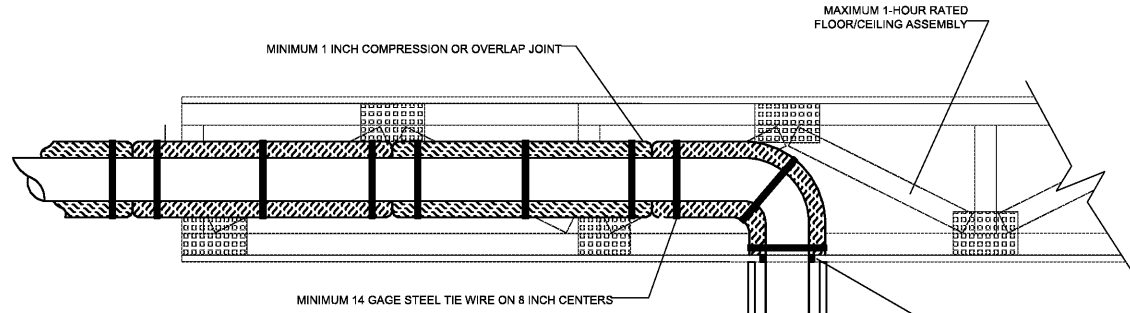
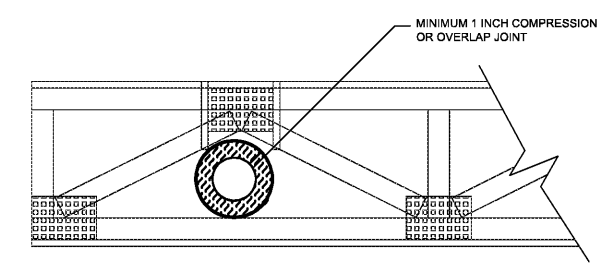


1
THERMAL CERAMICS FIREMASTER DRYERWRAP FOR 1-HOUR ENCLOSURE
DRYER EXHAUST DUCTS

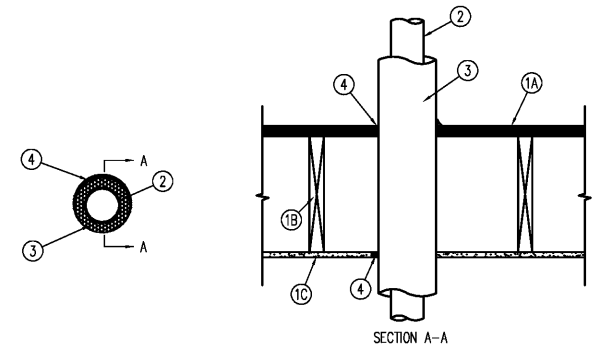


1. THERMAL CERAMICS FIREMASTER DRYERWRAP APPLIED IN ONE LAYER HAS BEEN TESTED IN ACCORDANCE WITH ISO 6944 FOR 1-HOUR VENTILATION DUCT RATING ON MAXIMUM 4 INCH DIAMETER 30 GAGE STEEL DUCT, ASTM E814 (UL1479) FOR 1-HOUR F- AND T-RATING PER UL LISTING F-C-7055
2. AUTHORITY HAVING JURISDICTION MUST APPROVE BEFORE INSTALLATION.
3. INSULATION APPLIED IN ONE LAYER WITH 1 INCH MINIMUM COMPRESSION OR OVERLAPS ON BOTH PERIMETER AND LONGITUDINAL JOINTS. BLANKET SUPPLIED BY 25 FOOT LONG ROLLS MAY BE COCCON WRAPPED AROUND 4 INCH DRYER EXHAUST, WITH CONSTRUCTION AND MAXIMUM LENGTH PER THE INTERNATIONAL MECHANICAL CODE.
4. 4 INCH DRYER EXHAUST, WITH CONSTRUCTION AND MAXIMUM LENGTH PER THE INTERNATIONAL MECHANICAL CODE.
5. THERMAL CERAMICS DUCT WRAP SHALL BE INSTALLED ON THE DRYER EXHAUST DUCT FROM THE PENETRATION OF THE RATED FLOOR/CEILING ASSEMBLY TO THE PENETRATION OF THE EXTERIOR WALL.
6. PENETRATION OF FIRE RATED ASSEMBLIES MUST BE FIRESTOPPED USING AN APPROVED SEALANT AND INSTALLATION METHOD IN UL LISTING F-C-7055 OR FRD V-28.
7. THERMAL CERAMICS DUCT ENCLOSURE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
8. AUTHORITY HAVING JURISDICTION MAY APPROVE A HEAVIER GAGE DUCTING INSTEAD OF DUCT WRAP. VERIFY FOR A.H.J.

3
DUCT WRAP FOR 1 OR 2 HOUR ENCLOSURE
NO SCALE



SYSTEM No. F-C-5058
July 09, 2003
F RATING - 1 HR
T RATING - 0, 3/4 and 1 HR (See Item 3)



- System No. F-L-2098
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Item 1)
Rating At Ambient - Less Than 1 CFM/Sq Ft
L Rating At 400 F - 4 CFM/Sq Ft
1. **Wall Assembly** - The 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 2-1/2 in. wide and spaced max 24 in. OC.
 - B. Wallboard, Gypsum* - 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 Wall and Partition Design. Max diam of opening is 4-3/8 in. The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
 2. **Through Penetrants** - Nom 2 in. diam (or One nonmetallic pipe installed within the firestop system. Pipe to be rigidly supported on both sides of floor or wall assembly. The space between pipe and periphery of opening shall be min. 3/4 in. to max. 1-1/4 in. Pipe to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes may be used:
 - A. Polyvinyl Chloride (PVC) Pipe - Nom 2 in. diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping system.
 - B. Chlorinated Polyvinyl Chloride (CPVC) Pipe - smaller SDR17 CPVC pipe for use in closed (process or supply) piping systems.
 3. **Fill, Void or Cavity Materials*** - Sealant - Installed to completely fill the annular space between the pipes and gypsum wallboard on both sides of wall.
 - A. HLI, Inc. - FS611A or FS-ONE Sealant (Note: L Ratings apply only when FS-ONE Sealant is used).

1
FIRE PENETRATION DETAILS
NO SCALE

System No. F-C-8021

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 1 Hr	F Rating - 1 Hr
T Ratings - 1/2 and 1 Hr (See Item 2)	FT Ratings - 1/2 and 1 Hr (See Item 2)
	FH Rating - 1 Hr
	FTH Ratings - 1/2 and 1 Hr (See Item 2)

1. **Floor-Ceiling Assembly** - The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory, as summarized below:
 - A. **Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening is 4-1/2 in. (114 mm).
 - B. **Wood Joists** - Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
 - C. **Gypsum Board*** - Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Max diam of opening is 4-1/2 in. (114 mm).
- 1A. **Chase Wall** - (Optional, Not Shown) - The through penetrant (Item 2) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. (13 mm) greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (Item 2). The chase wall shall be constructed of materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 - A. **Studs** - Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
 - B. **Sole Plate** - Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 4-1/2 in. (114 mm).
 - C. **Top Plate** - The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 4-1/2 in. (114 mm).
 - D. **Gypsum Board*** - Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

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2. **Through Penetrant** - One or more metallic pipes, conduits or tubing to be installed either concentrically or eccentrically within the opening. Pipes, conduits or tubing to be spaced min 0 in. (0 mm) (point contact) to max 1 in. (25 mm) apart. The space between the pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (0 mm) (point contact) to max 1 in. (25 mm). Penetrants to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 - A. **Steel Pipe** - Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
 - B. **Iron Pipe** - Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.
 - C. **Conduit** - Nom 3/4 in. (19 mm) diam (or smaller) steel conduit or steel electrical metallic tubing.
 - D. **Copper Pipe or Tube** - Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.
3. **When metallic pipe, conduit or tubing without insulation is used, T Rating is 1/2 hr. Otherwise, T Rating is 1 hr.**
 - A. **Plastic** - Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Tube insulation to be installed on a max of two metallic pipes or tubes. Insulated pipe or tubing to be min 0 in. (0 mm) (point contact) to max 1 in. (25 mm) from other through penetrants (Items 2, 4 and 5). The space between the insulated pipe or tube and the periphery of the opening shall be min 0 in. (0 mm) (point contact) to max 1 in. (25 mm).
4. **Nonmetallic Through Penetrant** - One nonmetallic pipe, conduit or tube to be installed within the firestop system. Pipe, conduit or tube to be spaced min 0 in. (0 mm) (point contact) to max 1 in. (25 mm) from the insulated through penetrants and min 1/2 in. (13 mm) to max 1 in. (25 mm) from non-insulated through penetrants. The space between pipe, conduit or tube and the periphery of the opening shall be min 0 in. (0 mm) (point contact) to max 1 in. (25 mm). Pipes/conduits/tubes to be rigidly supported on both sides of floor-ceiling assembly. One of the following types and sizes of nonmetallic through penetrants may be used:
 - A. **Polyvinyl Chloride (PVC) Pipe** - Nom 1-1/4 in. (32 mm) diam (or smaller) Schedule 40 PVC pipe for use in vented (drain, waste or vent) or closed (process or supply).
 - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** - Nom 1-1/4 in. (32 mm) diam (or smaller) SDR17 CPVC pipe for use in vented (drain, waste or vent) or closed (process or supply).
 - C. **Rigid Nonmetallic Conduit*** - Nom 1-1/4 in. (32 mm) diam (or smaller) PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
 - D. **Electrical Nonmetallic Tubing (ENT)** - Nom 1-1/4 in. (32 mm) diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70).
 - E. **Cross Linked Polyethylene (PEX) Tubing** - Nom 1 in. (25 mm) diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.
5. **Cables** - 4 pairs of 18 AWG (or smaller) cables with PVC insulation and jacketing. Cables to be spaced min 0 in. (0 mm) (point contact) to max 1 in. (25 mm) from the other through penetrants. The space between the cables and the periphery of the opening shall be min 0 in. (0 mm) (point contact) to max 1 in. (25 mm). Cables to be rigidly supported on both sides of the floor-ceiling assembly.
6. **Fill, Void or Cavity Material*** - Sealant - Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of ceiling or top plate. Additional fill material forced into grouped penetrant interstices to max extent possible. At point contact locations, min 1/4 in. (6 mm) diam bead of fill material applied at grouped penetrant bundle/subfloor or sole plate interface and at grouped penetrant bundle/ceiling or top plate interface.
 - A. HLI, Inc. - FS611A or FS-ONE Sealant, SpecSeal LCI Sealant or Type WF300 Caulk

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
#Bearing the UL Recognized Component Mark

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FIRE PENETRATION DETAILS
NO SCALE

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NC LICENSE #P-1248

CRABTREE NORTH APTS.
2251 Charles Drive
Raleigh, North Carolina
EYC COMPANIES

PROJECT	1915
DATE	010CT19
DRAWN BY	CME
CHECKED BY	CME
MECHANICAL DETAILS	

M1.4