --- Fibrous, woven netting material fastened to underside of each joint with staples, with side joints overlapped.

\*Bearing the UL Classification Mark

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