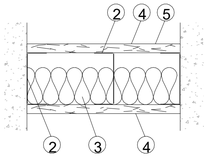
Design No. U465
October 03, 2012

Nonbearing Wall Rating - 1HR.



1. Floor and Ceiling Runners - (Not shown) - Channel shaped runners, 3-5/8 in. deep (min), 1-1/4 in. legs, formed from min No. 25 MSG galv steel, attached to floor and ceiling with fasteners spaced 24 in OC max

1A. Framing Members* — Floor and Ceiling Runners — (Not shown) — As an alternate to Item 1 - Channel shaped, min 35/8 in. deep, attached to floor and ceiling with fasteners 24 in. OC. max.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP.

BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME® Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

1B. Framing Members* - Floor and Ceiling Runners — Not shown - In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CRACO MFG INC — SmarterTrack20™, SmartTrack20™

MARINOWARE A DIV OF WARE INDUSTRIES INC — Viper20S™ Track, Viper20D™ Track

1C. Floor and Ceiling Runners — (Not shown)—For use with Item 2C- Channel shaped, fabricated from min 20 MSG corrosion protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1D. Framing Members* — Floor and Ceiling Runners — Not shown - In lieu of Items 1 through 1C — For use with Item 2D and 4G only, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.015 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CLARKWESTERN BUILDING SYSTEMS INC — CW ProTRAK

DIETRICH INDUSTRIES INC — DIETRICH ProSTUD

DMFCWBS L L C — ProTRAK

2. Steel Studs - Channel shaped, 3-5/8 in. deep (min), formed from min No. 25 MSG galv steel spaced 24in. OC max. Studs to be cut 3/4 in. less than assembly height.

2A. Framing Members* — Steel Studs — As an alternate to Item 2 - Channel shaped studs, min 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP.

BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

2B. Framing Members* - Steel Studs — Not shown - In lieu of Item 2 — For use with Item 1B, proprietary channel shaped steel studs, 1-1/4 in. wide by min 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel. Studs cut 3/4 in. less in length than assembly height.

CRACO MFG INC — SmarterStud20™, SmartStud20™

MARINOWARE A DIV OF WARE INDUSTRIES

INC — Viper20S™, Viper20D™

2C. Steel Studs — (As an alternate to Item 2, For use with Item 4E) Channel shaped, fabricated from min 20 MSG corrosionprotected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2D. Framing Members* — Steel Studs — As an alternate to Items 2 through 2C- For use with Item 1D and 4G only, channel shaped studs, min 2-1/2 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly height.

CLARKWESTERN BUILDING SYSTEMS INC — CW ProSTUD

DIETRICH INDUSTRIES INC — DIETRICH ProSTUD

DMFCWBS L L C — ProSTUD

3. Batts and Blankets* - (Optional) - Mineral wool or glass fiber batts partially or completely filling stud cavity.

See Batts and Blankets (BZJZ) category for names of Classified companies.

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. Nominal dry density of 3.0 lb/ft3. Alternate application method: The fiber is applied with U.S. Greenfiber LLC Type AD100 hot melt adhesive at a nominal ratio of one part adhesive to 6.6 parts fiber to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 2.5 lb/ft3.

U S GREENFIBER L L C — Cocoon2 Stabilized or Cocoon-FRM (Fire Rated Material)

3B. Fiber, Sprayed* — As an alternate to Batts and Blankets (Item 3) and Item 3A - 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 lbs/ft3.

INTERNATIONAL CELLULOSE CORP — Cellar-RL

4. Gypsum Board* - 5/8 in. thick, 48 wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly. When attached to item 6 (resilient channels) OR 6A (furring channels), gypsum board is screw attached to furring channels with 1 in. long, Type S steel screws spaced 12 in. OC.

AMERICAN GYPSUM CO — Types AG-C, AGX-1

BEIJING NEW BUILDING MATERIALS PUBLIC

LTD CO — Type DBX-1.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

CERTAINTEED GYPSUM INC — Types 1, EGRG, GlasRoc, ProRoc Type X, ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type C, ProRoc Type X or ProRoc Type Abuse-Resistant.

GEORGIA-PACIFIC GYPSUM L L C — Types 5, 6, 9, C, DAP, DD, DA, DAPC, DGG, DS, GPF96.

LAFARGE NORTH AMERICA INC — Types LGFC2, LGFC2A, LGFC6, LGFC6A, LGFC-C, LGFC-C/A, LGFC-WD.

NATIONAL GYPSUM CO — Types FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW, FSW-3, FSW-S, FSW-6.

PABCO BUILDING PRODUCTS L L C, DBA

PABCO GYPSUM — Type PG-C, PG-11 or PG-9.

PANEL REY S A — Type PRX.

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

TEMPLE-INLAND — Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X, TG-C, GreenGlass Type X, Type X ComfortGuard Sound Deadening Gypsum Board.

UNITED STATES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX, USGX (Joint tape and compound, Item 5, optional for use with Type USGX).

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4A. Gypsum Board* — (As alternate to Item 4) - Nom 5/8 in. thick gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by steel framing. Panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, and 12 in. OC when applied vertically. Attach to steel track with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, and 12 in. OC when applied vertically. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

CERTAINTEED GYPSUM INC — ProRoc Type X, ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type X, ProRoc Type C.

GEORGIA-PACIFIC GYPSUM L L C — Types DAP, DAPC, DGG, DS.

LAFARGE NORTH AMERICA INC — Type LGFC6A, LGFC-C/A

UNITED STATES GYPSUM CO — T ype AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX, , USGX (Joint tape and compound, Item 5, optional for use with Type USGX).

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4B. Gypsum Board* — (As an alternate to Items 4 or 4A) — Nom 3/4 in. thick, 4 ft wide, installed as described in Item 4A with screw length increased to 1-1/4 in.

CANADIAN GYPSUM COMPANY — Types AR, IP-AR.

UNITED STATES GYPSUM CO — Types AR, IP-AR.

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

4C. Gypsum Board* — As an alternate to Items 4, 4A, and 4B - Nom. 5/8 in. thick gypsum panels, with square edges, applied horizontally. Gypsum panels fastened to framing with 1 in. long bugle head steel screws spaced a max 8 in. OC, with last 2 screws 3/4 in. and 4 in. from each edge of board. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs on interior walls need not be staggered or backed by steel framing.

TEMPLE-INLAND — GreenGlass Type X.

4D. Gypsum Board* — As an alternate to Items 4, 4A, 4B, and 4C - Nom. 5/8 in. thick gypsum panels applied horizontally. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Gypsum panels fastened to framing with 1 in. long Type S steel screws 1-1/2 in. from board edges, 3 in. from board edge and every 8 in. OC in the field. Screws spaced a max 12 in. along the top and bottom edges of the wall.

NATIONAL GYPSUM CO — Types FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW-3.

4E. Gypsum Board* — (As an alternate to Items 4 through 4D) - Gypsum board as described in Item 4. 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically only and fastened to the studs and plates with 1 in. long, Type S steel screws spaced, 7 in. OC. Not to be used with Item 6.

NATIONAL GYPSUM CO — SoundBreak XP Type X Gypsum Board

4F. Gypsum Board* — (Not Shown) - (As an alternate to Item 4 when used as the base layer on one or both sides of wall. For direct attachment only to steel studs Item 2C) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

RAY-BAR ENGINEERING CORP — Type RB-LBG

4G. Gypsum Board* — (As an alternate to Items 4 through 4F) — For use with Items 1C and 2C only, 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly.

NATIONAL GYPSUM CO — Types FSW

UNITED STATES GYPSUM CO — Type SCX

4H. Wall and Partition Facings and Accessories* — (As an alternate to Items 4 through 4G) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 4.

QUIET SOLUTION INC — Types QuietRock ES, QuietRock 527.

5. Joint Tape and Compound - 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, nominal 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

6. Resilient Channel — (Optional-Not Shown) — 25 MSG galv steel resilient channels spaced vertically max 24 in. OC, flange portion attached to each intersecting stud with 1/2 in. long type S-12 pan head steel screws. May not be used with Item 4F.

6A. Steel Framing Members (Not Shown)* — As an alternate to Item 3, furring channels and resilient sound isolation clip 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 studs. Channels secured to studs as described in Item 5. 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 channel. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 8 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.

b. Framing Members* — Used to attach furring channels (Item a) to studs (Item 1). Clips spaced 48 in. OC., and secured to studs with 1-5/8 in. wafer or hex head Type S steel screw through the center grommet. Furring channels are friction fitted into clips.
PAC INTERNATIONAL INC — Type RSIC-1.

6B. Framing Members* — Optional - Not Shown - Used as an alternate method to attach resilient channels (Item 6). Clips attached at each intersection of the resilient channel and the steel studs (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the stud with min. 1 in. long Type S-12 pan head steel screws through the center hole of the clip and the resilient channel flange.

KEENE BUILDING PRODUCTS CO INC — Type RC Assurance.

7. Wall and Partition Facings and Accessories* — (Optional, Not shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-510 panel is installed between the steel framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

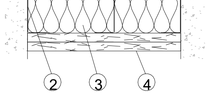
QUIET SOLUTION INC — Type QuietRock QR-510.

8. Lead Batten Strips — (Not Shown, For Use With Item 4E) - Lead batten strips, min 1-1/2 in. wide, max 10 ft long with a max thickness of 0.125 in. Strips placed on the interior face of studs and attached from the exterior face of the stud with two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C". Lead batten strips required behind vertical joints of lead backed gypsum board (Item 4E) and optional at remaining stud locations. Required behind vertical joints.

9. Lead Discs or Tabs — (Not Shown, For Use With Item 4E) - Used in lieu of or in addition to the lead batten strips (Item 8) or optional at other locations - Max 3/4 in. diam by max 0.125 in. thick lead discs compression fitted or adhered over steel screw heads or max 1/2 in. by 1-1/4 in. by max 0.125 in. thick lead tabs placed on gypsum boards (Item 4E) underneath screw locations prior to the installation of the screws. Lead discs or tabs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

Design No. U412
October 03, 2012

Nonbearing Wall Rating - 2HR.



1. Floor and Ceiling Runners - (Not shown) - 25 MSG (min) galv steel 1 in. high, return legs 1-5/8 in. wide (min), attached to floor and ceiling with fasteners 24 in. OC max

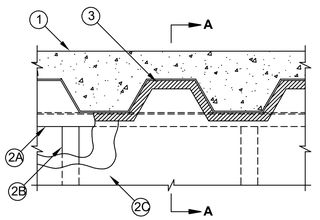
2. Steel Studs - 1-5/8 in. wide (min), 1-1/4 in. legs, 1/4 in. return, of No. 25 MSG (min) galv steel max stud spacing 24in. OC max. Studs to be cut 3/4 in. less than assembly height.

3. Batts and Blankets* - (Optional) - Mineral wool or glass fiber batts partially or completely filling stud cavity. Fasten each batt to wallboard base layer with a min 9/16 in. long staple. Use five staples for each 4 ft long piece. Drive one staple in the center of each piece and a staple at each corner, approx 3 in. from edges

4. Gypsum Board* - 1/2 in. thick, Gypsum board applied vertically in two layers. (Laminated System) Inner layer attached to studs with 1 in. long Type S steel screws spaced 24 in. O.C. along vertical edges and 24 in. O.C. in the field. Outer layer laminated to inner layer with joint compound about 3/8 in. in diameter, spaced not greater than 2 in O.C. Joints of laminated outer layer offset 12 in. from inner layer joints. Outer layer gypsum board attached to inner layer with 1-1/2 in. long Type G screws spaced 24 in. O.C. along edges and center line of each sheet.

Outer layer gypsum board joints covere with joint tape and min two coats of joint compound, and screw heads covered with min two coats of joint compound. As an alternate, nom 3/32 in. think gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced.

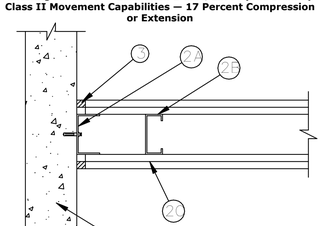
SYSTEM No. HW-D-0077
Assembly Rating — 1 or 2 Hr (See Items 2 and 3)
Nominal Joint Width — 3/4 In.
L Rating At Ambient — Less Than 1 CFM/Lin Ft
L Rating At 400°F — Less Than 1 CFM/Lin Ft
Class II Movement Capabilities — 17% Compression or Extension



SECTION A-A

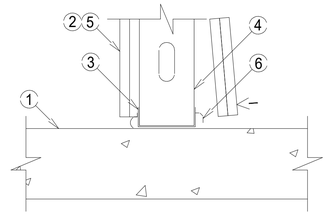
1. Floor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the Fire Resistance Directory and shall include the following construction features:
A. Steel Floor and Form Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.
B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.
C. Spray-Applied Fire Resistive Materials — (Optional, Not Shown) — Prior to or after the installation of the ceiling runner and Fill, Void or Cavity Materials (Item 3), the steel floor units may be sprayed with a min 5/16 in. (8 mm) thickness to a max 11/16 in. (17 mm) thickness of fire resistive material. Refer to Item 1A, Floor Assembly.
1A. Floor Assembly — (Not Shown) — As an alternate to the floor assembly, a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:
A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.
B. Roof Insulation — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the floor units.
1B. Roof Assembly — As an alternate to Items 1 and 1A, a fire rated protected fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:
A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.
B. Spray—Applied Fire Resistive Materials* — (Not Shown)—Prior to or after the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B), the roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.
W R GRACE & CO - CONN — Type MK-6HY
2. Wall Assembly — The 1 or 2 hr fire-rated gypsum board /steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B).Flange height of ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint width Ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
A1. Light Gauge Framing*-Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
BRADY CONSTRUCTION INNOVATIONS INC
DBA SLIPTRACK SYSTEMS — SLP-TRK
CALIFORNIA EXPANDED METAL PRODUCTS CO — CST
CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H
MARINOWARE, DIV OF WARE INDUSTRIES
INC — Type SLT
METAL-LITE INC — The System
SCAFCO STEEL STUD MANUFACTURING CO
TELLING INDUSTRIES L L C — True-Action Deflection Track
A2. Light Gauge Framing*-Vertical Deflection Ceiling Runner — As an alternate to the ceiling runners in Items 2A and 2A1, vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Flanges sized to accommodate steel studs (Item 2B). Vertical deflection ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
THE STEEL NETWORK INC — VertiTrack VTD250, VTD362, VTD400, VTD600 and VTD800
A3. Light Gauge Framing* - Notched Ceiling Runner — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 2B). Notched ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
CLARK DUPONT INC — Type SCR
B. Studs — Steel studs to be min 2-1/2 in. (64 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom resting in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. (610 mm) OC. When vertical deflection ceiling runner (Item 2A2) is used, steel studs secured to slotted vertical deflection clips, through the bushings, with steel screws at midheight of each slot. Stud spacing not to exceed 24 in. (610 mm) OC.
C. Gypsum Board* — For 1 hr assembly, one layer of 5/8 in. (16 mm) thick gypsum board is required in the individual Wall and Partition Design.
For 2 hr assembly, two layers of 5/8 in. (16 mm) thick gypsum board are required in the individual Wall and Partition Design. Will to be constructed as specified in the individual U400 Series Design in the UL Fire Resistance Directory, except that a max 3/4 in. (19 mm) gap shall be maintained between the side of gypsum board and face of concrete wall assembly. The screws attaching the gypsum board to the first stud shall be located 4 in. (102 mm) from face of concrete wall assembly. Gypsum board not attached to side runner. The hourly fire rating of the joint system is equal to the hourly rating of the gypsum wall assembly.
3. Fill, Void or Cavity Material* — Sealant — Max separation between bottom of floor and top of wall is 3/4 in. (19 mm). The joint system is designed to accommodate a max 17 percent compression or extension from its installed width. Min 5/8 in. (16 mm) thickness of fill material installed on each side of the wall between the side of the gypsum board and the face of the concrete wall assembly, flush with each surface of the gypsum wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP6015 Elastomeric Firestop Sealant or CP606 Flexible Firestop Sealant. L Ratings apply only when CP606 Sealant is used.
*Bearing the UL Classification Mark

SYSTEM No. WW-D-0040
Assembly Rating — 1 and 2 Hr (See Item 1)
Nominal Joint Width — 3/4 in.
L Rating At Ambient — Less Than 1 CFM/Lin Ft (See Item 3)
L Rating At 400°F — Less Than 1 CFM/Lin Ft (See Item 3)
Class II Movement Capabilities — 17 Percent Compression or Extension



1. Concrete Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) structural concrete. Wall may also be constructed of any UL Classified Concrete Blocks*.
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Gypsum Wall Assembly — The 1 or 2 h fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Steel Runners — Runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Runner to be provided with 1-1/4 in. (32 mm) flanges. Runner secured to concrete wall assembly with steel concrete fasteners spaced 12 in. (305 mm) OC.
B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom resting in ceiling runner without attachment. First stud adjacent to ceiling runner without attachment. First stud adjacent to concrete wall assembly located max 4 in. (102 mm) from wall face. Stud spacing not to exceed 24 in. (610 mm) OC.
C. Gypsum Board* — For 1 hr assembly, one layer of 5/8 in. (16 mm) thick gypsum board is required in the individual Wall and Partition Design.
For 2 hr assembly, two layers of 5/8 in. (16 mm) thick gypsum board are required in the individual Wall and Partition Design. Will to be constructed as specified in the individual U400 Series Design in the UL Fire Resistance Directory, except that a max 3/4 in. (19 mm) gap shall be maintained between the side of gypsum board and face of concrete wall assembly. The screws attaching the gypsum board to the first stud shall be located 4 in. (102 mm) from face of concrete wall assembly. Gypsum board not attached to side runner. The hourly fire rating of the joint system is equal to the hourly rating of the gypsum wall assembly.
3. Fill, Void or Cavity Material* — Sealant — Max separation between bottom of floor and top of wall is 3/4 in. (19 mm). The joint system is designed to accommodate a max 17 percent compression or extension from its installed width. Min 1-1/4 in. (32 mm) thickness of fill material flush with the surface of the gypsum board for 2 hr fire rated systems or 5/8 in. (16 mm) thickness of fill material for 1 hr fire rated systems installed on each side of the wall between the top of the gypsum board and the bottom of the steel floor or roof deck or the spray-applied fire resistive material on the steel deck.
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC — CP606 Flexible Firestop Sealant
*Bearing the UL Classification Mark

UL/cUL SYSTEM NO. BW-S-0039
BOTTOM OF WALL JOINT: GYPSUM WALL ASSEMBLY
ASSEMBLY RATING = 1-HR. OR 2-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM / LIN FT
L-RATING AT 400°F = LESS THAN 1 CFM / LIN FT
CROSS-SECTIONAL VIEW



1. CONCRETE FLOOR ASSEMBLY (2-HR. FIRE-RATING).
A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 4-1/2" THICK).
B. ANU (UL/cUL CLASSIFIED PRECAST (HOLLOW-CORE) CONCRETE FLOOR (MINIMUM 6" THICK).
2. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U400, V400, OR W400 SERIES) (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
3. FLOOR RUNNER (MIN. 25 GA., FLANGE HEIGHT OF FLOOR RUNNER SHALL BE MINIMUM 1-1/4") FASTENED TO TOP SIDE OF CONCRETE FLOOR WITH STEEL FASTENERS (SPACED MAX. 12" OC).
4. STEEL STUDS (MINIMUM 3-1/2" WIDE) CUT 1/2" TO 3/4" LESS IN LENGTH THAN ASSEMBLY HEIGHT WITH BOTTOM NESTING IN, RESTING ON, AND FASTENED TO FLOOR RUNNER.
5. 5/8" OR 1-1/4" THICKNESS GYPSUM WALLBOARD AS SPECIFIED IN THE INDIVIDUAL UL DESIGN.
6. HILTI CFS-TTS 350, CFS-TTS 600, OR CFS-TTS OS TOP TRACK SEAL INSTALLED UNDER FLOOR RUNNER PRIOR TO ATTACHMENT TO TOP SIDE OF CONCRETE FLOOR IN ACCORDANCE WITH THE ACCOMPANYING INSTALLATION INSTRUCTIONS.

NOTE: MAXIMUM WIDTH OF JOINT - 3/4"

SYSTEM No. HW-D-0077
Assembly Rating — 1 or 2 Hr (See Items 2 and 3)
Nominal Joint Width — 3/4 In.
L Rating At Ambient — Less Than 1 CFM/Lin Ft
L Rating At 400°F — Less Than 1 CFM/Lin Ft
Class II Movement Capabilities — 17% Compression or Extension

SECTION A-A

1. Floor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the Fire Resistance Directory and shall include the following construction features:
A. Steel Floor and Form Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.
B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.
C. Spray-Applied Fire Resistive Materials — (Optional, Not Shown) — Prior to or after the installation of the ceiling runner and Fill, Void or Cavity Materials (Item 3), the steel floor units may be sprayed with a min 5/16 in. (8 mm) thickness to a max 11/16 in. (17 mm) thickness of fire resistive material. Refer to Item 1A, Floor Assembly.
1A. Floor Assembly — (Not Shown) — As an alternate to the floor assembly, a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:
A. Steel Floor Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.
B. Roof Insulation — Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the floor units.
1B. Roof Assembly — As an alternate to Items 1 and 1A, a fire rated protected fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:
A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.
B. Spray—Applied Fire Resistive Materials* — (Not Shown)—Prior to or after the installation of the steel ceiling runners, Forming Material and Fill, Void or Cavity Material (Items 2A, 3A, 3B), the roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.
W R GRACE & CO - CONN — Type MK-6HY
2. Wall Assembly — The 1 or 2 hr fire-rated gypsum board /steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B).Flange height of ceiling runner shall be min 1/4 in. (6 mm) greater than max extended joint width Ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
A1. Light Gauge Framing*-Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
BRADY CONSTRUCTION INNOVATIONS INC
DBA SLIPTRACK SYSTEMS — SLP-TRK
CALIFORNIA EXPANDED METAL PRODUCTS CO — CST
CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H
MARINOWARE, DIV OF WARE INDUSTRIES
INC — Type SLT
METAL-LITE INC — The System
SCAFCO STEEL STUD MANUFACTURING CO
TELLING INDUSTRIES L L C — True-Action Deflection Track
A2. Light Gauge Framing*-Vertical Deflection Ceiling Runner — As an alternate to the ceiling runners in Items 2A and 2A1, vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Flanges sized to accommodate steel studs (Item 2B). Vertical deflection ceiling runner installed perpendicular to direction of fluted steel deck and secured to valleys with steel masonry anchors, steel fasteners or welds spaced 24 in. (610mm) OC before or after optional spray-applied fire resistive material is used. The use of welds to secure the ceiling runner may only be used prior to the installation of the optional spray-applied material.
THE STEEL NETWORK INC — VertiTrack VTD250, VTD362, VTD400, VTD600 and VTD800
A3. Light Gauge Framing* - Notched Ceiling Runner — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped