

T Rating - 0 Hr

System No. W-L-1077 F Rating - 2 Hr

1. Wall assembly- The fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the Individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in, lumber spaced 16 in, DC with nom 2 by 4 in lumber end plates and cross braces. Steel study to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. 00.

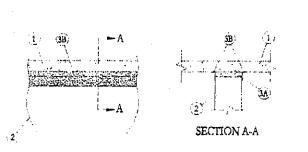
B. Gypsum Board*- Two layers of nom 5/8 in. thick gypsum wallboard, as specified in the individual Wall and Partition Design, Max diam of opening cut in gypsum wallboard layers is 1-15/16 in.

C. Fasteners- When wood stud framing is employed, gypsum wallboard attached to stude with cement coated nalls as specified in the individual Wall or Partition Design. When steel channel stud framing is employed, gypsum wallboard attached to studs with Type S selfdrilling, self-tapping bugle-head steel screws as specified in the individual Wall or Partition Design. Diam of circular through opening cut through both layers of gypsum wallboard on each side of wall assembly to be min 1/4 in. to max 11/16 in. larger than outside diam of flexible metal piping (Item 2) installed in through opening. Side edge of circular opening to be min 3 in. from nearest stud in wall cavity.

2. Through-Penetrating Product* - Flexible Metal Piping- Nom 1 in. diam (or smaller) steel Flexible Metal Piping. Max one flexible metal piping to be installed near center of circular opening in gypsum wallboard layers. Flexible metal piping to be rigidly supported on both sides of wall assembly. Plastic covering on piping shall be removed for a distance of 2 ft on both sides of wall assembly.

TITEFLEX CORP A BUNDY CO 3. Fill, Void or Cavity Material* - Caulk - Caulk fill material forced into annular space around entire circumference of through penetrating product to completely fill nom 1-1/4 in. deep opening in gypsum wallboard layers on each side of the wall assembly.

3M COMPANY -CP 25WB+ *Bearing the UL Classification Mark



System No. HW-D-0023 Assembly Ratings - 2 Hr L Rating at Ambinet - Less than 1 CFM/Lin Ft. L Rating a 400 F - Less than 1 CFM/Lin Ft. Nominal Joint Width - 1 In. Class II Movement Capabilities - 18.75% Compression □r

1. Floor Assembly- Min 4-1/2 in. thick steel-reinforced lightweight or normal weight (100-150 pcf) structural concrete. 2. Wall Assembly- Min 6-1/8 in. thick steel-reinforced

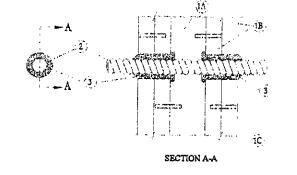
lightweight or normal weight (100-150 pcf) concrete. Vall may also be constructed of any UL Classified Concrete Blocks*. See Concrete Blocks (CAZT) category in Fire Resistance Directory for names of manufacturers. 3. Joint System- Max separation between bottom of floor and top of wall is 1 in. The Joint system is designed to accommodate a max 18.75 percent compression or extension from its installed width. The joint system consists of a forming material and a fill material, as follows:

A. Forming Material* - Min 6-1/8 in, thickness of min 4 acf density mineral wool batt insulation, cut to a min 1-3/8 n, height, compressed and firmly packed into the gap between the top of wall and bottom of the floor as a permanent form. FIBREX INSULATIONS INC -FBX Safing Insulation

IIG MINWOOL L L C -Safing Insulation/MW ROCK WOOL MANUFACTURING CO -Delta Board or Delta-ROXUL INC - Type Safe THERMAFIBER L L C -Type SAF

3. Fill, Void or Cavity Material*- Min 1/16 in. (dry, 1/8 in. wet) thickness of fill material sprayed or brushed on each side of the wall between the top of the wall and the bottom of the floor to completely cover mineral wool and overlap a min of 1 in. onto wall and floor on both sides of wall. 3M COMPANY -FireDam? Spray 100, Fire Barrier Spray

*Bearing the UL Classification Mark



System No. W-L-1017 (Formerly System No. 328) F Ratings - 1 and 2 Hr. (See Item 3) T Rating - 0 Hr L Rating At Ambient - less than 1 CFM/sq ft

L Rating At 400 F - less than 1 CFM/sq ft

1. Wall Assembly- The 1 or 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following

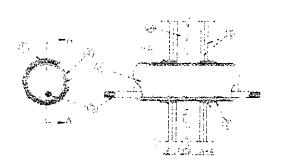
construction features: A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 In. lumber spaced 16 In. OC with nom 2 by 4 in lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. 00.

B. Gypsum Board* - Nom 5/8 In. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, specified in the individual Wall and Partition Design. Diam of circular through opening cut through gypsum wallboard on each side of wall assembly to be min 0 in. (point contact) to max 1 in, larger than outside diam of flexible metal conduit (Item 2) installed in through opening. Side edge of circular opening to be min 3 in. from nearest stud in wall cavity. C. Fasteners- When wood stud framing is employed.

gypsum wallboard attached to studs with cement coated nails as specified in the individual Wall or Partition Design. When steel channel stud framing is employed, gypsum wallboard attached to studs with Type S self-drilling, self-tapping bugle-head steel screws as specified in the individual Wall or Partition Design. 2. Through Penetrating Product* - Flexible Metal Conduit-Nom 4 in. diam (or smaller) aluminum or steel Flexible Metal Condult. Max one flexible metal condult to be installed near center of circular opening in gypsum wallboard. Flexible metal conduit to be rigidly supported on both sides of wall

AFC CABLE SYSTEMS INC 3. Fill, Vold or Cavity Material* - Caulk- Caulk fill material forced into annular space around entire circumference of through penetrating product to completely fill opening in gypsum wallboard layers on each side of the wall assembly. A min 5/8 in. thickness of caulk is required for the 1 hr F Rating. A min 1-1/4 in. thickness of caulk is required for the 2 hr F Rating.

3M COMPANY -CP 25WB+ *Bearing the UL Classification Mark



System No. W-L-2033 (Formerly System No. 573) F Rating - 2 Hr T Rating - 1-1/2 Hr L Rating At Ambient - 15 CFM/sq ft L Rating At 400 F - less than 1 CFM/sq ft

1. Wall Assembly - The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features: A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2

by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) [C.

Steel studs to be min 3-5/8 in.(92 mm) wide and spaced 24 in. (610 mm) 🗓 C. B. Gypsum Board*- Two layers of nom 5/8 in. (16 mm) gypsum wallboard, as specified in the individual Wall Partition Design. Diam of opening cut in gypsum layers on each side of wall assembly to be 1/2 to 3/4 in. (13 to 19 mm) larger than outside diam of ENT (Item 2) such that, when installed, a 1/4 to 3/8 in. (6 to 10 mm) annular space will be present between the ENT and the gypsum wallboard around the entire circumference of the opening. Max diam of opening is 3 in. (76 mm). 2. Electrical Nonmetallic Tubing#- Nom 2 in. (51 mm) diam (or smaller) ENT constructed of polyvinyl chloride (PVC). One ENT centered in circular openings in gypsum wallboard layers and rigidly supported on both sides of the wall assembly.

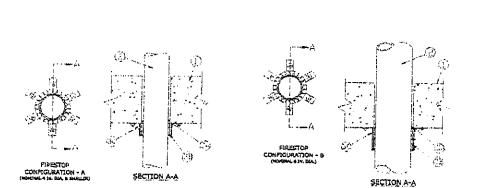
See Electrical Nonmetallic Tubing (FKHU) category in Electrical Construction Materials Directory for names of

3. Fiber Optic Cable- Multiple fiber optical communication cable jacketed with PVC and having a max outside diam of 5/8 in. 4. Fill, Void on Cavity Materials* - Wrap Strip - Nom 1/4 in. (6 mm) thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. (51 mm) wide strips. Nom 2 in. (51 mm) wide strip tightly wrapped around (foil side out) with seam butted. Wrap strip layer securely bound with steel wire or aluminum foil tape and slid into annular space

approx 1-1/4 in. (32 mm) such that approx 3/4 in. (19 mm) of

the wrap strip width protrudes from the wall surface on 3M COMPANY -FS-195+ 5. Fill, Void or Cavity Materials* - Caulk - Min 1/4 in. (6 mm) diam continuous bead applied to leading edge of wrap strip layer (Item 4) prior to insertion of wrap strip layer into annular space. After insertion of wrap strip layer in annular space, a nom 1/4 in. (6 mm) diam continuous bead is to be applied to the wrap strip/wall interface and to the exposed edge of the wrap strip approx 3/4 in. (19 mm) from the wall surface on each side of the wall assembly. 3M CDMPANY -CP 25WB+, IC 15WB or FireDam 150+

#Bearing the UL Listing Mark *Bearing the UL Classification Mark



System No. C-AJ-2214

T RATING 1 3/4, 2 AND 3 HR. (SEE ITEM 2)

I Rating is 1-3/4 when sleeve is used

1. Floor or Wall Assembly Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Cancrete Blacks*. Floor may also be constructed of any min 8 in. thick UL Classified hallow-care Precast Concrete Units*. Max diam of opening See Concrete Block and Precast Concrete Units (CAZT) (CFTV) categories in the Fire Resistance Directory

for names of manufacturers. 1A. Steel Sleeve (Optional, Not Shown)-Nom 5 in. diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. For use with nam 4 in. diam (or smaller) pipes or conduits,

2. Through Penetrants One nonmetallic pipe or conduit to be centered within opening with a norm 1/4 in. annular space between pipe or conduit and periphery of opening. Pipe or conduit to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes or conduits

A. Polyvinyi Chloride (PVC) Pipe Nom 6 in. diam (or smaller) Schedule 40 salid care or cellular care PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system. B. Rigid Nonmetallic Conduit++ Nom 5 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70). C. Chlorinated Polyvinyl Chloride (CPVC) Pipe Nam 6 in. diam (or smaller) SDR17 CPVC pipe for use in

closed (process or supply) or vented (drain, waste or vent) piping systems. D. Acrylanitrile Butadiene Styrene (ABS) Pipe Nam 6 in. diam (or smaller) Schedule 40 solid core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems, E. Fire Retardant Polypropylene (FRPP) Pipe Nom 6 in. diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system. F. Polyvinylidene Fluoride (PVDF) Pipe Nom 2 in. diam (or smaller) SDR 11, or nom 4 in. diam (or smaller)

SDR 32.5 PVDF pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system. T Rating is 1-3/4 Hr for nom 2-1/2 through 4 in. diam FRPP pipes. T Rating is 2-1/2 Hr for nom 2-1/2 through 4 in, diam PVC pipes or conduits. T Rating is 3 Hr for all other pipes or conduits.

3. Firestop System The details of the firestop system shall be as follows: A. Fill, Void or Cavity Materials* -- Caulk or Putty Min 1/2 in. thickness of caulk or putty applied within annular space, flush with bottom of floor or both sides of wall. 3M COMPANY -- CP 25WB+ Coulk, MPS-2+ Putty

Firestop Configuration A (Nam 4 in, diam and smaller pipes)

A1. Fill, Void or Cavity Materials* -- Secient (Optional, Not Shown) For floor assemblies, an additional min 1/2 in. thickness of sectant may be applied within the annular space flush with top surface of floor. 3M COMPANY -- FB-1000 NS Segiont

8. Fill, Void or Cavity Materials* -- Wrap Strip Nom 1/8 in. thick intumescent material supplied in 2 in. wide strips. Wrap strip tightly wrapped ground nonmetallic pipe with continuous layers and butted tightly against the bottom surface of the floor or both surfaces of the wall. The min number of layers required is dependent upon the nam diam of the pipe. For nom 2 in. diam (and smaller) pipes, two layers are required. For norm 2-1/2 in. and 3 in. diam pipes, three layers are required. For norm 3-1/2 in. and 4 in. diam pipes, four layers are required. Wrap strip layers temporarily held in position using aluminum fail tape, steel wire tie, or equivalent. 3M COMPANY -- Ultra CS

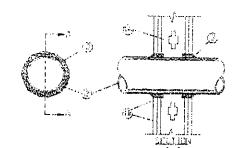
C. Steel Collar Nom 2 in, deep collar with 1-1/4 in, wide by 2 in, long anchor tabs and min 1/2 in, long tabs to retain wrap strip layers. Calls of precut 0.016 in. thick (28 gauge) galv sheet steel available from wrap strip manufacturer. As an alternate, collar may be field-fabricated from min 0.016 in. thick (28 gauge) gaiv sheet steel in accordance with instruction sheet supplied by wrap strip manufacturer. Steel collar, with anchor tabs bent outward 90 deg, wrapped tightly around wrap strip layers with min 1 in. overlap at seam. Anchor tabs to be pressed tightly against floor or wall surface(s), and collar to be compressed around wrop strip layers using a min 1/2 in. wide by 0.028 in. thick stainless steel band clamp at the collar midheight. As an alternate to the band clamp, collar for systems with three or more layers of wrap strip may be fastened together along with three No. 6 by 3/8 in, long self-tapping steel screws. Collar to be secured to floor or wall surface(s) with 1/4 in. diam by min 1-1/2 in. long steel expansion bolts in conjuction with steel nuts and min 1-1/4 in, diam steel fender washers. Min of two, three or four anchor boits, symmetrically located, for nom 2 in. diam (and smaller), nom 3 in. diam (and smaller) and nom 4 in. diam (and smaller), pipes, respectively.

Firestop Configuration B (Nom 6 in, diam pipes)

B. Fill, Void or Cavity Materials* -- Wrap Strip Nam 1/8 in. thick intumescent material supplied in 2 in. wide strips. Min four continuous layers of wrop strip tightly wrapped around nonmetallic pipe and butted tightly against the bottom surface of the floor or both surfaces of the wall. An additional stack of four continuous layers of wrop strip tightly wrapped around nonmetallic pipe and butted tightly against the first layers of wrap strip. 3M COMPANY -- Ultra GS

C. Steel Callar Two nom 2 in. deep collars with 1-1/4 in. wide by 2 in. long anchor tabs and min 1/2 in. long tabs to retain wrop strip layers. Calls of precut 0.016 in. thick (28 gauge) gaiv sheet steel available from wrap strip manufacturer. As an alternate, collars may be field—fabricated from min 0.016 in. thick (28 gauge) galv sheet steel in accordance with instruction sheet supplied by wrap strip manufacturer. Steel callars wrapped tightly around wrap strip layers with min 1 in. overlap at seams, with anchor tabs bent outward 90 deg for upper or inner collars for securement to wall or floor. Anchor tabs for lower or outer collars to overlap anto upper or inner collars. Collars to be compressed around wrap strip layers using a min 1/2 in. wide by 0.028 in. thick stainless steel band clamp at each collar's midheight. An additional min 1/2 in. wide by 0.028 in. thick stainless steel band clamp to be tightly fastened around callars at the point where anchor tabs of lower or auter collars overlap anto upper or inner collars. As an alternate to the band clamps at each collar's midheight, each collar may be fastened together along the overlapping seam with three No. 6 by 3/8 in. long self-topping steel screws. The additional steel band clamp fastened around collars at the paint where anchor tabs of lower or outer collars overlap anto upper or inner collars is still required when collars are fastened together with screws. Upper or inner collars to be secured to floor ar wall surface(s) with 1/4 in. diam by min 1-1/2 in. lang steel expansion bolts, or equivalent, in conjuction with steel nuts and min 1-1/4 in. diam steel fender washers. Min of six anchor balts, symmetrically located, required. *Bearing the UL Classification Marking

++Bearing the UL Listing Mark



System No. W-L-1001

(Formerly System No. 147) F Rotings - 1, 2, 3 and 4 Hr (See Items 2 and 3) T Ratings - 0, 1, 2, 3, and 4 Hr (See Item 3) L Roting At Ambient - less than 1 CFM/sq ft L Rating At 400 F - less than 1 CFM/sq ft

1. Wall Assembly The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features: A. Studs Wall framing may consist of either wood stude (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel study to be min 3-5/8 in, wide by 1-3/8 in, deep channels spaced max

B. Gypsum Board* Norn 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 13-1/22. Pipe or Conduit Nam 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nam 12 in. diam (or

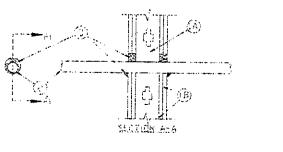
smaller) service weight (or heavier) cost iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L or (or heavier) capper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 h. Steel pipes or conduits larger than nom 4 in, diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly. 3. Fill, Void or Cavity Material* - Caulk Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in, diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Roting of the firestop system is dependent upon the hourly fire roting of the wall assembly in which it is installed, as shown in the following table. The hourly I Roting of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below: Max Pipe or Conduit Diam in. Annular Space In. F Rating Hr T

1 0 to 3/16 1 or 2 0+, 1 or 2 1 1/4 to 1/2 3 or 4 3 or 4 4 0 to 1-1/2 1 or 2 0 6 1/4 to 1/2 3 or 4 0 12 3/16 to 3/8 1 or 2 0

+When copper pipe is used, T Rating is 0 h.

3M COMPANY -- CP 25WB+.

*Bearing the UL Classification Mark



System No. W-L-2088

December 27, 1999

F Ratings — 1 and 2 Hr (See Item 1) T Rotings - 0, 1 and 2 Hr (See Item 2)

1. Wall Assembly The 1 or 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features: A. Studs Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-1/2 in. wide and spaced max 24 in.

B. Gypsum Board* Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Dlam of opening shall be 7/8 in. larger than the outside diam of nonmetallic pipe or conduit (Item 2). The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrants One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space for norm 1-1/4 in, diam and smaller between the pipe or conduit and periphery of opening shall be min D in. (point contact) to max 7/8 in. The annular space for pipe or conduit greater than norm 1-1/4 in. diam between the pipe or conduit and periphery of opening shall be min 1/2 in. to max 1 in. Pipe or conduit to be rigidly supported an both sides of wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:

A. Polyvinyl Chloride (PVC) Pipe Nom 2 in. diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system. B. Chlorinated Polyvinyl Chloride (CPVC) Pipe Nom 2 in. dlam (or smaller) SDR17 CPVC pipe for use in clased (process or supply) or vented (drain, waste or vent) piping systems.

C. Polyvinyl Chloride (PVC) Pipe Nam 3 in. diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) piping system. D. Chlorinated Polyvinyl Chloride (CPVC) Pipe Nam 3 in. diam (or smaller) SDR17 CPVC pipe for use in

closed (process or supply) piping systems. E. Rigid Nonmetallic Conduit++ Nom 3 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No 70). F. Electrical Nonmetallic Tubing (ENT)++ Nom 1 in. diam (or smaller) ENT formed of PVC, installed in

accordance with Article 331 of the National Electrical Code (NFPA No. 70). See Rigid Nonmetallic Conduit (DZKT) and Electrical Nonmetallic Tubing (FKHU) in UL Construction Materials Directory for names of manufacturers.

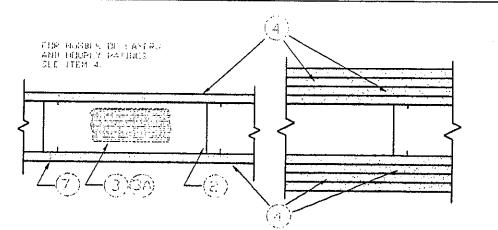
G. Acrylonitrile Butadiene Styrene (ABS) Pipe Nom. 2 in. diam (or smaller) Schedule 40 solid core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping The hourly T Rating is dependent on the hourly rating of the wall assembly, the pipe or conduit size and whether the pipe is intended for use as a closed or vented system, as shown in the following table.

Diam In. Wall Assembly Rating Hr Closed (c) or Vented (v) T Rating

1/2 to 3 1 c 1 1/2 to 1-1/4 I v 1 1/2 to 1-1/4 2 c 2 1/2 to 1-1/4 2 v 1 21 v 0 2 2 v 0

3. Fill, Vaid or Cavity Materials* -- Caulk or Putty Min thickness of 5/8 in. and 1-1/4 in. of caulk or putty for 1 and 2 hr rated wall assemblies, respectively, applied within annulus between pipe or conduit and periphery of the opening, flush with both surfaces of wall assembly. At the point contact location between pipe or conduit and gypsum wallboard, a min 1/2 in. diam bead of coulk or putty shall be applied at the pipe or conduit/wallboard interface on both surfaces of wall assembly. 3M COMPANY - CP 25WB+, MPS-2+

++Bearing the UL Listing Mark



Design No. U419

October 03, 2005

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 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 Stude -- Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min width as indicated under item 4, min 1-1/4 in. flanges and 1/4 in. return, epoced a max of 24 in. OC. Stude to be cut 3/8 to 3/4 in less than assembly height. 3. Batts and Biankets* -- (Required as indicated under item 4) -- Mineral wool batts, friction fitted between study and runners. Min nom thickness as indicated under Item 4. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies. 3A. Batts 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 Batts and Blankets

(BKNV or BZJZ) Categories for names of Classified companies. 4. Gypsum Board* — Gypsum panels with beveled, square or topered edges, applied vertically or horizontally. Vertical joints centered over study and staggered one stud cavity on apposite sides of study. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Harizontal edge joints and harizontal butt joints on apposite sides of stude need not be staggered. Harizontal 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 hr. 2 hr. 3 hr and 4 hr ratings are as follows: Wallboard Protection on Each Side of Wall

Rating Min Stud Depth No. of Lavers of Panel Min Thkns of Insulation 1 3-1/2 1 layer, 5/8 in. thick Optional 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 1-5/8 4 layers, 1/2 in. thick Optional 4 2-1/2 2 layers, 3/4 In. thick 2 In.

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 Types IP-X3 or ULTRACODE

UNITED STATES GYPSUM CO -- 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR. C. WRC, FRX-G, IP-AR, IP-X2, IPC-AR; 3/4 in. thick Types IP-X3 or ULTRACODE

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, WRC or; 3/4 in, thick Types IP-X3 or ULTRACODE

4A. Gypsum Board* -- (As an alternate to item 4) -- 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.

USC MEXICO S A DE C V -- Type SHX.

5. Fasteners -- (Not shown) -- Type S or S-12 steel screws used to attach panels to stude (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 battam 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 1/2in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. Three-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., 5/8 in. thick panels or 2-5/8 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, QC. 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 5/8 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 affect 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. 5A. Steel Framing Members (Not Shown)* -- (Optional on one or both sides, not shown, for single or double layer systems) -- 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. 2-3/8 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 5. Not for use with Item 4A. o. Steel Framing Members* -- Used to attach furring channels (Item Ba) to studs (Item 2). Clips spaced max. 48 in. OC., and secured to study with No. 8 \times 1-1/2 in, minimum self-drilling, S-12 steel screw through the center grammet. Furring channels are friction fitted into clips. SAC INTERNATIONAL INC -- Type RSIC-1.

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 ponels are supplied with a square edge. 8. Siding, Brick or Stucco -- (Optional, not shown) -- Aluminum, vinyl or steel siding, brick veneer or stucco, neeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to study with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick. 9. Caulking and Sealants* -- (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

DATE: 8-7-06

PROJECT NO. 1399

DAYTON FINATION I

NCARB REGISTRATION NO. 46021 REGISTRATION NO. AROO16887

SHEET NO.

the state and deployment makes of the state of the state

