DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 84 00—FIRESTOPPING

REPORT HOLDER:
PASSIVE FIRE PROTECTION PARTNERS
1412 DERWENT WAY
DELTA, BRITISH COLUMBIA V3M 6H9
CANADA

EVALUATION SUBJECT:
PASSIVE FIRE PROTECTION PARTNERS THROUGH-PENETRATION FIRESTOP SYSTEMS AND FIRE-RESISTIVE JOINT SYSTEMS

“2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence”
1.0 EVALUATION SCOPE

Compliance with the following codes:
- 2006 International Building Code® (IBC)
- 2006 International Residential Code® (IRC)
- 1997 Uniform Building Code™ (UBC)

Property evaluated:
Fire-resistance-rated construction

2.0 USES

The Passive Fire Protection Partners Through-penetration Firestop Systems and Fire-resistive Joint Systems are for use in fire-resistance-rated wall assemblies or floor/ceiling assemblies when installed in accordance with this report and IBC Section 712 (for penetrations), IBC Section 713 (for fire-resistance joint systems), UBC Section 706 (for fire-resistive joint systems) and UBC Section 714 (for through-penetration firestops).

3.0 DESCRIPTION

3.1 General:

The Passive Fire Protection Partners Through-penetration Firestop Systems are designed to seal through-penetrations in fire-resistant-rated wall assemblies or floor/ceiling assemblies described in Figures 1 through 5, 7, and 11. The Passive Fire Protection Partners Fire-resistive Joint Systems are designed to seal construction and expansion joints in the fire-resistant-rated assemblies described in Figures 6, 8, 9 and 10. The F-ratings, T-ratings and L-ratings are as indicated in the figures. The systems are installed in steel or wood-framed gypsum board partitions, wood-framed floor/ceiling assemblies, concrete walls and concrete floors.

3.2 Material:

3.2.1 4100SL™ (Self-leveling) Fire and Smoke Stop Sealant: 4100SL™ is a self-leveling, modified latex, pourable elastomeric sealant designed to prevent the passage of fire and hot gases through fire-resistive separations. The sealant is packaged in 29-fluid-ounce (850 mL) cartridges, 35.2-fluid-ounce (1.0 L) bottles, 2.65-gallon (10.0 L) bottles, and 5-gallon (18.9 L) plastic pails. Unopened containers of the sealant should be stored in an area where the temperature is between 40°F and 90°F (4°C and 32°C), and must not be allowed to freeze. The sealant has a shelf life of one year when stored under protective cover in its original sealed container.

3.2.2 4800DW™ Fire and Smoke Stop Sealant: 4800DW™ is a high-solid, latex-based, elastomeric sealant designed to be a one-component firestop seal for penetrations in fire-resistant concrete, concrete block, and gypsum board/wood partition walls and floors and top-of-wall joints as noted in Figure 8. The sealant is packaged in 10.1-fluid-ounce (300 mL) cartridges, 20-fluid-ounce (600 mL) foil packs, 29-fluid-ounce (850 mL) cartridges, 3.17-gallon (12 L) plastic pails and 5-gallon (18.9 L) plastic pails. It should be stored in an area where the temperature is between 40°F and 90°F (4°C and 32°C), and must not be allowed to freeze. The sealant has a shelf life of one year when stored under protective cover in its original sealed container.

3.2.3 5100SP™ (Sprayable Mastic) Fire and Smoke Stop Sealant: 5100SP™ is a spray-, brush- or trowel-grade elastomeric sealant. It is a modified latex elastomer designed to prevent the passage of fire and hot gases through fire-resistive penetrations and top-of-wall and floor-to-wall joints described in Figures 6, 9 and 10. The sealant is packaged in 5-gallon (18.9 L) plastic pails and should be stored in an area where the temperature is between 40°F and 90°F (4°C and 32°C), and must not be allowed to freeze. The sealant has a shelf life of one year when stored under protective cover in its original sealed container.

4.0 INSTALLATION

4.1 General:

The through-penetrating item, penetration opening, joint opening and related surfaces must be clean and free of...
contaminants that may inhibit adhesion or curing, such as dirt, dust, oil, moisture, frost, grease and wax. The sealant must be installed in accordance with Figures 1 through 11. Installation of through-penetration firestops must comply with IBC Section 712, and installation of fire-resistant joint systems must comply with IBC Section 713 or UBC Section 714, as applicable.

4.2 4100SL™ (Self-leveling) Fire and Smoke Stop Sealant:
The 4100SL™ sealant must be installed in accordance with Figure 1, with a backing of mineral wool insulation having a 4 to 6 pcf (64 to 96 kg/m³) density, compressed at a minimum of 25 percent to a minimum depth of 3\(\frac{1}{2}\) inches (87 mm). The 4100SL™ sealant is installed to a dry-film sealant depth of \(\frac{1}{4}\) inch (6 mm). Installation temperature must be between 50°F and 90°F (10°C and 32°C).

4.3 4800DW™ Fire and Smoke Stop Sealant:
The 4800DW™ sealant must be installed to a depth and thickness outlined in Figures 1 through 8, and 11. Installation temperature must be between 45°F and 90°F (7°C and 32°C).

4.4 5100SP™ (Sprayable Mastic) Fire and Smoke Stop Sealant:
The 5100SP™ sealant must be installed in accordance with Figures 1, 6, 9 and 10, with a backing of mineral wool insulation having a 4 to 6 pcf (64 to 96 kg/m³) density, compressed at a minimum of 25 percent to a minimum depth of 3\(\frac{1}{2}\) inches (87 mm). The 5100SP™ sealant is applied in layers, with each layer having a thickness of \(\frac{1}{16}\) to \(\frac{1}{4}\) inch (1.6 to 6 mm). Installation temperature must be between 43°F and 90°F (6°C and 32°C).

5.0 CONDITIONS OF USE
The Passive Fire Protection Partners Through-penetration Firestop Systems and Fire-resistant Joint Systems described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the case of a conflict between this report and the manufacturer's published installation instructions this report governs.

5.2 Fire-resistant-rated wall assemblies and floor/ceiling assemblies must comply with the applicable code.

5.3 Pipe insulation, when required, must have a flame-spread index not exceeding 25 and a smoke-density index not exceeding 50.

6.0 EVIDENCE SUBMITTED
Data and reports of testing in accordance with the ICC-ES Acceptance Criteria for Fire-resistant Joint Systems (AC30), dated June 2006; ASTM E 119 (UBC Standards 7-1); ASTM E 814 (UBC Standard 7-5); UL 1479; and UL 2079.

7.0 IDENTIFICATION
The containers of sealant used in the Passive Fire Protection Partners Through-penetration Firestop Systems and Fire-resistant Joint Systems are identified by a stamp or label bearing the manufacturer's name (Passive Fire Protection Partners), the product name, the batch number, the expiration date, the storage instructions, and the evaluation report number (ESR-2996).
General Notes on Figures

1. **Assemblies:** All fire-resistive assemblies must comply with Chapter 7 of the UBC or the IBC, as applicable. The minimum dimensions in figures must be observed.

2. **Concrete Assemblies:** The concrete assemblies are normal-weight concrete and must comply with Chapter 19 of the UBC or the IBC, as applicable.

3. **Gypsum Wallboard and Wall Assemblies:**
   a. **Steel Studs:** Minimum No. 25 gage [0.021 inch (0.53 mm)], galvanized steel studs at least 2 1/2 inches (64 mm) wide. Allowable spacing is up to 24 inches (610 mm) on center. Studs must comply with Chapter 22 of the UBC or the IBC, as applicable.
   b. **Wood Studs:** Minimum nominal 2-by-4 wood studs must comply with Chapter 23 of the UBC or the IBC, as applicable. The maximum spacing is 16 inches (406 mm) on center.
   c. **Gypsum Wallboard:** The gypsum wallboard thicknesses required on each side of the wall assembly are as indicated in the figures. The wallboard must be Type X complying with ASTM C 36, as referenced in Chapter 25 of the UBC or the IBC, as applicable.

4. **One-hour Fire-resistive Wood Floor/Chase Wall Assemblies:**
   a. **Floor:** Lumber or plywood subfloor with lumber, plywood or concrete or gypsum topping finish must comply with Chapter 23 of the UBC or the IBC, as applicable.
   b. **Wood Joists:** Nominal 2-by-10 or larger lumber joists with 1-by-3 lumber bridging and fire-blocked ends must comply with Chapter 23 of the UBC or the IBC, as applicable. Joist spacing is 16 inches (406 mm) on center.
   c. **Gypsum Wallboard:** One layer of 5/8-inch-thick (16 mm), Type X gypsum wallboard ceiling must comply with ASTM C 36, as referenced in Chapter 25 of the UBC or the IBC, as applicable. The wallboard is directly attached to wood joists.

5. **Two-hour Fire-resistive Wood Floor/Chase Wall Assemblies:**
   a. **Floor:** Lumber or plywood subfloor with lumber, plywood or concrete or gypsum topping finish must comply with Chapter 23 of the UBC or the IBC, as applicable.
   b. **Wood Joists:** Nominally 2-by-10 or larger lumber joists with 1-by-3 lumber bridging and fire-blocked ends must comply with Chapter 23 of the UBC or the IBC, as applicable. Joist spacing is 16 inches (406 mm) on center.
   c. **Furring Channels:** No. 25 gage [0.0209 inch (0.53 mm)] steel channels, 5/8 inch (16 mm) deep by 1 1/2 inches (38 mm) wide, are fastened to wood joists. Spacing is 24 inches (610 mm) on center.
   d. **Gypsum Wallboard:** Two layers of 5/8-inch-thick (16 mm), Type X gypsum wallboard ceiling must comply with ASTM C 36, as referenced in Chapter 25 of the UBC or the IBC, as applicable. The base layer is fastened to the joists, and the face layer is fastened to the channels.

6. **Chase Wall:**
   a. **Wood Studs:** Single 2-by-6 or double 2-by-4 wood studs must comply with Chapter 23 of the UBC or the IBC, as applicable. Spacing up to 16 inches (406 mm) on center is permitted.
   b. **Sole Plate:** Single 2-by-6 or two parallel 2-by-4 lumber plates must comply with Chapter 23 of the UBC or the IBC, as applicable.
   c. **Top Plate:** The double top plate is constructed using either two 2-by-6 lumber plates or two parallel sets of two 2-by-4 lumber plates complying with Chapter 23 of the UBC or the IBC, as applicable.
   d. **Gypsum Wallboard:** One or two layers of 5/8-inch-thick (16 mm), Type X gypsum wallboard on each side of the wall must comply with Chapter 25 of the UBC or the IBC, as applicable. When the double stud wall is constructed, the penetrating pipe must be surrounded on all four sides with the wallboard.
**FIGURE 1**
METALLIC PIPE THROUGH CONCRETE WALL OR FLOOR

**FIGURE 2**
INSULATED METALLIC PIPE THROUGH CONCRETE WALL OR FLOOR

- **METALLIC PIPE THROUGH CONCRETE WALL OR FLOOR**
  - F RATING: 3 HR
  - T RATING: 0 HR

- **INSULATED METALLIC PIPE THROUGH CONCRETE WALL OR FLOOR**
  - F RATING: 2 HR
  - T RATING: 1 HR

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1. **3 HOUR FIRE RATED CONCRETE WALL OR FLOOR ASSEMBLY**

   MAX 2½" DIAMETER OPENING

   - MIN 4½" LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL OR FLOOR
   - MIN 4½" LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL OR FLOOR

2. **ONE OF THE FOLLOWING PENETRATING ITEMS TO BE INSTALLED:**
   - **ANNUAL SPACE:**
     - **STEEL PIPE:** MAX 4" DIA. (OR SMALLER) SCH 10 (OR HEAVIER)
     - **STEEL CONDUIT:**
       - **C CONDUIT:** NON 4" DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING
       - **D CONDUIT:** NON 4" DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING
     - **IRON PIPE:** NON 4" DIA. (OR SMALLER) CAST OR DUCTILE
     - **COPPER TUBING:** NON 6" DIA. (OR SMALLER) TYPE L (OR HEAVIER)
     - **COPPER PIPE:** NON 6" DIA. (OR SMALLER) REGULAR (OR HEAVIER)

3. **FIRESTOP SYSTEM**
   - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
     - **MIN 4" THICKNESS:** 4 PCF DENSITY MINERAL WOOL, COMPRESSED 25%
     - **1/4" THICKNESS FLUSH WITH BOTH SIDES OF WALL OR TOP SURFACE OF FLOOR**
     - **1/4" BEAD AT POINT CONTACT LOCATION**

4. **FIGURE 3**
METALLIC PIPE THROUGH WOOD FRAMED FLOOR

- **METALLIC PIPE THROUGH WOOD FRAMED FLOOR**
  - F RATING: 1 HR
  - T RATING: 0 HR

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5. **1 HR FIRE RATED FLOOR-CEILING ASSEMBLY**

   MAX 2½" DIAMETER OPENING

   - **LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TONING MIXTURE**
   - **LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TONING MIXTURE**

   **B.**
   - **2" X 10" LUMBER JOIST SPACED 16" OC WITH 4" THICKNESS LUMBER BRIDGING AND ENDS FIRESTopped**
   - **2" X 10" STEEL OR COMBINATION LUMBER AND STEEL JOISTS SPACED 16" OC WITH BRIDGING AS REQUIRED AND ENDS FIRESTopped**
   - **2" X 10" TRUSSES OR STRUCTURAL WOOD MEMBERS SPACED 16" OC WITH BRIDGING AS REQUIRED AND ENDS FIRESTopped**
   - **C.**
     - **NOM 5/8" THICK CEILING HUNG WALLBOARD**

   **2.**
   - **ONE OF THE FOLLOWING PENETRATING ITEMS TO BE INSTALLED:**
     - **ANNUAL SPACE:**
       - **STEEL PIPE:** MAX 4" DIA. (OR SMALLER) SCH 10 (OR HEAVIER)
       - **STEEL CONDUIT:**
         - **C CONDUIT:** NON 4" DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING
         - **D CONDUIT:** NON 4" DIA. (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING
     - **COPPER TUBING:** NON 4" DIA. (OR SMALLER) TYPE L (OR HEAVIER)
     - **COPPER PIPE:** NON 4" DIA. (OR SMALLER) REGULAR (OR HEAVIER)

   - **3/4" THICKNESS FLUSH WITH TOP SURFACE OF FLOOR**
   - **5/6" THICKNESS FLUSH WITH THE SURFACE OF CEILING**

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**FIGURE 4**
NONMETALLIC PIPE THROUGH WOOD FRAMED FLOOR

- **NONMETALLIC PIPE THROUGH WOOD FRAMED FLOOR**
  - F RATING: 1 HR
  - T RATING: 0 HR

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6. **1 HR FIRE RATED FLOOR-CEILING ASSEMBLY**

   MAX 2½" DIAMETER OPENING

   - **LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TONING MIXTURE**
   - **LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TONING MIXTURE**

   **B.**
   - **2" X 10" LUMBER JOIST SPACED 16" OC WITH BRIDGING AS REQUIRED AND ENDS FIRESTopped**
   - **2" X 10" STEEL OR COMBINATION LUMBER AND STEEL JOISTS SPACED 16" OC WITH BRIDGING AS REQUIRED AND ENDS FIRESTopped**
   - **2" X 10" TRUSSES OR STRUCTURAL WOOD MEMBERS SPACED 16" OC WITH BRIDGING AS REQUIRED AND ENDS FIRESTopped**

   **C.**
   - **C.**
     - **NOM 5/8" THICK CEILING HUNG WALLBOARD**

   **2.**
   - **ONE OF THE FOLLOWING PENETRATING ITEMS TO BE INSTALLED:**
     - **ANNUAL SPACE FOR VENT PIPE:**
       - **1½" TO 1½" ANNUAL SPACE FOR VENT PIPE**
       - **1½" TO 1½" ANNUAL SPACE FOR VENT PIPE**
     - **PVC PIPE:** NON 2" DIA. (OR SMALLER) SCH 40 SOLID CORE OR CELLULAR
     - **ABS PIPE:** NON 2" DIA. (OR SMALLER) SCH 40 SOLID CORE OR CELLULAR

   - **3/4" THICKNESS FLUSH WITH TOP SURFACE OF FLOOR OR TOP SURFACE OF SOLE PLATE**
   - **1" THICKNESS FLUSH WITH BOTTOM SURFACE OF LOWER TOP PLATE**
   - **5/6" THICKNESS FLUSH WITH TOP SURFACE OF WALLBOARD**
FIGURE 5
NONMETALLIC PIPE THROUGH WOOD FRAMED FLOOR

F RATING - 1 HR
T RATING - 0 HR

1. 1 HR FIRE RATED FLOOR-CEILING ASSEMBLY
A. LUMBER OR PLYWOOD SURFACE WITH FINISH FLOOR OF LUMBER, PLYWOOD OR
   FLOOR TABBING MIXTURE MAX. 5" DIAMETER OPENING.
B. NOM. 2x10" LUMBER JOIST SPACED 16" OC WITH BRIDGING AS REQUIRED
   AND ENDS FIRESTOPPED.
C. NOM. 2x4" OR DOUBLE 2x2" LUMBER STUDS SPACED 16" OC WITH
   BRIDGING AS REQUIRED AND ENDS FIRESTOPPED.
D. BNEB. 2x4" X 2x4" OR STRUCTURAL WOOD MEMBERS SPACED 16" OC WITH
   BRIDGING AS REQUIRED AND ENDS FIRESTOPPED.
E. NOM. 5/8" THICK GYPSUM WALLBOARD NAILED TO LOWER SURFACE OF JOIST.

2. 1 HR FIRE RATED CHASE WALL
A. NOM. 2x4" OR DOUBLE 2x2" LUMBER STUDS.
B. NOM. 2x4" OR PARALLEL 2x4" LUMBER PLATE MAX. 3" DIAM OPENING.
C. TWO NOM. 2x4" OR TWO SETS OF 2x4" LUMBER PLATE MAX. 3" DIAM OPENING.
D. ONE LAYER NO. 5/8" GYPSUM.

3. ONE OF THE FOLLOWING PENETRATING ITEMS FOR OPEN PIPING SYSTEMS ONLY
   TO BE INSTALLED: ANNULAR SPACE FOR VENT PIPE - 1/8" TO 3/4".
   ANNULAR SPACE FOR DRAIN PIPE - 1/8" (POINT CONTACT) TO 1/2".
   A. PVC PIPE: NOM. 4" DIAM OR SMALLER SCH 40 SOLID OR CELLULAR CORR.
   B. CPVC PIPE: NOM. 4" DIAM OR SMALLER SCH 17.
   C. ABS PIPE: NOM. 4" DIAM OR SMALLER SCH 40 SOLID OR CELLULAR CORR.
   D. PBP PARTNERS - 48000GW.

1/4" THICKNESS FLUSH WITH TOP SURFACE OF FLOOR OR TOP SURFACE
   OF Gypsum WALLBOARD.
1/4" THICKNESS FLUSH WITH BOTTOM SURFACE OF LOWER FLOOR OR
   GYPSUM WALLBOARD.
3. WATER CLOSET - FLOOR MOUNTED VITRIFIED CHINA WATER CLOSET.

FIGURE 6
TOP OF WALL JOINT-TO-FRAMED WALL TO CONCRETE FLUTED DECK

F RATING - 1, 2, 3 & 4 HR (SEE ITEM 2)
L RATING @ Ambient - LESS THAN 1 CFM/LIN FT
L RATING @ 400 CFM/LIN FT
NOMIAL JOINT WIDTH - 3/4"
33% COMPRESSION & EXTENSION

1. FLUTED DECK/CONCRETE WOOD JOINT ASSEMBLY
A. MAX 3" DEEP GALVANIZED STEEL FLUTED UNITS.
B. MIN 2-1/2" THICK REINFORCED CONCRETE.
AS MEASURED FROM THE TOP PLANE OF THE FLOOR UNITS.

2. 1, 2, 3 OR 4 HR FIRE RATED WALL ASSEMBLY
A. GALV STEEL CHANNEL SIZE TO ACCOMMODATE STEEL STUDS.
B. MIN 3-5/8" WIDE STEEL STUDS, STUD SPACING NOT TO EXCEED 24" OC.
C. TWO, THREE OR FOUR LAYERS OF 5/8" WALLBOARD ON EACH SIDE OF
   STUDS FOR A 1, 2, 3 OR 4 HR FIRE RATING, RESPECTIVELY. WALLBOARD TO
   BE STRAIGHT CUT MIN 3/4" FROM LOWER SURFACE OF FLOOR UNITS.

3. MAX JOINT WIDTH - 3/4", 33% COMPRESSION OR EXTENSION
A. NOM. 3-5/8" WIDE BY 2" DEEP, 24 GA. STEEL DEFLECTION CHANNEL FASTENED
   TO UNDERSIDE OF FLUTED UNITS. CEILING RUNNER INSTALLED WITHIN
   DEFLECTION CHANNEL TO ALLOW MOVEMENT.
B. MIN 4-1/2" THICKNESS FOR 1 & 2 HR FIRE RATED ASSEMBLY, MIN 7-3/8" THICKNESS FOR 3 HR FIRE RATED ASSEMBLY AND 8-5/8" THICKNESS FOR 4 HR
   FIRE RATED ASSEMBLY OF MIN. 4 Pcf DENSITY MINERAL WOOL, COMPRESSED 25%
   INSTALLED BETWEEN TOP OF WALLBOARD OR CHANNEL AND LOWER SURFACE
   OF FLUTED UNITS, FLUSH WITH BOTH SURFACE OF WALLBOARD.
C. PBP PARTNERS - 51000GW.
1/4" THICKNESS COMPLETELY COVERING MINERAL ON BOTH SIDES OF WALL
   1/4" OVERLAP ONTO WALL OR STEEL FLUTED UNITS.

FIGURE 7
METALLIC PIPE THROUGH FRAMED WALL

F RATING - 2 HR
T RATING - 0 HR

1. 2 HOUR FIRE RATED FRAMED WALL ASSEMBLY
A. NOM. 2x4" LUMBER STUDS SPACED 16" OC.
B. TWO LAYERS NOM. 5/8" THICK GYPSUM WALLBOARD TYPE X.

2. ONE OF THE FOLLOWING PENETRATING ITEMS TO BE INSTALLED:
   ANNULAR SPACE - 3/8" TO 1/2".
   A. STEEL PIPE: NOM. 4" DIAM OR SMALLER SCH 7 OR HEATHER.
   B. STEEL PIPE: NOM. 8" DIAM OR SMALLER SCH 10 OR HEATHER.
   C. STEEL PIPE: NOM. 10" DIAM OR SMALLER SCH 20 OR HEATHER.
   D. IRON PIPE: NOM. 4" DIAM OR SMALLER CAST OR DUCTILE.
   E. CONDUIT: NOM. 4" DIAM OR SMALLER EXC OR STEEL CONDUIT.
   F. COPPER TUBING: NOM. 4" DIAM OR SMALLER TYPE L OR HEATHER.
   G. COPPER PIPE: NOM. 4" DIAM OR SMALLER REGULAR OR HEATHER.
   PBP PARTNERS - 48000GW.

1-1/4" THICKNESS FLUSH WITH BOTH SIDES OF WALL.

FIGURE 8
TOP OF WALL JOINT-TO-FRAMED WALL TO CONCRETE FLUTED DECK

F RATING - 1 & 2 HR (SEE ITEM 2)
NOMIAL JOINT WIDTH - 3/4"
33% COMPRESSION & EXTENSION

1. FLUTED DECK/CONCRETE WOOD JOINT ASSEMBLY
A. MAX 3" DEEP GALVANIZED STEEL FLUTED UNITS.
B. MIN 2-1/2" THICK REINFORCED CONCRETE.
AS MEASURED FROM THE TOP PLANE OF THE FLOOR UNITS.

2. 1 OR 2 HR FIRE RATED FRAMED WALL ASSEMBLY
A. GALV STEEL CHANNEL SIZE TO ACCOMMODATE STEEL STUDS.
B. MIN 3-5/8" WIDE STEEL STUDS, STUD SPACING NOT TO EXCEED 24" OC.
C. ONE OR TWO LAYERS OF 5/8" WALLBOARD ON EACH SIDE OF STUDS
   FOR A ONE OR TWO HR FIRE RATING, RESPECTIVELY. WALLBOARD TO
   BE CURVED IN THE SHAPE OF THE STEEL FLUTED UNITS WITH A
   MAX 3/4" GAP.

3. MAX JOINT WIDTH - 3/4", 33% COMPRESSION OR EXTENSION
A. NOM. 3-5/8" WIDE BY 2" DEEP, 24 GA. STEEL DEFLECTION CHANNEL FASTENED
   TO UNDERSIDE OF FLUTED UNITS. CEILING RUNNER INSTALLED WITHIN
   DEFLECTION CHANNEL TO ALLOW MOVEMENT.
B. PBP PARTNERS - 51000GW.
5/8" THICKNESS WITH BOTH SIDES OF WALL.
**FIGURE 9**

**FLOOR TO WALL JOINT**  
**CONCRETE FLOOR TO EXTERIOR INSULATION FINISH SYSTEM**  
**F RATING - 2 HR**  
**L RATING AT AMBIENT < 1 CFM/LIN FT**  
**L RATING AT 400°F < 1 CFM/LIN FT**

1. **2 HR FIRE RATED CONCRETE FLOOR/CEILING ASSEMBLY.**
   A. **MIN 4-1/2" THICKNESS LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE.**
   B. **MIN 1-1/2" x 1-1/2" x 3/16" CAST-IN-PLACE STRUCTURAL STEEL ANGLE**

**FIGURE 10**

**TOP OF WALL JOINT**  
**CONCRETE WALL TO CONCRETE FLOOR/CEILING**  
**F RATING - 4 HR**  
**L RATING AT AMBIENT < 1 CFM/LIN FT**  
**L RATING AT 400°F < 1 CFM/LIN FT**

1. **4 HR FIRE RATED CONCRETE FLOOR/CEILING ASSEMBLY.** **MIN 5" THICKNESS.**
2. **4 HR FIRE RATED CONCRETE WALL ASSEMBLY.** **MIN 6-3/4" THICKNESS.**
3. **B. MIN 6-3/4" THICKNESS LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL.**
4. **B. 4 HOUR FIRE RATED, MIN 8", HOLLOW OR CONCRETE FILLED CONCRETE BLOCK WALL.**
5. **C. MIN 6-3/4" THICKNESS, 4 PCF DENSITY MINERAL WOOL, COMPRESSED MIN 40X WITH BOTH SIDES OF WALL ASSEMBLY.**
6. **C. PFP PARTNERS - 5100SP**

**FIGURE 11**

**NONMETALLIC PIPE THROUGH HOLLOW CORE CONCRETE**

1. **F RATING - 3 HR**
2. **T RATING - 3 HR**

1. **3 HR FIRE RATED CONCRETE FLOOR ASSEMBLY.** **MAX 5" DIAM OPENING.**
2. **A. 8" THICK UL CLASSIFIED HOLLOW CORE PRECAST CONCRETE UNITS.**
3. **MIN 8/" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR.**
4. **ONE OF THE FOLLOWING PENETRATING ITEMS FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS MAY BE USED:**
5. **A. PVC PIPE: NOM 4" DIAM (OR SMALLER) SCH 40 SOLID OR CELLULAR CORE**
6. **B. CPVC PIPE: NOM 4" DIAM (OR SMALLER) SCH 40 SOLID OR CELLULAR CORE**
7. **B. ABS PIPE: NOM 4" DIAM (OR SMALLER) SCH 40 SOLID OR CELLULAR CORE**
8. **C. PPV PIPE: NOM 4" DIAM (OR SMALLER) SDR 17**
9. **3 FIRESTOP SYSTEM - THE FIRESTOP SYSTEM SHALL INCLUDE THE FOLLOWING:**
10. **A. MIN 1" THICKNESS, 4 PCF DENSITY MINERAL WOOL, FIRMLY PACKED AS A PERMANENT FORM, FLUSH WITH BOTTOM OF FLOOR ASSEMBLY.**
11. **B. PFP PARTNERS - PLASTIC FIBER COLLMER TO BE INSTALLED IN ACCORDANCE WITH ACCOMPANYING INSTRUCTIONS AND ENSURE WITH MIN 3/16" DIAM x 1/14" LONG STEEL EXPANSION BOLTS**
12. **C. PFP PARTNERS - 40000W**

**SECTION A-A**

1. **1/2" THICKNESS FLUSH WITH TOP SURFACE OF FLOOR AT POINT CONTACT 1/2" DIAM BEAD.**