UL ASSEMBLIES

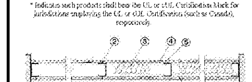
1F 1F 1F 1F
ONE HOUR FIRE BARRIER
1FS 1FS 1FS 1FS
ONE HOUR FIRE - SMOKE BARRIER

Design No. U465

October 10, 2019

Nonbearing Wall Rating -- 1 HR.

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



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 3-5/8 in. deep, attached to floor and ceiling with fasteners 24 in. OC max.

ALLSTEEL & GYPSUM PRODUCTS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV -- Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO -- Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

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.

CALIFORNIA EXPANDED METAL PRODUCTS CO -- Viper20™ Track

MARINO/WARE, DIV OF WARE INDUSTRIES INC -- Viper20™ Track

FUSION BUILDING PRODUCTS -- Viper20™ Track

IMPERIAL MANUFACTURING GROUP INC -- Viper20™ 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 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CLARKDIETRICH BUILDING SYSTEMS -- CD ProTRAK

DMFCWBS L L C -- ProTRAK

MBA METAL FRAMING -- ProTRAK

RAM SALES L L C -- Ram ProTRAK

STEEL STRUCTURAL PRODUCTS L L C -- Tri-S ProTRAK

1E. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Items 1 through 1D -- For use with Item 2E and 4I only, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

TELLING INDUSTRIES L L C -- TRUE-TRACK™

1F. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Items 1 through 1E -- For use with Item 2, channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 25 MSG steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

KIRII (HONG KONG) LTD -- Type KIRII

1G. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Items 1 through 1F -- For use with Item 2, channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide, attached to floor and ceiling with fasteners spaced 24 in. OC max.

STUDCO BUILDING SYSTEMS -- CROCSTUD Track

1H. Floor and Ceiling Runners -- (Not Shown) -- Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, for use with studs specified below and fabricated from min 0.02 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC.

MARINO/WARE, DIV OF WARE INDUSTRIES INC -- Viper20™ Track VT100

FUSION BUILDING PRODUCTS -- Viper20™ Track VT100

IMPERIAL MANUFACTURING GROUP INC -- Viper20™ Track VT100

1I. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Item 1 -- For use with Item 2H, 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.

TELLING INDUSTRIES L L C -- Viper20™ Track

1J. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Items 1 -- For use with Item 2 L, proprietary channel shaped runners, 1-1/4 in. deep by min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

STEEL INVESTMENT GROUP L L C -- AlphaTRAK

1K. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Item 1 -- For use with Item 2M, proprietary channel shaped runners, 1-1/4 in. wide by min 3-5/8 in. deep, fabricated from min 25 MSG (0.018 in. min. bare metal thickness), attached to floor and ceiling with fasteners spaced 24 in. OC max.

CALIFORNIA EXPANDED METAL PRODUCTS CO -- Viper X Track

1L. Framing Members* -- Floor and Ceiling Runners -- Not Shown -- In lieu of Item 1 -- For use with Item 2N, 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 -- SmartTrack20™

2. Steel Studs -- Channel shaped, 3-5/8 in. deep (min), formed from min No. 25 MSG galv steel spaced 24 in. 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 D24/30EQD and Type SUPREME D20

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV -- Type SUPREME D24/30EQD and Type SUPREME D20

QUAIL RUN BUILDING MATERIALS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

SCAFCO STEEL STUD MANUFACTURING CO -- Type SUPREME D24/30EQD and Type SUPREME D20

STEEL CONSTRUCTION SYSTEMS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

UNITED METAL PRODUCTS INC -- Type SUPREME D24/30EQD and Type SUPREME D20

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.

CALIFORNIA EXPANDED METAL PRODUCTS CO -- Viper20™

CRACO MFG INC -- SmartStud20™

MARINO/WARE, DIV OF WARE INDUSTRIES INC -- Viper20™

FUSION BUILDING PRODUCTS -- Viper20™

IMPERIAL MANUFACTURING GROUP INC -- Viper20™

2C. Steel Studs -- (As an alternate to item 2, For use with Item 1C) -- Channel shaped, fabricated from min 20 MSG corrosion-protected 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. See materials in Item(s) 4 that require Item 2C studs.

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 3-5/8 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.

CLARKDIETRICH BUILDING SYSTEMS -- CD ProSTUD

DMFCWBS L L C -- ProSTUD

MBA METAL FRAMING -- ProSTUD

RAM SALES L L C -- Ram ProSTUD

STEEL STRUCTURAL PRODUCTS L L C -- Tri-S ProSTUD

2E. Framing Members* -- Steel Studs -- As an alternate to items 2 through 2D -- For use with Item 1E and 4I only, channel shaped studs, min 3-5/8 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.

TELLING INDUSTRIES L L C -- TRUE STUD™

2F. Framing Members* -- Steel Studs -- As an alternate to items 2 through 2E -- For use with Item 1F, channel shaped studs, min 3-5/8 in. wide fabricated from min 25 MSG steel, spaced a max of 24 in. OC. Studs to be cut 1/2 in. less than assembly height.

KIRII (HONG KONG) LTD -- Type KIRII

2G. Framing Members* -- Steel Studs -- Not Shown -- In lieu of Item 2 through 2F -- For use with Item 1G. Proprietary channel shaped studs, minimum 3-5/8 in. wide. Studs to be cut 1/2 in. less than the assembly height.

STUDCO BUILDING SYSTEMS -- CROCSTUD

2H. Framing Members* -- Steel Studs -- Not Shown -- In lieu of Item 2 -- For use with Item 1I, 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.

TELLING INDUSTRIES L L C -- Viper20™

2I. Framing Members* -- Steel Studs -- In lieu of Item 2 -- For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 3-5/8 in. deep (min), spaced 24 in. OC max. Studs to be cut 3/4 in. less than assembly height.

EB METAL INC -- NITROSTUD

2J. Framing Members* -- Steel Studs -- In lieu of Item 2 -- For use with Item 1, channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 3-5/8 in. deep (min), spaced 24 in. OC max. Studs to be cut 3/4 in. less than assembly height.

OLMAR SUPPLY INC -- PRIMESTUD

2K. Framing Members* -- Steel Studs -- As an alternate to item 2 -- For use with Item 1B (3-5/8 in. wide track), channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 1-1/4 in. wide by 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

MARINO/WARE, DIV OF WARE INDUSTRIES INC -- StudRite™

2L. Framing Members* -- Steel Studs -- As an alternate to items 2 -- For use with Item 1J, channel shaped studs, min 3-5/8 in. wide fabricated from min 0.018 in. thick galv steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

STEEL INVESTMENT GROUP L L C -- AlphaSTUD

2M. Framing Members* -- Steel Studs -- Not Shown -- In lieu of item 2 -- For use with Item 1K, proprietary channel shaped steel studs, min 1-1/4 in. wide by min 3-5/8 in. deep, fabricated from min 25 MSG (0.018 in. min. bare metal thickness). Studs cut 3/4 in. less in length than assembly height.

CALIFORNIA EXPANDED METAL PRODUCTS CO -- Viper X

2N. Framing Members* -- Steel Studs -- Not Shown -- In lieu of Item 2 -- For use with Item 1L, 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 -- SmartStud20™

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

ROCKWOOL -- Type AFB, min. density 1.69 pcf / 27.0 kg/m³

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

3A. Fiber, Sprayed* -- As an alternate to Batts and Blankets (Item 3) -- (100% Borate Formulation) -- 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, INS750LD for use with wet or dry application. 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 lbs/ft³.

INTERNATIONAL CELLULOSE CORP -- Celbar RL

3D. Batts and Blankets* -- For use with Item 6. Nom 3 in. thick, minimum 3.4 pcf mineral wool batts, friction fit between the studs and floor and ceiling runners.

See **Batts and Blankets** (BZJZ) category for names of manufacturers.

3E. Batts and Blankets* -- For use with Item 4P, 4R, and 4S. Placed in stud cavities, any min. 3-1/2 in. thick glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance.

See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

3F. 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 materials on either face of the studs. The minimum dry density shall be 5.79 lbs/ft³.

APPLEGATE HOLDINGS L L C -- Applegate Advanced Stabilized Cellulose Insulation

4. Gypsum Board* -- 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. When attached to Items 6 (resilient channels) or 6A, 6B, 6C, 6D, or 6E (furring channels), gypsum board is screw attached to furring channels with 1 in. long, Type S steel screws spaced 12 in. OC.

CABOT MANUFACTURING ULC -- Type X, 5/8 Type X, Type Blueglass Exterior Sheathing

AMERICAN GYPSUM CO -- Types AG-C, AGX-1, M-Glass, LightRoc

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO -- Type DBX-1

CGC INC -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, USGX, WRC or WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

CERTAINTEED GYPSUM INC -- Types 1, EGRG, GlasRoc, Type X, Type X-1, Type C, 5/8" Easi-Lite Type X, Easi-Lite Type X-2

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C -- Types LGFC2A, LGFC6A, LGFC-C/A, LGFC-WD, LGLLX

GEORGIA-PACIFIC GYPSUM L L C -- Types 5, 9, C, DAP, DD, DA, DAPC, DGG, DS, GPFS6, LS, 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, Type LWX, Veneer Plaster Base-Type LWX, Water Rated-Type LWX, Sheathing Type-LWX, Soffit-Type LWX, Type DGLW, Water Rated-Type DGLW, Sheathing Type-DGLW, Soffit-Type DGLW, Type LW2X, Veneer Plaster Base-Type LW2X, Water Rated - Type LW2X, Sheathing - Type LW2X, Soffit - Type LW2X, Type DGL2W, Water Rated - Type DGL2W, Sheathing - Type DGL2W

NATIONAL GYPSUM CO -- Types eXP-C, FSK, FSK-C, FSK-G, FSMR-C, FSW-C, FSW-G, FSW, FSW-3, FSW-5, FSW-6, FSW-8, FSL

NATIONAL GYPSUM CO -- Riyadh, Saudi Arabia -- Type FR, or WR

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Types PG-C, PG-9, PG-11, PGS-WRS

PANEL REY S A -- Types GREX, GRIX, PRC, PRC2, PRX, RHX, MDX, EFX

SAINT-GOBAIN GYPROC MIDDLE EAST FZE -- Type Gyproc FireStop, Gyproc FireStop MR, Gyproc FireStop M2TECH, Gyproc FireStop ACTIV'Air, Gyproc FireStop MR ACTIV'Air, Gyproc FireStop M2TECH ACTIV'Air, Gyproc DuraLine, Gyproc DuraLine MR, Gyproc DuraLine M2TECH, Gyproc DuraLine ACTIV'Air, Gyproc DuraLine MR ACTIV'Air, Gyproc DuraLine M2TECH ACTIV'Air

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

THAI GYPSUM PRODUCTS PCL -- Type X, Type C

UNITED STATES GYPSUM CO -- Types 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 BORAL DRYWALL SFZ LLC -- Types C, SCX, USGX (Joint tape and compound, Item 5, optional for use with Type USGX)

USG MEXICO S A DE C V -- Type AR, C, IP-AS, IP-X1, IP-X2, IPC-AS, SCX, SHX, USGX, WRC or WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

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, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CERTAINTEED GYPSUM INC -- Type X, Type X-1, Type C, Type EGRG, GlasRoc, GlasRoc-2, Type SilentFX, Easi-Lite Type X-2

CGC INC -- Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, USGX, WRC or WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C -- Types LGFC2A, LGFC6A, LGFC-C/A, LGFC-WD

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

SAINT-GOBAIN GYPROC MIDDLE EAST FZE -- Type Gyproc FireStop, Gyproc FireStop MR, Gyproc FireStop M2TECH, Gyproc FireStop ACTIV'Air, Gyproc FireStop MR ACTIV'Air, Gyproc FireStop M2TECH ACTIV'Air, Gyproc DuraLine, Gyproc DuraLine MR, Gyproc DuraLine M2TECH, Gyproc DuraLine ACTIV'Air, Gyproc DuraLine MR ACTIV'Air, Gyproc DuraLine M2TECH ACTIV'Air

THAI GYPSUM PRODUCTS PCL -- Type X, Type C

UNITED STATES GYPSUM CO -- Types 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 BORAL DRYWALL SFZ LLC -- Types C, SCX, 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, USGX, WRC or WRX (Joint tape and compound, Item 5, optional for use with Type USGX)

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.

CGC INC -- 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.

GEORGIA-PACIFIC GYPSUM L L C -- Type DGG, GreenGlass Type X

4D. Gypsum Board* -- As an alternate to Items 4, 4A, 4B and 4C -- Nom. 5/8 in. thick gypsum panels 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. Gypsum panels fastened to framing with 1 in. long Type S steel screws 12 in. OC along vertical edges and in the field. Screws spaced a max 12 in. along the top and bottom edges of the wall for both vertical and horizontal applications. When used in widths other than 48 in., gypsum panels to be installed horizontally.

NATIONAL GYPSUM CO -- Types eXP-C, FSK, FSK-C, FSK-G, FSL, FSW-C, FSW-G, FSW, FSW-3, FSW-5, FSW-6, FSMR-C

4E. Gypsum Board* -- (As an alternate to Items 4 through 4D) -- Installed as described in Item 4. 5/8 in. thick, 4 ft wide, applied vertically only and fastened to the studs and plates with 1 in. long, Type S steel screws spaced 12 in. OC.

NATIONAL GYPSUM CO -- Type SBWB

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 1D and 2D 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.

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C -- Type LGFC-C/A

NATIONAL GYPSUM CO -- Types FSW

UNITED STATES GYPSUM CO -- Type SCX

USG BORAL DRYWALL SFZ LLC -- Type SCX

4H. Gypsum Board* -- (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.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type QuietRock ES

4I. Gypsum Board* -- (As an alternate to Items 4 through 4F) -- For use with Items 1E and 2E 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.

UNITED STATES GYPSUM CO -- Type SCX

USG BORAL DRYWALL SFZ LLC -- Type SCX

4J. 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. To be used with Lead Batten Strips (see Item 9A) or Lead Discs (see Item 10A).

MAYCO INDUSTRIES INC -- Type X Ray Shielded Gypsum

4K. Gypsum Board* -- (As an alternate to Item 4 and 4A, not for use with Items 1D, 1E, 2D and 2E) -- Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 4 and 4A.

CGC INC -- Type ULX

UNITED STATES GYPSUM CO -- Type ULX

USG MEXICO S A DE C V -- Type ULX

4L. 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. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws gypsum panel steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 in. long with a max thickness of 0.14 in., placed on the face of studs and attached to the stud with construction adhesive and 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 discs, nominal 3/8 in. diam by max 0.065 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

RADIATION PROTECTION PRODUCTS INC -- Type RPP - Lead Lined Drywall

4M. Gypsum Board* -- (For use with Item 8) -- 5/8 in. thick, 4 ft wide, [illegible] vertical joints located where [illegible] Mineral and fiber board [illegible] 1-1/2 in. Type G [illegible] spaced 8 in. OC [illegible] edges of each [illegible] 12 in. OC in intermediate field of the Mineral and Fiber Board (Item 8). Secured to outermost studs and floor and ceiling runners with 2 in. long Type S screws spaced 8 in. OC. Gypsum board joints covered with paper tape and joint compound. Screw heads covered with joint compound.

[illegible] GYPSUM CO -- Type AG-C

CERTAINTEED GYPSUM INC -- Type FRPC, Type C

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

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C -- Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C -- Types 5, DAPC, TG-C

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

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type PG-C

PANEL REY S A -- Types PRC, PRC2

SAINT-GOBAIN GYPROC MIDDLE EAST FZE -- Type Gyproc FireStop, Gyproc FireStop MR, Gyproc FireStop M2TECH, Gyproc FireStop ACTIV'Air, Gyproc FireStop MR ACTIV'Air, Gyproc FireStop M2TECH ACTIV'Air, Gyproc DuraLine, Gyproc DuraLine MR, Gyproc DuraLine M2TECH, Gyproc DuraLine ACTIV'Air, Gyproc DuraLine MR ACTIV'Air, Gyproc DuraLine M2TECH ACTIV'Air

THAI GYPSUM PRODUCTS PCL -- 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

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

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type QuietRock 527

4O. Gypsum Board* -- As an alternate to Items 4, 4A, 4B, and 4C -- Two layers Nom. 5/16 in. thick gypsum panels applied vertically or horizontally. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed by steel framing. Horizontal joints on the same side need not be staggered. When applied horizontally, both layers of gypsum board fastened to each side of framing with 1 in. long Type S steel screws spaced 8 in. OC and staggered 4 in. OC between layers. When applied vertically, both layers of gypsum board fastened to each side of framing with 1 in. long Type S steel screws spaced 8 in. OC along vertical edges and 12 in. OC in the field, staggered 4 in. OC between layers. Screws spaced a max 12 in. along the top and bottom edges of the wall.

NATIONAL GYPSUM CO -- Type FSW

4P. Gypsum Board* -- As an alternate to Item 4. For use with Item 3E, **Batts and Blankets*** -- 5/8 in. thick, 4 ft wide, installed as described in Item 4.

UNITED STATES GYPSUM CO -- Types ULX

4Q. Gypsum Board* -- 3/4 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track as described in Item 4 with screw length increased to min. 1-1/8 in.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type PG-13

4R. Gypsum Board* -- As an alternate to Item 4Q. For use with Item 3E, **Batts and Blankets*** -- 5/8 in. thick, 4 ft wide, installed as described in Item 4.

NATIONAL GYPSUM CO -- Type FSLX

4S. Gypsum Board* -- As an alternate to Item 4. For use with Item 3E, **Batts and Blankets*** -- 5/8 in. thick, 4 ft wide, installed as described in Item 4A.

CONTINENTAL BUILDING PRODUCTS OPERATING CO, L L C -- Type CLLX

4T. Wall and Partition Facings and Accessories* -- (As an alternate to Item 4, 5/8 in. thick board as outlined in Item 4) -- Nominal 1-1/4 in. thick, 4 ft wide panels, applied vertically or horizontally. Fastened with #6 x 2 in. long drywall screws spaced 3 in. OC along the perimeter and 12 in. OC in the field.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type QuietRock 545

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, 4J or 4L.

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 studs. Channels secured to studs as described in Item b. 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 No. 8 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Not for use with Items 4F, 4J, or 4L.

b. Framing Members* -- Used to attach furring channels (Item a) to studs (Item 2). 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. 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.

PAC INTERNATIONAL L L C -- Types RSIC-1, RSIC-1 (2.75)

6B. Framing Members* -- (Not Shown) -- (Optional on one or both sides) -- As an alternate to Item 6, furring channel 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 max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to furring channels as described in Item 4. Not for use with Items 4F, 4J, or 4L.

b. Steel Framing Members* -- Used to attach furring channels (Item 6Ba) to studs (Item 2). Clips spaced max 48 in. OC. GENIECLIPS secured to studs with No. 8 x 1-1/2 in. minimum self-drilling S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.

[illegible] INC -- Type Genie Clip

6C. Steel Framing Members* -- (Optional, Not Shown) -- Furring channels and Steel Framing Members as described below:

a. Furring Channels -- Formed of No. 25 MSG galv steel spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 6Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 4. Not for use with Items 4F, 4J, or 4L.

b. Steel Framing Members* -- Used to attach furring channels (Item 6Ca) to studs. Clips spaced 48 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.

STUDCO BUILDING SYSTEMS -- RESILMOUNT Sound Isolation Clips - Type A237R

6D. Steel Framing Members* -- (Optional, Not Shown) -- Furring channels and Steel Framing Members as described below:

a. Furring Channels -- Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 6Db. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 4. Not for use with Items 4F, 4J, or 4L.

b. Steel Framing Members* -- Used to attach furring channels (Item 6Da) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.

REGUPOL AMERICA -- Type SonusClip

6E. Steel Framing Members* -- (Optional, Not Shown) -- Resilient channels and Steel Framing Members as described below:

a. Resilient Channels -- Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 4. Not for use with Items 4F, 4J, or 4L.

b. Steel Framing Members* -- Used to attach resilient channels (Item 6Ea) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self drilling screw.

KEENE BUILDING PRODUCTS CO INC -- Type RC+ Assurance Clip

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-500 or 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 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.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM -- Type QuietRock QR-500 and QR-510

8. Mineral and Fiber Board* -- (Optional, Not Shown) -- For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to studs and floor and ceiling runners with 1-5/8 in. long Type S steel screws, spaced 12 in. OC and 24 in. OC along all intermediate framing. The required UL Classified gypsum board layer (Item 4M) is to be installed over the Mineral and Fiber Board. Batts and Blankets, Item 3, and Adhesive, Item 11, are required.

HOMASOTE CO -- Homasote Type 440-32

8A. Mineral and Fiber Board -- (Optional, Not Shown) -- For optional use as an additional layer on one side of wall - Nom 1/2 in. thick, 4 ft wide, square edge fiber boards applied vertically to studs on one side of the wall in between the wood studs and the UL Classified Gypsum Board (Item 4). Fiber boards installed with 1-1/4 in. long, Type S steel screws spaced 12 in. OC max, with the last screws spaced 2 in. and 6 in. from edge of board. Gypsum board (Item 4) 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. Not evaluated for use with Item 4M.

BLUE RIDGE FIBERBOARD INC -- SoundStop

8B. Mineral and Fiber Board* -- (Optional, Not Shown) -- For optional use as an additional layer on one side of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to studs and floor and ceiling runners with 1-5/8 in. long Type S steel screws, spaced 12 in. OC and 24 in. OC along all intermediate framing. The required UL Classified gypsum board layer is to be installed over the Mineral and Fiber Boards and secured to studs with length of fasteners increased by 1/2 in. over the length specified for installation of the gypsum boards. Batts and Blankets, Item 3, are optional unless otherwise required. Not for use with Items 4F, 4J, 4L, and 4M.

HOMASOTE CO -- Homasote Type 440-32

9. 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.

9A. Lead Batten Strips -- (Not Shown, for use with Item 4J) -- Lead batten strips, 2 in. wide, max 10 ft long with a max thickness of 0.140 in. Strips placed on the face of studs and attached to the stud with two min. 1 in. long min. Type S-8 pan head steel screws, one at the top of the strip and one at the bottom of the strip or with one min. 1 in. long min. Type S-8 pan head steel screw at the top of the strip. Lead batten strips to have a purity of 99.5% meeting the Federal specification QQ-L-201f, Grades "B, C or D". Lead batten strips required behind vertical joints of lead backed gypsum wallboard (Item 4J) and optional at remaining stud locations.

10. Lead Discs or Tabs -- (Not Shown, For Use With Item 4E) -- Used in lieu of or in addition to the lead batten strips (Item 9) 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".

10A. Lead Discs -- (Not Shown, for use with Item 4J) -- Max 5/16 in. diam by max 0.140 in. thick lead discs compression fitted or adhered over steel screw heads. Lead discs to have a purity of 99.5% meeting the Federal Specification QQ-L-201f, Grades "B, C or D".

11. Adhesive -- (Not Shown) -- (For use with Item 8) -- Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide beads down the length of both vertical edges and central [illegible] of Mineral and Fiber Board (Item 8).

12. Wall and Partition Facings and Accessories* -- (Optional, Not Shown) -- For use with Items 1 to 1I, Items 2 to 2J, Item 3, items 4 to 4I, Item 5 and Item 6. For maximum fire rating of 1 hour. On one side of the wall, over the first layer of Gypsum Board (Item 4 to Item 4I), install ReflexXor membrane with the gold side facing outwards. Membrane installed with 750 staples spaced 12 inches on center in both directions as per manufacturer's instructions, seams in membrane to be overlapped by 2 inches. When ReflexXor membrane is used an additional layer of Gypsum Board that is identical to the one used in the first layer and as specified in Item 4 to Item 4I shall be installed over the membrane. The additional layer of Gypsum Board to be installed through the membrane to the stud as specified in item 4 to item 4I except the fastener length shall be increased by a minimum of 5/8 inch. Install Batts and Blankets in the stud cavity as per Item 3. On the other side of the wall, prior to the installation of the Gypsum Board, install Resilient Channels as per Item 6. Over the Resilient Channels install 3/4 inch thick SONOpan panel secured to the Resilient Channels with drywall screws and washers spaced at 16 in. OC on the perimeter of the panel and 8 in. OC in the field of the panel. Over the SONOpan panel install the same Gypsum Board as specified in Item 4 to item 4I with the fastener length increased by minimum 3/4 inch. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

MSL -- ReflexXor membrane, SONOpan panel

13. Barrier Mesh -- (Optional, Not Shown) - Attached to steel studs on one or both sides of the wall using Barrier Mesh Clips spaced at maximum 12 inches on center vertically, using a flat head type screw penetrating through the steel at least 3/8 of an inch. For Steel Studs less than 0.033 inches in thickness, use self-piercing screws. For Steel Studs equal to or greater than 0.033 inches in thickness, use steel drill screws (self-tapping). Gypsum Board (Item 4) to be installed directly over the Barrier Mesh using prescribed screw patterns with lengths increased by a minimum 1/8 in. Barrier Mesh may be installed with the long dimension of the diamond pattern positioned vertically or horizontally. Barrier Mesh joints may occur as butt joints at the framing members and secured using the Barrier Mesh Clips or occur in between framing members as overlapping joints secured using 18 SWG wire ties spaced a maximum 12 in. on center.

CLARKDIETRICH BUILDING SYSTEMS -- Barrier Mesh, Barrier Mesh Clips

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

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