

INTERIOR WALLS

Design No. U419  
Nonbearing Wall Ratings—1, 2, 3 or 4 Hr (See Items 3 & 4)

1. Floor and Ceiling Runners— (Not shown)— Channel shaped, fabricated from min 25 MSG (min 20 MSG when Item 4A is used) corrosion-protected steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners 24 in. OC, max.

2. Steel Studs— Channel shaped, fabricated from min 25 MSG (min 20 MSG when Item 4A is used) corrosion-protected steel, min width as indicated under Item 4, min 1-1/4 in. flanges and 1/4 in. return, spaced a max. of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

3. Batt and Blankets\*— (Required as indicated under Item 4)— Mineral wool batts, friction fitted between studs and runners. Min non thickness as indicated under Item 4. See Batt and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

3A. Batt and Blankets\*— (Optional)— Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See Batt and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

4. Gypsum Board\*— 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. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. 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. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1, 2, 3 hr and 4 hr ratings are as follows:

Rating	Min Stud Depth	No. of Layers of Panel	Min Thickness of Panel (Item 3)
1	3-1/2	1 layer, 5/8 in. thick	1-1/2 in.
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	Optional
4	2-1/2	2 layers, 5/8 in. thick	Optional

CANADIAN GYPSUM COMPANY—1/2 in. thick Type C, IP-X2 or IPC-AR; WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX or WRC, 3/4 in. thick Type IP-X2, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

UNITED STATES GYPSUM CO.—1/2 in. thick Type C, IP-X2, IPC-AR or WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR, 3/4 in. thick Type IP-X2, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

USG MEXICO S A DE C V—1/2 in. thick Type C, IP-X2, IPC-AR or WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRX or 3/4 in. thick Type IP-X3, ULTRACODE, ULTRACODE SHC or ULTRACODE WRC.

4A. Gypsum Board\*— (As an alternate to Item 4)— 5/8 in. thick gypsum panels, installed as described in Item 4 with Type S-12 steel screws. The length and spacing of the screws as specified under Item 5.

CANADIAN GYPSUM COMPANY—Type FRX.

UNITED STATES GYPSUM CO.—Type FRX.

4B. Gypsum Board\*— (As an alternate to Items 4 and 4A)— 5/8 in. thick, 2 ft. wide, tongue and groove edge, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 5. Joint covering (Item 7) not required.

CANADIAN GYPSUM COMPANY—Type SHX.

UNITED STATES GYPSUM CO.—Type SHX.

USG MEXICO S A DE C V—Type SHX.

5. Fasteners— (Not shown)— Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 6). Single layer systems: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. Two layer systems: First layer: 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer: 1-5/8 in. long for 1/2 in. 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Third layer: 2-1/4 in. long for 1/2 in. 5/8 in. thick panels or 2-5/8 in. long for 3/4 in. thick panels, spaced 16 in. OC. Fourth layer: 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. Four-layer systems: First layer: 1 in. long for 1/2 in. 5/8 in. thick panels, spaced 24 in. OC. Second layer: 1-5/8 in. long for 1/2 in. 5/8 in. thick panels, spaced 24 in. OC. Third layer: 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 3/4 in. thick panels, spaced 24 in. OC. Fourth layer: 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

6. Furring Channels— (Optional, not shown, for single or double layer systems)— Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 4A.

7. Joint Tape and Compound— Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.

8. Caulking and Sealant\*— (Optional, not shown)— A bead of acoustical sealant applied around the partition perimeter for sound control.

UNITED STATES GYPSUM CO.—Type AS.

\*Bearing the UL Classification Mark

SHAFT WALLS

1-HR SHAFT WALL, SYSTEM A & 2-HR SHAFT WALL, SYSTEM B

Design No. U415  
Nonbearing Wall Ratings—1, 2 or 3 Hr  
System A—1 Hr.

System A—1 Hr.

System B—2 Hr.

System C—2 Hr.

System D—2 Hr.

System E—2 Hr.

System F—3 Hr.

System G—3 Hr.

1. Floor, Side and Ceiling Runners— "T"—shaped runner, min 2-1/2 in. deep, with unequal legs of 1 in. and 2 in., fabricated from min 24 MSG (min 20 MSG when Item 4A or 7 are used) galv steel. Runners positioned with short leg toward finished side of wall. Runners attached to structural supports with steel fasteners located not greater than 2 in. from ends and not greater than 24 in. OC.

2. Steel Studs— "C-H"—shaped studs, min 2-1/2 in. deep, fabricated from min 25 MSG (min 20 MSG when Item 4A or 7 are used) galv steel. Cut to lengths 3/8 to 1/2 in. less than floor-to-ceiling height and spaced 24 in. or 600 mm OC.

2A. Steel Studs— (Not Shown)— "E"—shaped studs installed back to back in place of "C-H"—shaped studs (Item 2) and used to secure the closure liner panels at the ends of walls. When installed back to back in place of the "C-H"—shaped studs, "E"—shaped studs secured together with steel screws spaced a maximum 12 in. OC. Fabricated from min 25 MSG (min 20 MSG when Item 4A or 7 are used) galv steel, min 2-1/2 in. deep, with one leg 1 in. long and two legs 3/4 in. long. Shorter legs 1 in. apart to engage gypsum liner panels. Cut to lengths 3/8 in. less than floor to ceiling heights. Sill and lintel of opening formed with "T"—shaped runners (Item 1) secured to "E"—shaped studs with angle clips and steel screws.

2B. Furring Channels— (Optional, not shown)— For use with single or double layer systems. Resilient furring channels fabricated from min 25MSG corrosion protected steel, installed horizontally, and spaced vertically a max 24 in. OC. Flange portion of channel attached to each intersecting stud (on the "C" side of the "C-H" studs) with 1/2 in. long Type S or S-12 pan-head steel screws. When furring channels are used, wallboard to be installed vertically only. Not to be used with Type FRX gypsum wallboard (Item 4A) or cementitious backer units (Item 7).

3. Wallboard, Gypsum\*— Gypsum liner panels, nom 1 in. thick, 24 in. or 600 mm (for metric spacing) wide. Panels cut 1 in. less in length than floor to ceiling height. Vertical edges inserted in "H"—shaped section of "C-H" studs. Free edge of end panels attached to long leg of "T"—runners with 1-5/8 in. long Type S steel screws spaced not greater than 12 in. OC. When wall height exceeds liner panel length, liner panel may be butted to extend to the full height of the wall.

CANADIAN GYPSUM COMPANY—Type SLX.

UNITED STATES GYPSUM CO.—Type SLX.

YESO PANAMERICANO S A DE C V—Type SLX.

4. Wallboard, Gypsum\*— Systems A & D. Gypsum panels, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. when installed vertically or 8 in. OC when installed horizontally (24 in. OC when installed vertically or 16 in. OC when installed horizontally in System D).

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

UNITED STATES GYPSUM CO.—Types AR, C, FRX-G, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

YESO PANAMERICANO S A DE C V—Types AR, C, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

System B. Gypsum panels, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in two layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Outer or face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 12 in. when installed vertically and staggered 12 in. from base layer screws, or 8 in. OC when installed horizontally and staggered 8 in. from base layer screws. Joints between inner and outer layers staggered a min of 12 in. when applied horizontally. Joints centered over studs and staggered 24 in. when applied vertically.

CANADIAN GYPSUM COMPANY—1/2 in. Type C, IP-X2 or WRC, 5/8 in. Types AR, C, FRX-G, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

UNITED STATES GYPSUM CO.—1/2 in. Types C, IP-X2 or WRC, 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

YESO PANAMERICANO S A DE C V—1/2 in. Types C, IP-X2 or WRC, 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

System C. Gypsum panels, nom 1/2 in. or 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, attached to studs with 1 in. long Type S steel screws spaced 12 in. OC when installed vertically or 8 in. OC when installed horizontally.

CANADIAN GYPSUM COMPANY—1/2 in. Type C, IP-X2, 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

UNITED STATES GYPSUM CO.—1/2 in. Type C, IP-X2, 5/8 in. Types AR, C, FRX-G, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

YESO PANAMERICANO S A DE C V—1/2 in. Type C, IP-X2, 5/8 in. Types AR, C, IP-X1, IP-X2, SCX, SHX, WRX, WRC.

System E. Gypsum panels, nom 3/4 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, secured with 1-1/4 in. long Type S steel screws spaced 8 in. OC along the perimeter and 12 in. OC in the field when installed vertically or 8 in. OC along the perimeter and in the field when installed horizontally. Screws along side joints offset 4 in.

CANADIAN GYPSUM COMPANY—ULTRACODE or Type IP-X3.

UNITED STATES GYPSUM CO—ULTRACODE or Type IP-X3.

YESO PANAMERICANO S A DE C V—ULTRACODE or Type IP-X3.

System F. Gypsum panels, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally in three layers. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Middle layer attached to studs with 1-5/8 in. long Type S steel screws spaced 24 in. when installed vertically or 16 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints adjacent layers staggered a min of 12 in. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CANADIAN GYPSUM COMPANY—Types C, IP-X2, WRC.

UNITED STATES GYPSUM CO.—Types C, IP-X2, WRC.

YESO PANAMERICANO S A DE C V—Types C, IP-X2, WRC.

System G. Gypsum panels, nom 5/8 in. thick, 48 in. or 1200 mm wide, applied vertically or horizontally, two layers over the flange of the "C" section of the studs, one layer over the flange of the "H" section of the studs. Inner or base layer attached to studs with 1 in. long Type S steel screws spaced 24 in. OC when installed vertically or 16 in. OC when installed horizontally. Face layer attached to studs with 1-5/8 in. long Type S steel screws spaced 16 in. when installed vertically or 12 in. OC when installed horizontally. Screws offset 6 in. from layer below. Horizontal joints on adjacent layers staggered a min of 12 in. Vertical joints centered over studs and staggered 24 in. on adjacent layers.

CANADIAN GYPSUM COMPANY—Types C, IP-X2, WRC.

UNITED STATES GYPSUM CO.—Types C, IP-X2, WRC.

YESO PANAMERICANO S A DE C V—Types C, IP-X2, WRC.

6. Batt and Blankets\*— Systems A, B, C, E & G. Joints between outer layers of Gypsum Wallboard (Item 4) covered with paper tape and joint compound. Exposed screw heads covered with joint compound.

7. Cementitious Backer Units\*— (System D)— Nom 1/2 or 5/8 in. thick panels, square edge, attached to studs over gypsum wallboard with 1-5/8 in. long, Type S-12, corrosion resistant steel screws spaced 8 in. OC and staggered 8 in. from gypsum wall board screws. Joints covered with glass fiber mesh tape. Vertical joints staggered one stud cavity from gypsum wallboard. Horizontal joints staggered a min of 12 in. from the gypsum wall-board joints.

UNITED STATES GYPSUM CO.—DUROCK Exterior Cement Board or DUROCK Brand Cement Board.

8. Laminating Adhesive\*— (Optional, Not Shown)— Used to bond outer layer of Cementitious Backer Units (Item 7) to inner layers of Gypsum Wallboard (Item 4) in System D. ANSI A136 Type I organic adhesive applied with 1/4 in. square notched trowel. See Adhesives (BYWR) in the Fire Resistance Directory or Adhesives (BLZ) in the Building Materials Directory for names of Classified companies.

\*Bearing the UL Classification Marking

RATED ASSEMBLY NOTE

DESIGNS OF FIRE RATED ASSEMBLIES ARE INCLUDED HEREIN FOR THE CONVENIENCE OF THE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY CONSTRUCTION OF ALL RATED ASSEMBLIES CONFORMS TO THE DESIGN AS PUBLISHED BY THE TESTING LABORATORY. IF ANY PROPRIETARY MATERIAL IS SUBSTITUTED FROM ANY TESTING LABORATORY DESIGN, THE CONTRACTOR MUST PROVIDE DOCUMENTATION THAT THE PROPOSED REVISED ASSEMBLY HAS BEEN APPROVED BY AN APPROVED TESTING LABORATORY FOR THE REQUIRED FIRE AND SOUND RATINGS.

EACH SUB-CONTRACTOR SHALL SUBMIT THE TESTED RATED ASSEMBLY AND FIRE PROTECTION RATED PRODUCTS PROPOSED FOR ALL PENETRATION TYPES AND ALL DIFFERENT RATED ASSEMBLIES REQUIRED FOR CONSTRUCTION ON THIS PROJECT. SEE SPECIFICATIONS.

RECORD REVISIONS

REGISTERED ARCHITECT  
PENNSYLVANIA  
KARL LEWIS WELSH, RAYMOND  
Karl Welsh  
6/27/23  
PROFESSIONAL'S SIGNATURE DATE

UpStreet ARCHITECTS, INC.  
541 PHILADELPHIA ST. 911 MENOHER BLVD.  
INDIANA, PA 15701 JOHNSTOWN, PA 15905

COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF GENERAL SERVICES  
HARRISBURG, PENNSYLVANIA

D.G.S. PROJECT No. C-0588-0015 PHASE 1

LOYSVILLE YOUTH DEVELOPMENT CENTER-  
RENOVATIONS TO ZIMMERMAN-  
BINGAMAN (ZB) COTTAGE  
DEPARTMENT OF HUMAN SERVICES  
LOYSVILLE, TYRONE TOWNSHIP, PERRY COUNTY, PA

RATED ASSEMBLIES

VERIFY SCALE

BAR IS ONE (1) INCH LONG  
ON ORIGINAL DRAWING:  
0 1  
IF BAR IS NOT ONE (1) INCH LONG,  
ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY  
ALL DIMENSIONS.  
VARIANCE FROM CONTRACT  
DOCUMENTS NOT PERMITTED  
WITHOUT PROFESSIONAL & BUREAU  
OF CONSTRUCTION APPROVAL.

DRAWN BY  
B. GAGAN  
CHECKED BY  
J. RIFFER  
DATE  
27 JUNE 2023  
SCALE  
AS NOTED

SHEET No.

FR-01