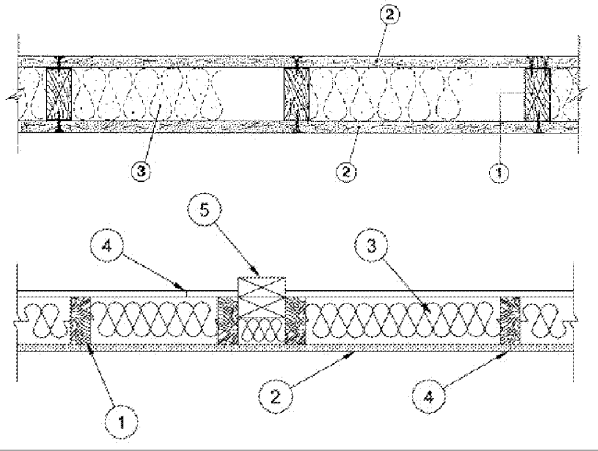


Bearing Wall Rating — 1 Hr.

Finish Rating — 23 min.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide 8XUV or 8XUV7

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



1. Wood Studs -- Nom 2 by 4 in., spaced 16 in. OC effectively cross braced.

2. Gypsum Board* -- 5/8 in. thick, 4 ft wide, applied either vertically or horizontally, screw attached to studs and plates with 1-1/4 in. long Type W steel screws, spaced 12 in. OC.

- AMERICAN GYPSUM CO -- Types AG-C
CERTAINTEED GYPSUM INC -- Type C
CGC INC -- Types C, IP-X2, IPC-AR
CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C -- Type LGFC-CIA
GEORGIA-PACIFIC GYPSUM L L C -- Types 5, DAPC, TG-C
NATIONAL GYPSUM CO -- Types eXP-C, FSK-C, FSW-C, FSW-G
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type C or PG-C
PANEL REY S A -- Types PRC, PRC2
THAI GYPSUM PRODUCTS PCL -- Type 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

3. Batts and Blankets* -- (Optional) -- Mineral wool insulation, partially or completely filling stud cavity.

- ROCKWOOL -- Type SAFESOUND
THERMAFIBER INC -- Type SAFB, SAFB FF

3A. Fiber, Sprayed* -- As an alternate to Batts and Blankets (Item 3) -- Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal dry density of 2.7

lb/ft3. Alternate Application Method: 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.

U S GREENFIBER L L C -- INS735, INS745 and INS750LD for use with wet or dry application. INS515LD, INS541LD, INS735, INS765LD, and INS773LD are to be used for dry application only.

3B. Fiber, Sprayed* -- As an alternate to Batts and Blankets (Item 3) -- Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.

NU-WOOL CO INC -- Cellulose Insulation

3C. Fiber, Sprayed* -- As an alternate to Batts and Blankets (Item 3) -- Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lb/ft3.

INTERNATIONAL CELLULOSE CORP -- Ceibar-RL

3D. Fiber, Sprayed* -- As an alternate to Batts and Blankets (Item 3) -- Spray-applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. To facilitate the installation of the material, any thin, woven or non-woven netting may be attached by any means possible to the outer face of the studs. The material shall reach equilibrium moisture content before the installation of material on either face of the studs. The minimum dry density shall be 5.79 lb/ft3. APPLIGATE HOLDINGS L L C -- Appligate Advanced Stabilized Cellulose Insulation

4. Joints and Nailheads -- Wallboard joints covered with paper tape and compound. Screw heads covered with joint compound.

5. Non-Bearing Wall Partition Intersection -- (Optional) -- Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with two 3 in. long 10d nails spaced a max. 16 in. OC, vertically and fastened to one side of the nominal 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC, vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by with a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC, vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

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

Last Updated on 2019-09-09

Bearing Wall Rating - 1 Hr Rating Exposed to Fire on Interior Face Only

Bearing Wall Rating -- 1 Hr Rating Exposed to Fire on Exterior Face (See Item 6E)

Finish Rating -- 23 Min or 25 Min (See Item 2C)

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used -- See Guide 8XUV or 8XUV7

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

1. Wood Studs -- Nom 2 by 4 in. spaced 16 in. OC with two 2 by 4 in. top and one 2 by 4 in. bottom plates. Studs laterally-braced by wood structural panel sheathing (Item 5). When Mineral and Fiber Boards* (Item 5A) are considered as bracing for the studs, the load is restricted to 76% of allowable axial load. Walls effectively fire stopped at top and bottom of wall.

2. Gypsum Board* -- Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. Nom 5/8 in. thick, 4 ft wide, applied vertically and nailed to studs and bearing plates 7 in. OC with 6d cement-coated nails, 1-7/8 in. long with 1/4 in. diam head.

- CABOT MANUFACTURING ULC (View Classification) -- CKNX.R25370
AMERICAN GYPSUM CO (View Classification) -- CKNX.R14195
BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) -- CKNX.R19374
CERTAINTED GYPSUM INC (View Classification) -- CKNX.R3680
CGC INC (View Classification) -- CKNX.R19751
CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C (View Classification) -- CKNX.R18482
GEORGIA-PACIFIC GYPSUM L L C (View Classification) -- CKNX.R2717
LOADMASTER SYSTEMS INC (View Classification) -- CKNX.R11809
NATIONAL GYPSUM CO (View Classification) -- CKNX.R3501
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) -- CKNX.R7094
PANEL REY S A (View Classification) -- CKNX.R21796
SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) -- CKNX.R19282
THAI GYPSUM PRODUCTS PCL (View Classification) -- CKNX.R27517
UNITED STATES GYPSUM CO (View Classification) -- CKNX.R1319
USG BORAL DRYWALL SFZ LLC (View Classification) -- CKNX.R38438
USG MEXICO S A DE C V (View Classification) -- CKNX.R16089

3. Joints and Fastener Heads -- (Not Shown) -- Gypsum board joints covered with tape and joint compound. Fastener heads covered with joint compound.

4. Batts and Blankets* -- Mineral fiber or glass fiber insulation, 3-1/2 in. thick, pressure fit to fill wall cavities between studs and plates. Mineral fiber insulation to be unfaced and to have a min density of 3 pcf. Glass fiber insulation to be faced with aluminum foil or kraft paper and to have a min density of 0.9 pcf (min R-13 thermal insulation rating).

See Batts and Blankets* (BKNV) Category in the Building Materials Directory and Batts and Blankets* (BZJZ) Category in the Fire Resistance Directory for names of Classified Companies.

5. Wood Structural Panel Sheathing -- Min 7/16 in. thick, 4 ft wide wood structural panels, min grade "C-D" or "Sheathing". Installed with long dimension of sheet (strength axis) or face grain of plywood parallel with or perpendicular to studs. Vertical joints centered on studs. Horizontal joints backed with nom 2 by 4 in. wood blocking. Attached to studs on exterior side of wall with 6d cement coated nails spaced 6 in. OC at perimeter of panels and 12 in. OC interior studs.

5A. Mineral and Fiber Boards* -- As an alternate to Item 5 -- Min 1/2 in. thick, 4 ft wide sheathing, installed vertically on studs. Vertical joints centered on studs. Horizontal joints backed with nom 2 by 4 in. wood blocking. Attached to studs on exterior side of wall with 10d galvanized roofing nails spaced 6 in. OC at perimeter of panels and 12 in. OC along interior studs. As an option a weather resistant barrier may be applied over the Mineral and Fiber Boards.

6. Exterior Facings -- Installed in accordance with the manufacturer's installation instructions. Only the following exterior facings is to be applied over the sheathing:

A. Vinyl Siding -- Molded Plastic* -- Contoured rigid vinyl siding having a flame spread value of 20 or less. See Molded Plastic (BTAT) category in the Building Materials Directory for names of manufacturers.

B. Particle Board Siding -- Hardboard exterior sidings including patterned panel or lap siding.

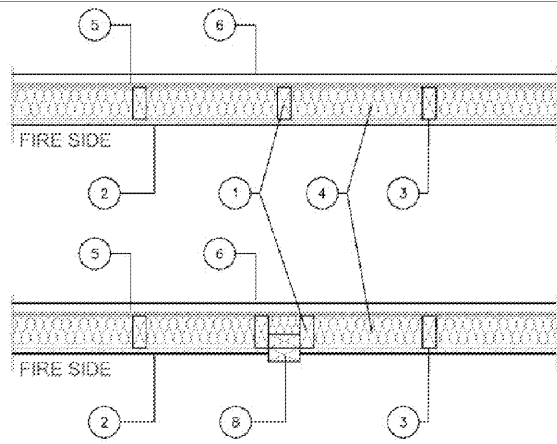
C. Wood Structural Panel or Lap Siding -- APA Rated Siding, Exterior, plywood, OSB or composite panels with veneer faces and structural wood core, per PS 1 or APA Standard PRP-108, including textured, rough sawn, medium density overlay, brushed, grooved and lap siding.

D. Cementitious Stucco -- Portland cement or synthetic stucco systems with self-furring metal lath or adhesive base coat. Thickness from 3/8 to 3/4 in., depending on system.

E. Brick Veneer -- Any type on nom 4 in. wide brick veneer. When brick veneer is used, the rating is applicable with exposure on either face. Brick veneer fastened with corrugated metal wall ties attached over sheathing to wood studs with 8d nail per tie; ties spaced not more than each sixth course of brick and max 32 in. OC horizontally. One in. air space provided between brick veneer and sheathing.

F. Exterior Insulation and Finish System (EIFS) -- Nom 1 in. Foamed Plastic* insulation bearing the UL Classification Marking, attached over sheathing and finished with coating system, or Portland cement or synthetic stucco systems, in accordance with manufacturer's instructions. See Foamed Plastic (BRYX and CCVV) categories for names of Classified companies.

G. Siding -- Aluminum or steel siding attached over sheathing to studs.



H. Fiber-Cement Siding -- Fiber-cement exterior sidings including smooth and patterned panel or lap siding.

I. Wall and Partition Facings and Accessories* -- Stone veneer is mortar bonded to a lath, scratch coat and water resistant barrier applied to sheathing, installed in accordance with the manufacturers installation instructions, and meeting the requirements of local code agencies. ELDORADO STONE OPERATIONS L L C -- Type Eldorado Stone

J. Cementitious Backer Units -- 1/2 in. or 5/8 in., min. 32 in. wide. Applied vertically or horizontally with vertical joints centered over studs. Fastened to studs and runners with cement based screws of adequate length to penetrate stud by a minimum 3/4 in., spaced a max of 8 in. OC. Horizontal joints need not be backed by framing. When Cementitious Backer Units are used, the rating is applicable with exposure on either face. Cementitious Backer Units for use as substrate for exterior finishes such as ceramic tile, slate, marble, natural stone, manufactured stone, brick, or Portland cement or synthetic stucco. NATIONAL GYPSUM CO -- Type PermaBase

8. Non-Bearing Wall Partition Intersection -- (Optional) -- Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with two 3 in. long 10d nails spaced a max. 16 in. OC, vertically and fastened to one side of the nominal 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC, vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by with a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC, vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

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

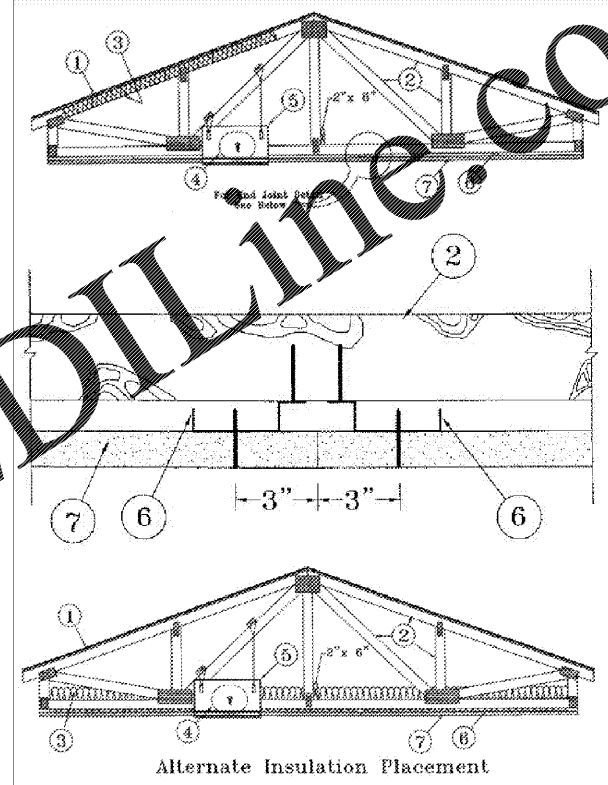
Last Updated on 2019-10-02

Unrestrained Assembly Rating -- 1 Hr

Finish Rating -- 25 Min (See Items 3 or 3A)

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used -- See Guide 8XUV or 8XUV7

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



1. Roofing System* -- Any UL Class A, B or C Roofing System (TGFL) or Prepared Roof Covering (TRFZ) acceptable for use over non 15/32 in. thick wood structural panels, min. grade "C-D" or "Sheathing". Nom 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 -- Pitched or parallel chord wood trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Truss members secured together with min. 0.0358 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on 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 packed 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 pcf. 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 are used, ceiling gypsum board ceiling membrane and gypsum board (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 trusses and Steel Framing Members (Item 6Bd). The finished raling has only been determined when the insulation is secured to the decking.

4. Air Duct* -- Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer.

5. Ceiling Damper* -- Max nom area, 324 sq in. Max square size, 18 in. by 18 in. rectangular sizes not to exceed 324 sq in. with a max width of 18 in. Max damper height is 14 in. Installed in accordance with manufacturers 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
AMERICA -- Model PC-RD0505

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, or when insulation (Item 3B, 3D or 3E) is applied to the underside of the roofing system (Item 1). 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 S screws.

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 S bugle-head screws. Screws spaced a max of 12 in. OC along butted 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 butted 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. When insulation (Item 3B, 3D or 3E) is installed in the concealed space, spray-applied to the underside of the roofing system (Item 1), screws are spaced a max of 8 in. OC along resilient channels, fasteners are increased in length to 1-1/4 in. and gypsum board butt joints shall be staggered min. 2 ft within the assembly, and occur between the main furring channels.

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 wallboard plus 6 in. on 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 S bugle-head screws spaced 8 in. OC at butted joints and 12 in. OC in the field. Butted end joints of outer layer to be offset a minimum of 8 in. from base layer end joints. Butted side joints of outer layer to be offset minimum 18 in. from butted side joints of base layer.

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.

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

Last Updated on 2019-09-06

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CHARLOTTE, NORTH CAROLINA 28205

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