Thermal Ceramics Inc.
Design No. TC/BI 120-07
Fire Resistive Grease Duct Enclosure System
FireMaster® FastWrap® XLS
FireMaster® FastWrap® XL
Pyroscat® Duct Wrap XL

ASTM E814:
F-Rating, T-Rating: 2 Hours

CAN/ULC-S115
F-, FH-, FT-, FTH-Rating: 2 Hours

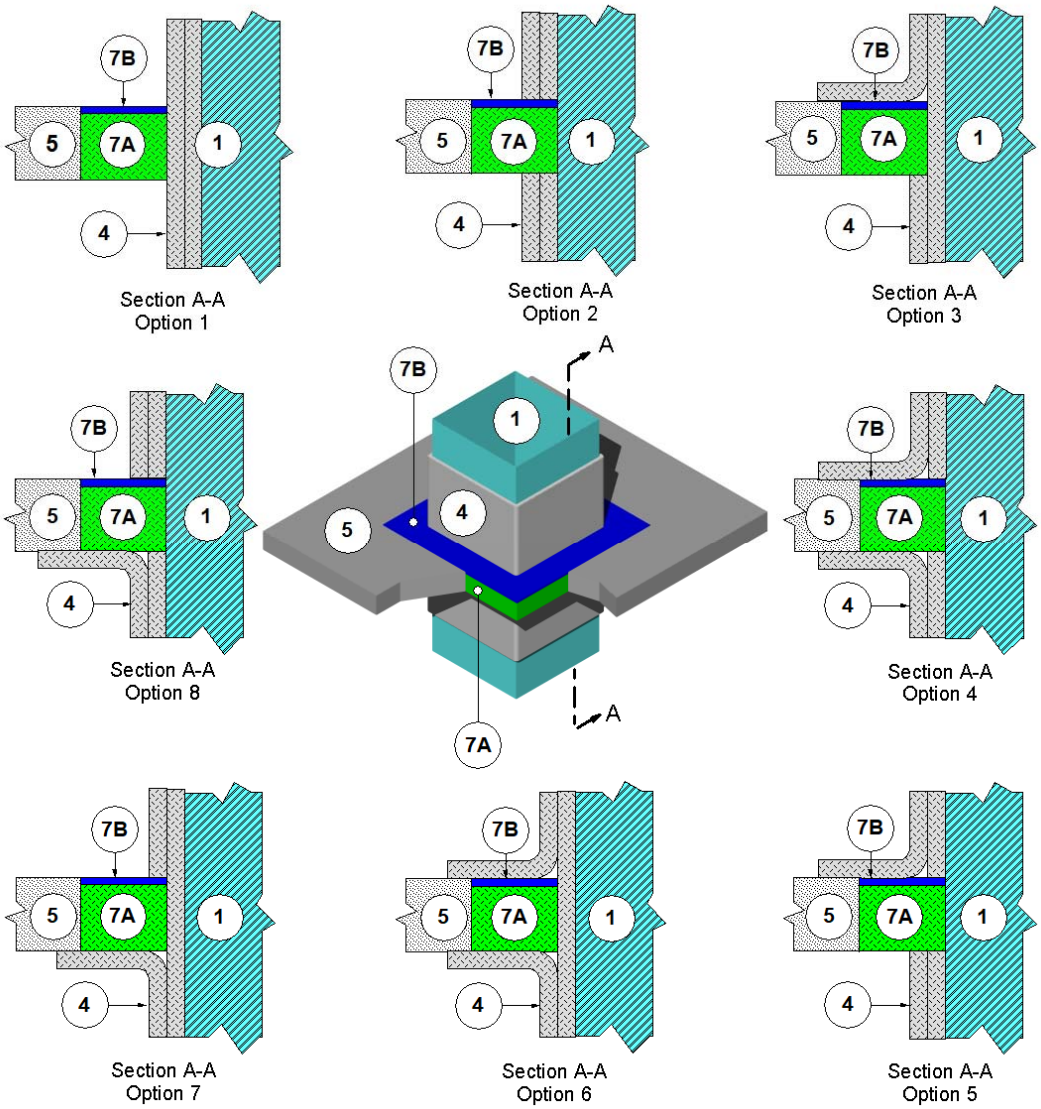

Figure 1. Penetration Firestop Systems – Floor Penetrations

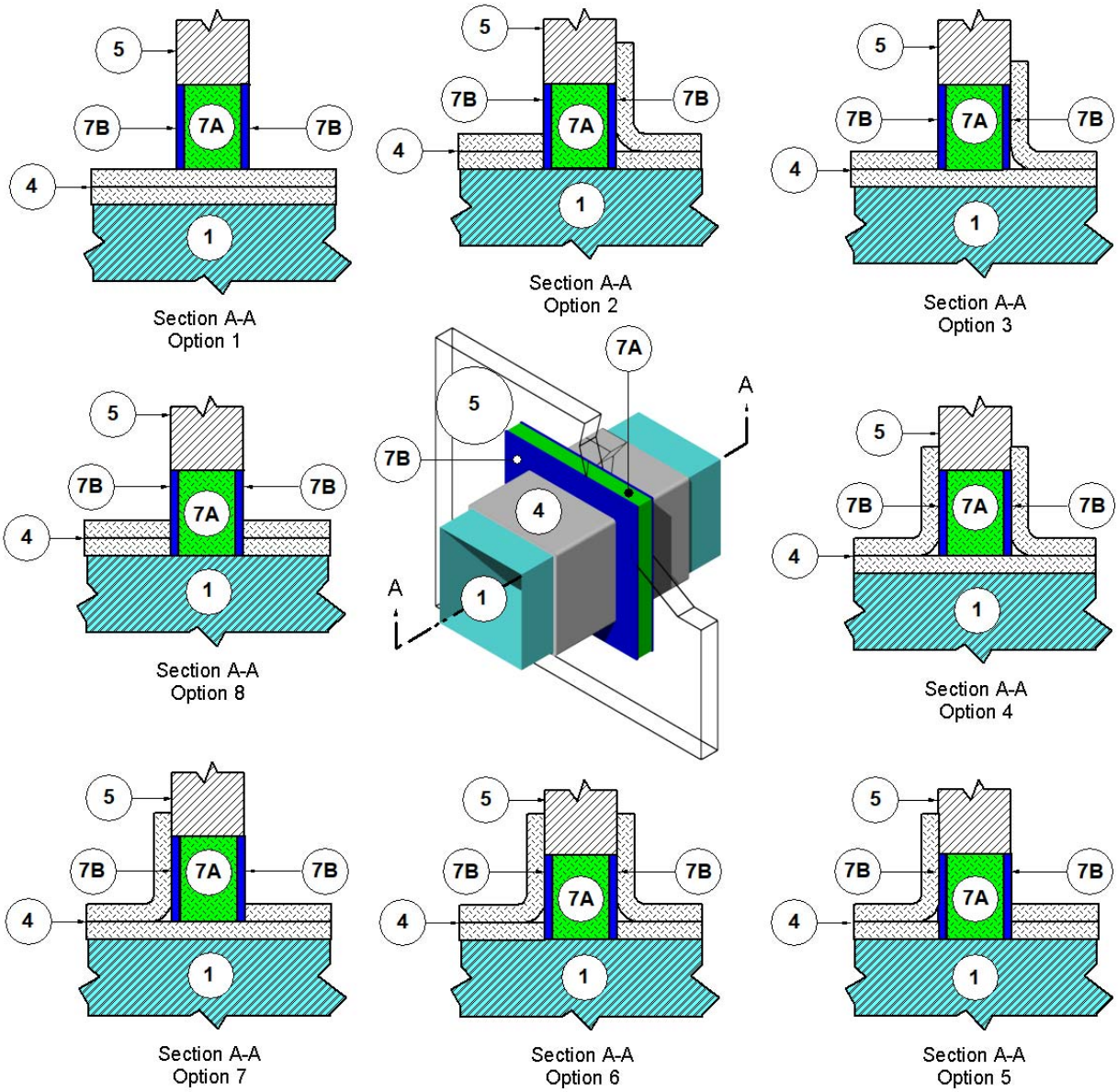

Figure 2. Penetration Firestop Systems – Wall Penetrations

1. **PENETRATING ITEM:** Use a continuously welded, liquid-tight, rectangular grease duct with the following construction and dimensional requirements:

   A. Construction material: Min. 0.059 in. (16 GA) carbon steel.

   B. Dimensions:

   - Rectangular: Max. 1152 in.^{2} cross-sectional area with a max. 48 in. dimension.
   - Round: Max. 36 in. diameter.

2. **PINS (Not Shown):** When pins are used to secure the duct insulation, weld min. 12 GA, copper-coated, steel insulation pins to the grease duct. Space the pins max. 12 in. on center (oc) and max. 6 in. from grease duct edges. Locate pins 1-1/2 in. to either side of all second layer duct insulation butt joints. Locate pins centered on all second layer duct insulation overlap joints. After duct insulation is installed, place min. 1-1/2 in. round or square, galvanized steel, self-locking washer clips onto all insulation pins. After clips are installed, cut off or bend pins of excessive length. A row of pins is required to be installed adjacent to the supporting construction (Item 5) for the following firestop configurations:
   - Floor Penetration Firestop Options 2, 4, 5, and 8 (Refer to Figure 1): locate a row of pins on the underside of floor assembly.
   - Wall Penetration Firestop Options 2, 5, 6 and 8 (Refer to Figure 2): locate a row of pins on both sides of the wall assembly.
3. **BANDING (Not Shown):** When banding is used to secure the duct insulation, use min. 1/2 in. wide, 0.015 in. thick stainless steel or carbon steel bands. Space bands max. 12 in. on center. Locate bands 1-1/2-in. to either side of all second layer duct insulation transverse joints. Secure bands with min. 1 in. long stainless steel or carbon steel crimp clamps corresponding to banding material. Tension banding to hold the duct insulation in place without cutting or damaging duct insulation or grease duct.
4. **COMPONENT NAME: DUCT INSULATION**

   CERTIFIED PRODUCT:
   - Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 4.4 pcf density, FireMaster® FastWrap® XLS.
   - Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, FireMaster® FastWrap® XL.
   - Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, Pyroscat® Duct Wrap XL.

   Apply two layers of duct insulation, over the entire surface of the grease duct. Finish and seal exposed ends of insulation with finish/seal tape (Item 8). When needed to ease installation, use filament tape as a temporary hold for the duct insulation. Use one of the following installation methods, with the provision that 3 in. overlap insulation joints can be substituted for compression butt joints at any location:

   A. Compression Butt Joint: Use compression butt joints with min. 1-1/2 in. compression at all joints. Stagger first layer and second layer joints a min. of 6 in. Offset insulation pieces so that first layer insulation pieces are centered under the second layer insulation transverse joints. Secure the insulation with pins or banding.

   B. Butt Joint with Collar: Use tightly butted joints at all joints. Stagger first layer and second layer joints a min. of 6 in. Offset insulation pieces so that first layer insulation pieces are centered under the second layer insulation transverse joints. Place and center 6 in. wide insulation collar over each transverse butt joint. Secure the insulation with pins or banding.

   C. Single End Overlap (Telescope): Use tightly butted joints at all first layer joints. Use 3 in. min. overlaps at all second layer joints, overlapping each adjacent insulation edge with the edge of the next piece of insulation. Stagger first layer and second layer joints a min. of 6 in. Secure the insulation with pins or banding.

D. Dual End Overlap (Checkerboard): Use 3 in. min. overlaps at all second layer joints, overlapping every other piece of insulation onto the adjacent pieces. Stagger first layer and second layer joints a min. of 6 in. Secure the insulation with pins or banding.

5. SUPPORTING CONSTRUCTION: Use one of the following wall or floor/ceiling assemblies:

A. CONCRETE WALL ASSEMBLY: Use a min. 4.6 in. deep, min. 2-hr rated, solid concrete wall assembly made from reinforced lightweight or normal weight (100-150 pcf) concrete constructed of solid concrete with a minimum concrete thickness measured from exposed face to exposed face.

B. MASONRY WALL ASSEMBLY: Use a min. 4.6 in. thick, min. 2-hr rated, hollow or solid concrete masonry unit (CMU) wall assembly made from lightweight or normal weight concrete (100-150-pcf).

C. CONCRETE FLOOR/CEILING ASSEMBLY: Use a min. 4.6 in. thick, min. 2-hour rated solid concrete floor/ceiling assembly made from reinforced lightweight or normal weight concrete (100-150-pcf) with a minimum thickness measured from exposed face to exposed face.

D. CONCRETE AND STEEL FORM UNIT FLOOR/CEILING ASSEMBLY: Use a min. 2-hour rated concrete and steel form unit floor/ceiling assembly made from reinforced lightweight or normal weight concrete (100-150-pcf) and min. 4.6 in. thick concrete over the top-most surface of the steel form unit.

6. OPENING: Create an opening in the supporting construction. For framed walls, the opening shall be framed out using min. 2x4 wood studs or min. 25 GA steel studs as appropriate for framing material type. The opening shall have a solid perimeter face for concrete and masonry wall construction. Round ducts may be used only with concrete wall or floor assemblies (Items 5A, 5C, and 5D) and shall be installed in a round opening. The opening shall be sized with dimensions max. 5 in. greater than the penetrating item. The penetrating item dimensions shall be those of the bare grease duct, the grease duct with one layer of insulation, or the grease duct with two layers of insulation, depending on the number of layers of insulation passing through the supporting construction. Position the grease duct, concentrically or eccentrically in the opening such that there is a min. 1/2 in. and max. 4-1/2 in. annular space. The annular space is measured between the edge of the opening in the supporting construction and the penetrating item with either no insulation, one layer of insulation, or two layers of insulations, depending on the number of insulation layers passing through the supporting construction. Please refer to Figures 1 and 2, Section A-A, Options 1-8.

7. PENETRATION FIRESTOP: Refer to Figures 1 and 2. Use a firestop system with the following minimum requirements:

A. COMPONENT NAME: PACKING MATERIAL

CERTIFIED PRODUCT:

- Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 4.4 pcf density, FireMaster® FastWrap® XLS.
- Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, FireMaster® FastWrap® XL.
- Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, Pyroscat® Duct Wrap XL.

Fill the entire annular space with certified duct insulation without the encapsulation (foil scrim). Cut nominal 1-1/2 in. thick core insulation into strips measuring the full depth of the supporting construction (min. 4-1/2 in.). Compress and insert the strips into the nominal 1/2 in. to nominal 4-1/2 in. annular space dimension. Pack the material so that the overall compression of packing and any duct insulation passing through the opening is min. 50%. Recess the packing material 1/4 in. from the top of horizontal supporting construction (Floor/Ceiling Assemblies), and 1/4 in. from either side of vertical supporting construction (Wall Assemblies).

B. COMPONENT NAME: FILL, VOID OR CAVITY MATERIAL

CERTIFIED PRODUCTS:

- Intertek-Certified, Tremco, Inc., Fyre-Sil® GG Sealant.
- Intertek-Certified, Tremco, Inc., Fyre-Sil® S/L Sealant (Wall Penetrations only).
- Intertek-Certified, 3M Company, Fire Barrier™ 1000 NS Sealant.
- Intertek-Certified, RectorSeal, LLC, Metacaulk 835+ SL Sealant (Wall Penetrations only).

8. FINISH/SEAL TAPE: Finish and seal exposed ends of insulation with aluminum foil tape, aluminum foil/scrim tape or tape certified to UL 181A or UL 181B.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.