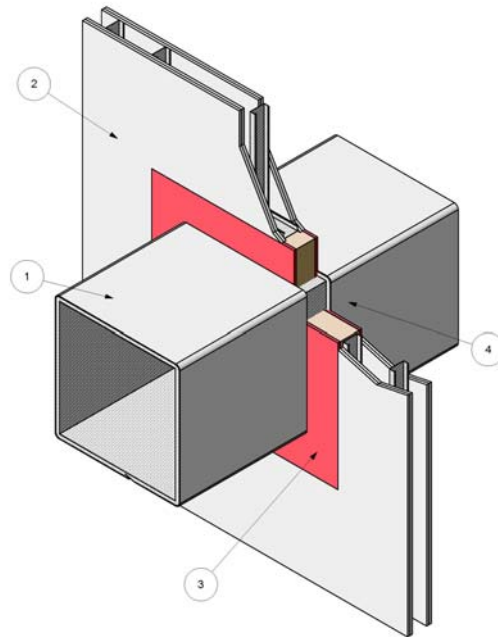
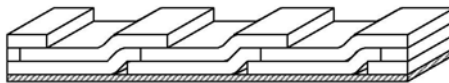
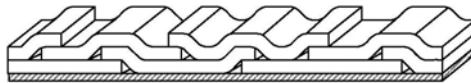

Design No. FS 122 W
FIRE PENETRATION SEAL
Penetrating Item Steel Duct
ASTM E 814 T-Rating - 2 hr
ASTM E 814 F-Rating - 2 hr



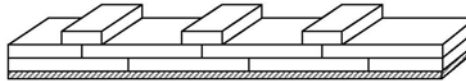
Single End Overlap (Telescope)



Dual End Overlap Checkerboard



Butt Joint with Collar



1. **PENETRATING ITEM:** A liquidtight duct system constructed of min. 16 GA (0.028 in.) sheet steel with max. 4900-in. area and max. 70-in. width (max. dim. 70-in. x max. 70-in.) and insulated with 2 layers of insulation. When required, equip the duct with a field fabricated

access door. Construct the duct using sections affixed to each other with seams. Reinforce the duct to IMC or NFPA 96 requirements designed to carry the weight of the grease duct assembly covered with insulation under a fire load equivalent to UL 1978 exposure and

Through-Penetration Fire Stop Systems

the ASTM E 119 time-temperature curve. Duct to be rigidly supported in accordance with IMC or NFPA 96 requirements and as specified in Item 6. Use nom. 1-1/2-in. thick, 6-pcf blanket made of soluble amorphous wool fibers or calcium magnesium silica fibers. Use blanket that is fully encapsulated or single faced with foil-scrim-metallized polyester facing. Wrap the steel duct with one layer of duct wrap (facing exposed) with 3-in. min. overlaps at all joints. Install insulation with zero clearance at the overlaps, with a nom. thickness of 3 in. at the overlap. Make the longitudinal overlaps of adjacent blankets using one of the following three methods as depicted in the drawings:

- 3-in. overlap telescoping method where each adjacent blanket has one edge exposed and one edge covered by the next blanket,
 - 3-in. overlap checkerboard pattern where both edges of each alternating blanket are covered by each adjacent blanket whose edges are exposed, or
 - butt splice with collar method where the blankets are butted together and a 6-in. wide collar of blanket is centered over the butt splice overlapping each adjacent blanket 3-in.
- For vertical runs, the insulation can be applied to the duct in a continuous length applied parallel with the length of the duct as opposed to wrapping around the duct. All overlaps are to be maintained at a min. 3 in. and are to occur a min. of 6 in. from any corner of the duct. Pins spaced a maximum 8 in. o.c. are to be placed at the centerline of all vertically oriented overlaps. Seal all cut edges that have exposed fiber with min. 4-in. wide, pressure-sensitive aluminum foil tape. Secure the outer layer with stainless steel banding or pins. The second layer of insulation is applied in the same manner as the first, except the second layer is offset as illustrated. Reference Product Section of this Directory for more details.

Listed Manufacturer:

Unifrax Corporation
Applied Fireproofing
Insulation Blanket
FyreWrap EZ® 1.5 Duct Insulation
FyreWrap 1.5 Duct Insulation
FyreWrap MAX 2.0 Duct Insulation

PINS AND BANDING: (Not Shown) Weld min. 12 GA, min. 5-in. long, stainless steel insulation pins to the duct. Locate pins at all blanket overlaps and meet the following requirements. No pins are required on the sides. On bottom of duct, space pins in rows max. 10-1/2-in. apart and the pins in the rows are max. 12-in. O.C. Locate pins max. 12 in.

from the edges of the duct. All overlaps are a min. 3 in. for overlaps going around the duct and for overlaps following the length of the duct. Locate pins in the middle of the overlap. Secure blanket to pins with 1-1/2 in. square or round galvanized steel speed clips. Turn down or cut off insulation pins that extend beyond the outer blanket wrap layer. Use min. 1/2-in. wide nom. 0.015-in. thick stainless steel or min. 1/2-in. wide nom. 0.020-in. thick carbon steel bands. When needed, use filament tape as a temporary holding method for the insulation prior to banding to ease installation. Place bands max. 1.5 in. from each blanket edge and max. 10-1/2-in O.C. Tension the banding material to hold the insulation in place without causing any cutting or damage to the insulation or duct.

OPTIONAL BANDING ONLY: (Not shown) For ducts having widths of 24 in. or less, place stainless steel bands (min. 1/2-in. wide, nom. 0.015-in. thick) over joints and within the field around the wrap. Locate bands 1-1/2 in. from each edge of the blanket, centered on the overlap. Place a minimum of two additional bands in the field area between the overlaps on maximum 8 in. centers. Pins are not required when this banding technique is used.

OPTIONAL MECHANICAL FASTENERS: The alternate use of cuphead pins with 1 3/16 inch diameter or 1 1/2 inch diameter washers at the same pin spacing as the welded stick pins detailed above.

2. **GYPSUM WALL ASSEMBLY:** A two-hour rated wall assembly constructed of the following: 25 GA galvanized steel studs spaced 24 in. o.c. measuring 3-5/8 in. wide with 1-1/4-in. legs. Studs attached with min. #6 x 3/8-in. steel stud framing screws to channel shaped floor and ceiling runners measuring 1/2-in. deep by 3-5/8-in wide, which are secured to floor and ceiling with 1-in. long fasteners, suitable for the mounting substrate, spaced max. 18-in. o.c. Studs and runners covered with two layers of 5/8 in. thick, Type X gypsum wallboard on each face. The base layer of gypsum wallboard fastened to steel studs with #6 1-1/8 in. bugle head phillips drywall screws spaced 12 in. o.c. The face layer of gypsum wallboard fastened with #6, 1-5/8 in. long bugle phillips drywall screws spaced 8 in. o.c. Joint Tape and Compound - vinyl or casein, dry or premixed joint compound applied to face layers of gypsum wallboard in two coats to all exposed screw heads and gypsum wallboard joints. A min. 2

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in. wide paper, plastic or fiberglass tape embedded in first layer of compound over joints in gypsum wallboard. A min. wall depth of 6-1/8 in. created from face layer of gypsum wallboard to face layer of gypsum wallboard. Create an opening in the wall assembly that is framed with the same steel channel and studs described above. The opening shall have a max. clearance to the single layer insulated duct of 3-1/2-inches and a zero minimum clearance (contact with the insulation). Position the duct assembly concentrically or eccentrically in the opening so that the annular space ranges are within to the requirements above.

3. **FILL, VOID OR CAVITY MATERIAL:** Min. 5/8-in. depth of intumescent firestop sealant fill material is to be applied to the recess of the packing material on both sides of the wall through-penetration opening. The sealant material is to overlap onto the gypsum wallboard and the duct insulation nom. 1/2-in. Where the insulation is in contact with the wall assembly a triangular shaped sealant is formed at the interface. The legs of the triangular shaped sealant is to overlap onto the gypsum wallboard and the duct insulation nom. 1/2-in. The exposed face of the sealant material at the interface is at least 0.70-inches.

Listed Supplier:

Unifrax Corporation
Spec Seal SSS100 Triple S¹

4. **PACKING MATERIAL:** Fill the annular space with leftover unfaced 6 pcf soluble fiber blanket. Compress the fiber 48% and insert into the annular space around the penetrating item, filling the annular space. Recess the surface of packing material a min. 5/8 in. from both surfaces of the wall, as required to accommodate the necessary depth of fill void or cavity material.

Listed Manufacturer:

Unifrax Corporation
Applied Fireproofing
Insulation Blanket
FyreWrap EZ® 1.5 Duct Insulation
FyreWrap 1.5 Duct Insulation
FyreWrap MAX 2.0 Duct Insulation

¹ Note: The Spec Seal SSS100 Triple S used in this Design Listing is a UL Certified Product under File #R14288 Any change to that formulation as of August 24, 2004 may alter the fire rating attributed to this Design Listing.