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**UNI/PHV 120-03**  
**FIRE PENETRATION SEAL (Ventilation Duct)**

Unifrax I LLC

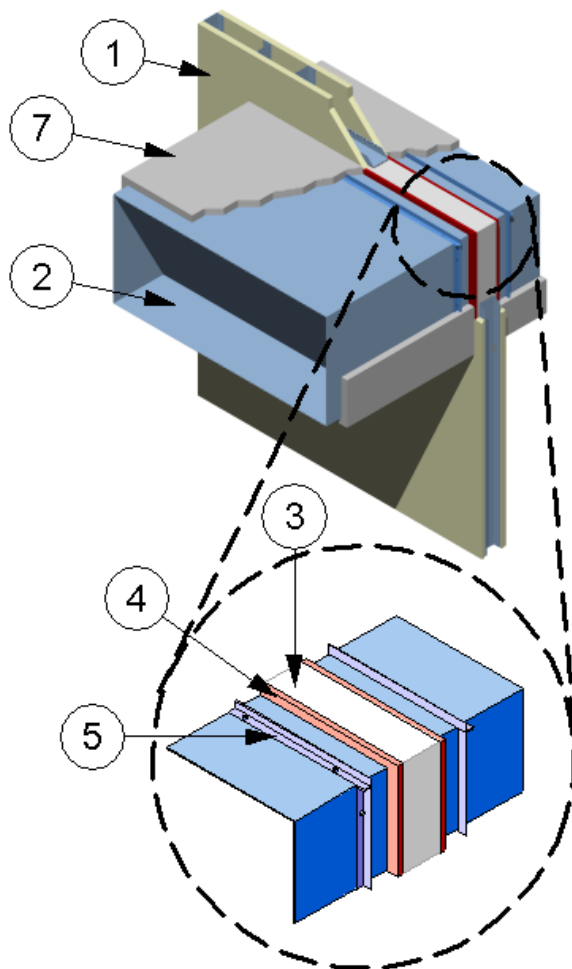
Unifrax FyreWrap® Elite™ 1.5

**ASTM E 814-09**

F-Rating – 2 hr

T-Rating – 2 hr

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1. GYPSUM WALL ASSEMBLY: Construct a nominal 6-1/8-inch deep, two-hour rated wall assembly using minimum 25-gauge, 3-5/8-inch deep with 1-1/4-inch legs, steel studs spaced maximum 24 inches on center (o.c.). Secure studs with minimum #6 x 3/8-inch steel stud framing screws to 25-gauge steel, channel-shaped, floor and ceiling runners measuring 1/2-inch high by 3-5/8-inch deep. Secure floor and ceiling

runners to the floor and ceiling with 1-inch long fasteners, suitable for the mounting substrate and spaced maximum 18 inches o.c. Cover studs and runners with two layers of 5/8-inch thick, Type X gypsum board on each face. Fasten the bottom layers of gypsum board with #6, minimum 1-inch long bugle head Phillips drywall screws spaced maximum 24 inches o.c. Fasten the face layers of gypsum board

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with #6, minimum 1-5/8-inch long bugle head Phillips drywall screws spaced maximum 12-inches o.c. Apply to exposed layer of gypsum board on each face, minimum 2-inch wide joint tape and two coats of joint compound (vinyl or casein, dry or premixed) over all exposed joints with the joint tape embedded into first coat of joint compound. Create an opening in the wall assembly and frame the opening with 25-gauge steel studs. Establish the clearance to the penetrating item (Item 2) (ventilation air duct) no greater than 1-1/2 inches and no less than 1 inch.

2. PENETRATING ITEM: Use a SMACNA compliant ventilation air duct constructed of minimum 26-gauge galvanized steel with maximum 1296-inch<sup>2</sup> area, maximum 54-inch width and maximum 24-inch height. Position the ventilation air duct concentrically or eccentrically in the opening in the gypsum wall assembly (Item 1) so that the width of the annular space is no greater than 1-1/2 inches and no less than 1 inch. Support the ventilation air duct in accordance with the International Mechanical Code or NFPA 96 requirements as applicable.

3. CERTIFIED COMPANY: Unifrax I LLC  
CERTIFIED PRODUCT: Duct Insulation  
MODEL: FyreWrap® Elite™ 1.5 (6 pcf)

PACKING MATERIAL: Use only Certified duct insulation as indicated above, bearing the Intertek mark. Remove the poly-foil-scrim facing or encapsulation material from the duct insulation, exposing the core fiber insulation blanket. Use the core fiber insulation blanket as the packing material for the annular space. Cut the core fiber insulation blanket at least 8-inches wide. Use core fiber insulation blanket thickness that is at least 1-1/2 times the width of the annular space. Cut and layer the core fiber insulation blanket as needed to achieve the required thickness. Pack the core fiber insulation blanket into the annular space in the 6-1/8-inch deep gypsum wall assembly (Item

1) such as to create a 1/2-inch recess on each side of the gypsum wall assembly (Item 1).

4. CERTIFIED COMPANY: 3M  
CERTIFIED PRODUCT: Firestop Sealant  
MODEL: Fire Barrier™ 1000 NS;

CERTIFIED COMPANY: TREMCO  
CERTIFIED PRODUCT: Firestop Sealant  
MODEL: TREMstop Fyre-Sil GG;

LISTED COMPANY: HILTI  
LISTED PRODUCT: Firestop Sealant  
MODEL: FS-ONE; or,

LISTED COMPANY: SPECIFIED  
TECHNOLOGIES, INC. (STI)

LISTED PRODUCT: Firestop Sealant  
MODEL: SpecSeal® Series SSS

FILL, VOID OR CAVITY MATERIAL:

Use only Certified sealants as indicated above, bearing the Intertek mark or Listed sealants as indicated above, bearing the corresponding listing agency's mark. Apply minimum 1/2-inch depth of sealant to the recess of the packing material (Item 3) from both sides of the gypsum wall assembly (Item 1). Overlap the sealant onto the gypsum board and the penetrating item (Item 2) (ventilation air duct) a minimum of 1 inch.

5. DUCT REINFORCEMENT: After installation of packing material (Item 3) and sealant (Item 4), position 1-inch by 1-inch by 1/8-inch steel angles to all four sides of the penetrating item (Item 2) (ventilation air duct) and on both sides of the gypsum wall assembly (Item 1) 3 inches from each side of the gypsum wall assembly (Item 1). Mechanically fasten steel angles to all four sides of the penetrating item (Item 2) (ventilation air duct) and on both sides of the gypsum wall assembly (Item 1) using 2-inch long,

1/4-inch diameter hex-head bolts, with appropriately sized nuts and flat washers, and space the bolts approximately 12 inches on center. Install the nuts and washers from the inside of the penetrating item (Item 2) (ventilation air duct). Tighten the bolts slowly such as not to damage or compromise the seal created by the fill, void or cavity material (Item 4) (firestop sealant). Continue to tighten the fasteners until the maximum space between the walls of the penetrating item (Item 2) (ventilation air duct) and the steel angles is not greater than 3/4 inches.

6. PINS: (Not Shown) Use either of the following options:

Option 1: Use this pin installation option in combination with banding (Item 8). Use minimum 12-gauge, minimum 3-1/2-inch long or 5-inch long (use longer pins when indicated below), CD weld pins and weld them to the penetrating item (Item 2) (ventilation air duct) at the following locations:

- Bottom only of penetrating item (Item 2) (ventilation air duct)
- Transverse spacing (widthwise) – 3 inches from edges of penetrating item (Item 2) (ventilation air duct) and maximum 12 inches o.c.
- Longitudinal spacing (lengthwise) - 3-1/2 inches from each side of the gypsum wall assembly (Item 1) welded directly to the duct reinforcement (Item 5) (steel angle) and then maximum 10-1/2 inches o.c. welded to the duct wall.
- All insulation (Item 7) overlap joint locations at the bottom of the duct along the centerline of the joint overlap using spacing indicated above and using minimum 5-inch long pins.

Option 2 (Pins Only): Use this pin installation option when no banding (Item 8) is employed. Weld the pins on all four sides of the penetrating item (Item 2) (ventilation air duct). Follow the same pin

transverse and longitudinal spacing as described in Option 1.

Option 3 (No Pins): Requires no pins when penetrating item (Item 2) width is equal to or less than 24 inches. Refer to Banding (Item 8), Option 3, “Banding Only” method.

7. CERTIFIED COMPANY: Unifrax I LLC

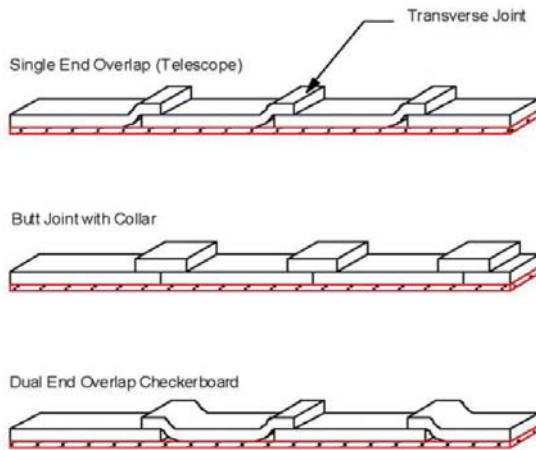
CERTIFIED PRODUCT: Duct Insulation

MODEL: FyreWrap® Elite™ 1.5 (6 pcf)

INSULATION: Use only Certified duct insulation as indicated above, bearing the Intertek mark. Use one layer of nominal 1-1/2-inch thick, nominal 6-pcf duct insulation to insulate the penetrating item (Item 2) (ventilation air duct). Use insulation that is fully encapsulated or single-faced with a poly-foil-scrim material. Install insulation (facing exposed) with 3-inch overlaps using one of the following three methods as depicted in the drawings to follow:

- 3-inch overlap telescoping method where each adjacent insulation blanket has one edge exposed and one edge covered by the next insulation blank,
- Butt splice with collar method where the blankets are butted together and a 6-inch wide collar of poly-foil-scrim-encapsulated insulation blanket is centered over the butt splice overlapping each adjacent insulation blanket by 3-inches, or
- 3-inch overlap checkerboard pattern where both edges of each alternating insulation blanket are covered by the adjacent insulation blankets whose edges are exposed.

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Butt the insulation using a minimum 1-inch of compression against the fill, void or cavity material (Item 4) (firestop sealant) and gypsum wall assembly (Item 1) on both sides of the gypsum wall assembly (Item 1). Ensure that the fill, void or cavity material (Item 4) (firestop sealant) has reached a "skinned-over" condition prior to butting insulation against it.

Secure the insulation to the pins (Item 6) with 2-1/2-inch square or round galvanized steel speed clips at all locations except for pins located on the duct reinforcements (Item 5) (steel angles), which require 1-1/2-inch square or round galvanized speed clips. Turn down or cut off pins (Item 6) that extend beyond the outer layer of insulation.

8. **BANDING:** (Not Shown) Use one of the following options:

Option 1: Use this banding method in combination with pins (Item 6), Option 1. Use minimum 1/2-inch wide, minimum 0.015-inch thick stainless steel or carbon steel bands. When required, use filament tape as a temporary holding method for the insulation (Item 7) prior to banding for ease of handling. Place bands on overlap joints 1-1/2 inches from edges of insulation (Item 7) blankets and between overlaps spaced maximum 10-1/2 inches o.c. Tension the banding to hold the insulation (Item 7) in place without tearing or damaging the insulation (Item 7) or penetrating item (Item 2) (ventilation air duct).

Option 2 (No Banding): Banding not required when pins (Item 6), "Pins Only" Option 2, installation method is used.

Option 3 (Banding Only): Option available when penetrating item (Item 2) width equal to or less than 24 inches: pins not required. When selected, use minimum 1/2-inch wide, minimum 0.015-inch thick carbon steel or stainless steel bands. When required, use filament tape as a temporary holding method for the insulation (Item 7) prior to banding for ease of handling. Locate and center bands on the overlap joints (1-1/2 inches from edges of insulation (Item 7) for 3-inch overlaps), and locate in the field area between the overlaps spaced a maximum 10-1/2 inches o.c.