

# FIRESTOP SUBMITTAL PACKAGE

## *Mechanical*

**PROJECT:**

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**SUBMITTED BY:**



# Mechanical

## Concrete Floors

SYSTEM	DESCRIPTION	PRODUCT(S)
<a href="#">C-AJ-1353</a>	Max.8 in.steel,iron or max.4 in.copper.Optional steel sleeve.	LCI Sealant
<a href="#">C-AJ-2166</a>	Max.2 in.RNC with RED Wrap Strip	LCI Sealant
<a href="#">C-AJ-2290</a>	Max.2 in.PVC or CPVC pipe.Optional steel sleeve.Caulk and Walk.	LCI Sealant
<a href="#">C-AJ-2291</a>	Mult.max.1 in.PVC,CPVC,PEX.Optional steel sleeve.	LCI Sealant
<a href="#">C-AJ-2298</a>	Max.4 in.PVC,ccPVC,CPVC,ABS or ccABS pipe.	LCC Collar
<a href="#">C-AJ-5138</a>	Max.6 in.steel,iron or copper pipe with 2 in.Fiberglass.Opt.steel sleeve.	LCI Sealant
<a href="#">C-AJ-5154</a>	Max.6 in.steel,iron or copper pipe with 3 in.Foam Glass.Opt.sleeve.	LCI Sealant
<a href="#">C-AJ-5155</a>	Max.4 in.steel,iron or max.2 in.copper with 1/2 in.AB/PVC.Opt.sleeve.	LCI Sealant
<a href="#">C-AJ-7040</a>	Max.8 in.steel vent duct.Optional steel sleeve.	LCI Sealant
<a href="#">C-AJ-7041</a>	Rectangular steel HVAC ductwork.	LCI Sealant
<a href="#">C-AJ-8083</a>	Multiple Bare or Insulated Metallic Pipes.	LCI Sealant
<a href="#">C-AJ-8084</a>	Air Conditioner Line Set.Optional steel sleeve.	LCI Sealant

## Masonry Walls

SYSTEM	DESCRIPTION	PRODUCT(S)
<a href="#">W-J-1099</a>	Max.8 in.steel,iron or max.4 in.copper pipe.Steel sleeve.Caulk and Walk.	LCI Sealant
<a href="#">W-J-2076</a>	Max.2 in.PVC,CPVC pipe or 1-1/2 in.ABS pipe.Caulk and Walk.	LCI Sealant
<a href="#">W-J-2077</a>	Mult.max.1 in.PEX,PVC,CPVC pipes.Caulk and Walk.	LCI Sealant
<a href="#">C-AJ-2166</a>	Max.2 in.RNC with RED Wrap Strip	LCI Sealant
<a href="#">C-AJ-2298</a>	Max.4 in.PVC,ccPVC,CPVC,ABS or ccABS pipe.	LCC Collar
<a href="#">W-J-5054</a>	Max.6 in.steel,iron pipe,max.4 in.copper with 2 in.fiber glass.Caulk and walk.	LCI Sealant
<a href="#">W-J-5055</a>	Max.4 in.steel,iron pipe,max.2 in.copper with 3/4 in.AB/PVC.Caulk and walk.	LCI Sealant
<a href="#">W-J-5056</a>	Max.6 in.steel,iron,max.4 in.copper with 3 in.Foam Glass.Caulk and walk.	LCI Sealant
<a href="#">W-J-7031</a>	Rectangular steel HVAC duct.	LCI Sealant
<a href="#">W-J-8011</a>	Air Conditioner Line Set.Caulk and Walk.	LCI Sealant

## Gypsum Board Walls

SYSTEM	DESCRIPTION	PRODUCT(S)
<a href="#">W-L-1222</a>	Max.8 in.steel,iron or max.4 in.copper pipe.Caulk and Walk.	LCI Sealant
<a href="#">W-L-1223</a>	Max.8 in.steel,iron or max.4 in.copper pipe.Steel sleeve.Caulk and Walk.	LCI Sealant
<a href="#">W-L-5121</a>	Max.6 in.steel,iron pipe,max.4 in.copper with 2 in.fiber glass.Caulk and Walk.	LCI Sealant
<a href="#">W-L-5122</a>	Max.4 in.steel,iron pipe,max.2 in.copper with 3/4 in.AB/PVC.Caulk and Walk.	LCI Sealant
<a href="#">W-L-5123</a>	Max.6 in.steel,iron,max.4 in.copper with 3 in.Foam Glass.Caulk and walk.	LCI Sealant
<a href="#">W-L-2237</a>	Max.4 in.PVC,ccPVC,CPVC,ABS or ccABS pipe.	LCC Collar
<a href="#">W-L-2241</a>	Max.2 in.PVC,CPVC pipe or 1-1/2 in.ABS pipe.Caulk and Walk.	LCI Sealant
<a href="#">W-L-2242</a>	Mult.max.1 in.PEX,PVC,CPVC pipes.Caulk and Walk.	LCI Sealant
<a href="#">W-L-7060</a>	Rectangular steel HVAC duct.	LCI Sealant
<a href="#">W-L-7061</a>	Max.8 in.round steel HVAC duct.	LCI Sealant
<a href="#">W-L-8025</a>	Max.8 in.x 8 in.steel HVAC duct.Caulk and Walk.	LCI Sealant
<a href="#">W-L-7062</a>	Air Conditioner Line Set.Caulk and Walk.	LCI Sealant

# Mechanical-(Cont.)

## General Certificate of Conformance

### **Product Data Sheets**

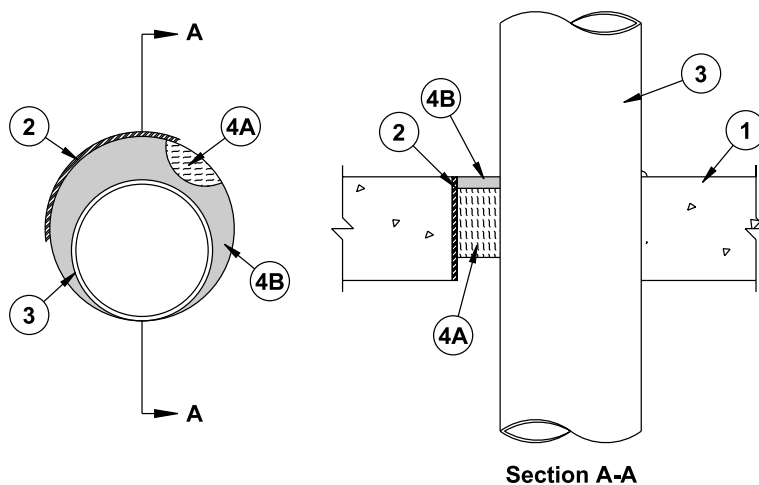
[Series LCI Intumescent Sealant](#)

[Series LCC Intumescent Collar](#)

### **Material Safety Data Sheets**

[Series LCI Intumescent Sealant](#)

[Series LCC Intumescent Collar](#)



**System No. C-AJ-1353**

November 30, 2001

F Rating — 3 Hr

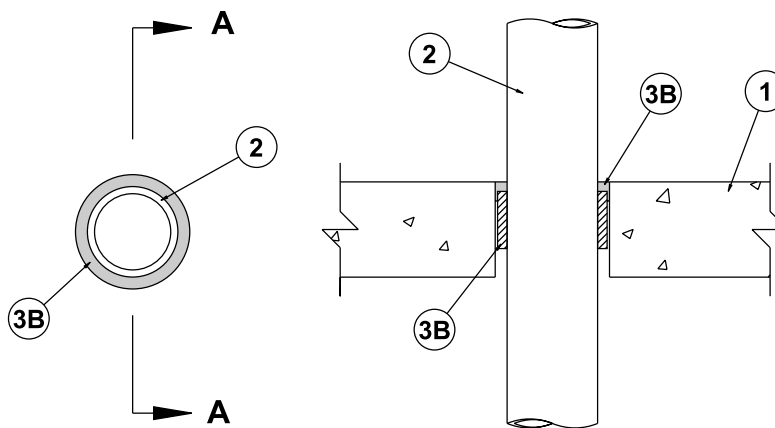
T Rating — 0 Hr

1. **Floor or Wall Assembly** — Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units**.\* Wall may also be constructed of any UL Classified **Concrete Blocks**.\* Max diam of opening is 10 in. Max diam of opening in floors constructed of hollow-core is 7 in. See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces.
3. **Through Penetrant** — One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
  - A. **Steel Pipe** — Nom 12 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 12 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. diam (or smaller) flexible steel conduit.
  - D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - E. **Copper Tube** — Nom 4 in. diam (or smaller) Regular L (or heavier) copper tube.
- 3A. **Through Penetrating Product\*** — **Flexible Metal Piping** — As an alternate to Item 3, one nom 2 in. diam (or smaller) flexible steel pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of the floor or wall assembly.
 

**Omega Flex Inc**  
**Titeflex Corp**  
**A Bundy Co**  
**Ward Mfg Inc**
4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 2-1/4 in. thickness. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 4B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material (Item 4B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface.
  - B. **Fill, Void or Cavity Material\*** — **Sealant** — Min 1/4 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/4 in. thickness of fill material applied flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both side of floor. At point contact location, apply min 1/4 in. diam bead of fill material at pipe/concrete interface or pipe/steel sleeve interface on top surface of floor or both surfaces of wall or precast concrete units.

**Specified Technologies Inc** — SpecSeal LCI Sealant

\*Bearing the UL Classification Mark



### Section A-A

#### System No. C-AJ-2166

November 13, 2000

F Rating — 2 Hr

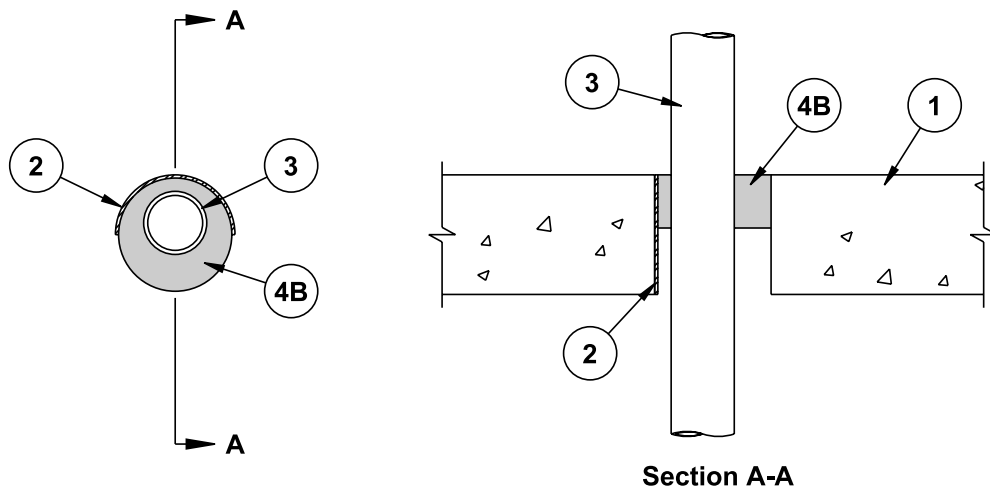
T Ratings — 0 and 1 Hr (See Item 2)

1. **Floor or Wall Assembly** — Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor or wall. Floor may also be constructed of any min 6 in. thick UL Classified hollow-core **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 3 in.  
See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrants** — One nonmetallic pipe, conduit or tubing to be centered within the firestop system. A nom annular space of 5/16 in. is required within the firestop system. The pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of pipes, conduits or tubing may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
  - B. **Rigid Nonmetallic Conduit (RNC)+** — Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code, (NFPA No. 70.)
  - C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - D. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

**The T Rating of the firestop system is dependent upon the type of through penetrant used. If a PVC pipe, RNC or CPVC pipe is used, the T Rating is 1 Hr. If an ABS pipe is used, the T Rating is 0 Hr.**
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Fill, Void or Cavity Material\* — Wrap Strip** — Nom 1/4 in. thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. wide strips. One layer of wrap strip installed around outer circumference of the through penetrant with ends butted and held in place with masking tape. The wrap strip shall be recessed a nom 3/4 in. from the bottom surface of the concrete floor. In walls having a nom thickness of 3-1/4 in. or less, the wrap strip shall be centered within the wall. In walls having a nom thickness equal to or greater than 3-1/4 in., the wrap strip shall be installed on both surfaces of the wall such that the exposed edges of the wrap strip are recessed a max 1/4 in. from each side of the wall. When floor is constructed of hollow-core precast concrete unit, wrap strip shall be installed on both surfaces of floor such that the exposed edges of the wrap strip are recessed a max 1/4 in. from each side of the floor.  
**SPECIFIED TECHNOLOGIES INC** — Speceal RED Wrap Strip
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall assembly. In floors, bottom edge of fill material shall be recessed a nom 1/4 in. below the top edge of wrap strip. When floor is constructed of hollow-core precast concrete unit, sealant to be installed symmetrically on both sides of floor, flush with floor surfaces.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant, SpecSeal LCI Sealant

+Bearing the UL Listing Mark

\*Bearing the UL Classification Marking



**System No. C-AJ-2290**

September 22, 2000

F Rating — 2 Hr

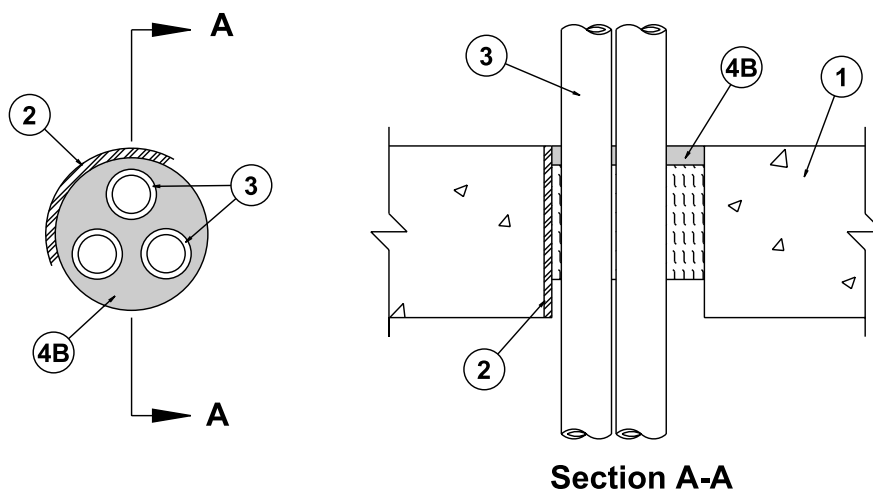
T Rating — 0 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 4 in.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. **Through Penetrant** — One nonmetallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be nom 1/2 in. to max 1-1/8 in. Pipe, conduit or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. diam (or smaller) Schedule 40 polyvinyl chloride (PVC) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. diam (or smaller) SDR17 chlorinated polyvinyl chloride (CPVC) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - C. **Rigid Nonmetallic Conduit+** — Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Electrical Nonmetallic Tubing+** — Nom 2 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70).
4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Optional, Not Shown) — Polyethylene backer rod, mineral wool batt insulation or glass fiber batt insulation friction fit into opening as a permanent form to facilitate installation of fill material (Item 4B).
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 2 in. thickness of fill material installed within annulus, flush with top surface of floor or both surfaces of wall assembly. In floors constructed of precast hollow core units, fill material installed to min 1-1/2 in. depth, flush with each surface of the floor.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking

+Bearing the UL Listing Mark



**System No. C-AJ-2291**

September 22, 2000

F Rating — 2 Hr

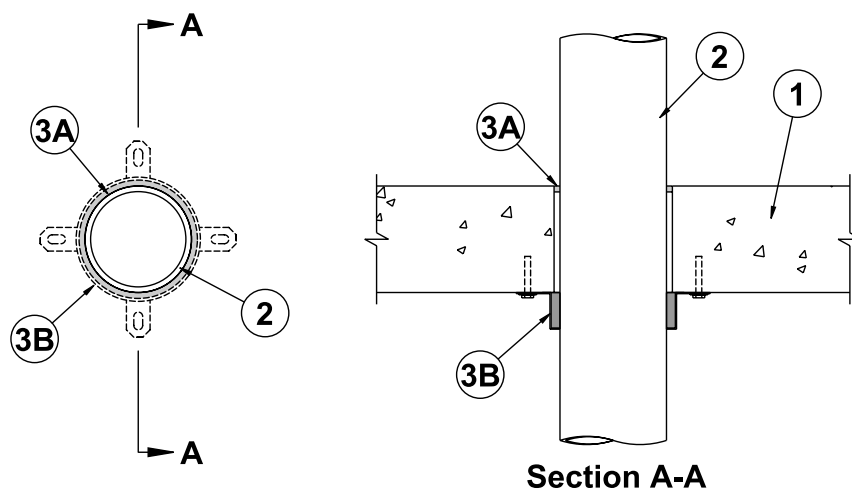
T Rating — 1-3/4 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\*** Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 4 in.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. **Through Penetrant** — One or more nonmetallic pipes, conduits or tubes to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 1/4 in. to max 1-1/8 in. The space between the pipes, conduits or tubes shall be min 1/4 in. Pipes, conduits or tubing to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 1 in. diam (or smaller) Schedule 40 polyvinyl chloride (PVC) pipe for use in closed (process or supply) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 1 in. diam (or smaller) SDR17 chlorinated polyvinyl chloride (CPVC) pipe for use in closed (process or supply) piping systems.
  - C. **Rigid Nonmetallic Conduit+** — Nom 1 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Electrical Nonmetallic Tubing+** — Nom 1 in. 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. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.
4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 3 in. thickness of min 4 pcf mineral wool batt insulation compressed and tightly packed into opening. Packing material recessed from top surface of floor or both surfaces of wall or precast concrete units.
  - B. **Fill, Void or Cavity Material\*** — **Sealant** — Min 1/2 in. thickness of fill material installed within annulus, flush with top surface of floor or both surfaces of wall assembly. In floors constructed of precast hollow core units, fill material installed symmetrically on both sides of floor, flush with each surface of the floor.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Mark

+Bearing the UL Listing Mark



**System No. C-AJ-2298**

October 13, 2000

F Ratings — 2 Hr

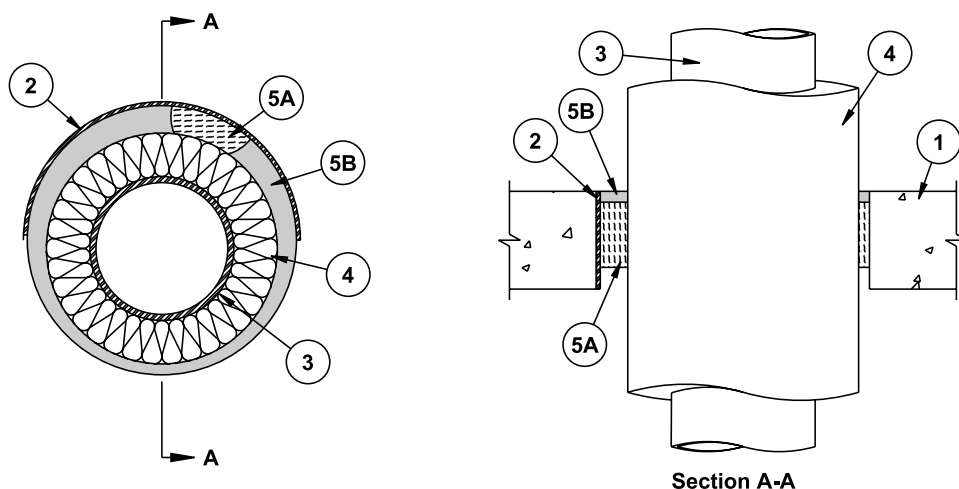
T Ratings — 2 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete Blocks\***. For nom 2-1/2 in. diam and smaller pipes and conduits, diam of opening shall be max 1/4 in. larger than nom pipe diam. For pipes and conduits greater than nom 2-1/2 in. diam of opening shall be max 1/2 in. larger than nom pipe diam.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrants** — One nonmetallic pipe or conduit to be centered within opening with a max 1/8 in. annular space for nom 2-1/2 in. diam and smaller pipes and conduits and a max 1/4 in. annular space for pipes and conduits greater than 2-1/2 in. diam. Pipe or conduit to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes and conduits may be used.
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 4 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - C. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 4 in. diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - D. **Rigid Nonmetallic Conduit+** — Nom 4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
3. **Firestop System** — The firestop system consists of the following:
  - A. **Fill, Void or Cavity Material\* — Sealant** — Min 1/4 in. thickness applied within annulus, flush with top surface of floor or both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant
  - B. **Firestop Device\*** — Galv steel collar lined with an intumescent material sized to fit the specific diam of the through penetrant. Device shall be installed around through penetrant in accordance with the accompanying installation instructions. Device incorporates anchor tabs for securement to bottom surface of floor or both surfaces of wall assembly by means of 1/4 in. diam by 1-1/2 in. long steel concrete screws in conjunction with 1-1/4 in. diam steel fender washers.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCC Collar

\* Bearing the UL Classification Marking

+ Bearing the UL Listing Mark





# **System No. C-AJ-5138**

December 05, 2000

F Rating — 2 Hr

T Ratings — 3/4 and 1 Hr (See Item 2)

1. **Floor or Wall Assembly** — Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\*** Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 12 in. Max diam of opening in floors constructed of hollow-core precast concrete units is 7 in.  
See **Concrete Blocks (CAZT)** or **Precast Concrete Units (CFTV)** categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces. **When steel sleeve is used, the T Rating is 3/4 hr. When steel sleeve is omitted in min 4-1/2 in. thick concrete, the T Rating is 1 hr.**
3. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 6 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 4 in. diam (or smaller) Regular L (or heavier) copper tube.
4. **Pipe Coverings** — One of the following types of pipe coverings shall be used:
  - A. **Pipe and Equipment Covering Materials\*** — Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product.  
See **Pipe and Equipment Covering Materials (BRGU)** category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
  - B. **Pipe Covering Materials\*** — Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. OC.  
**OWENS CORNING HT INC, DIV OF OWENS CORNING** — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc
  - C. **Sheathing Material\*** — Used in conjunction with Item 4B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 4B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.  
See **Sheathing Materials (BVDV)** category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed into opening as a permanent form. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 5B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material (Item 5B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface. Packing material depth is dependent upon several variables, as shown in the table under Item 5B.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surfaces of floor. Fill material depth is dependent upon several variables, as shown in the following table:

Min Floor or Wall Thkns In.	Annular Space, In.	Min Packing Material Depth, In.	Min Fill Material Depth In.
2-1/2	1/4 to 5/8	1-1/2	1
4-1/2	1/4 to 1-5/8	3	1/2

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

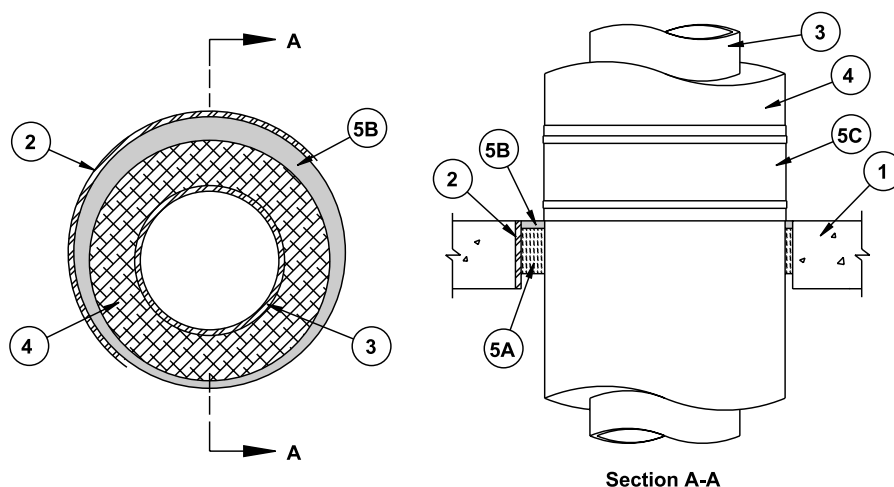
\*Bearing the UL Classification Mark

Reproduced courtesy of Underwriters Laboratories, Inc.

Created or Revised: 09/01/01

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3417



**System No. C-AJ-5154**

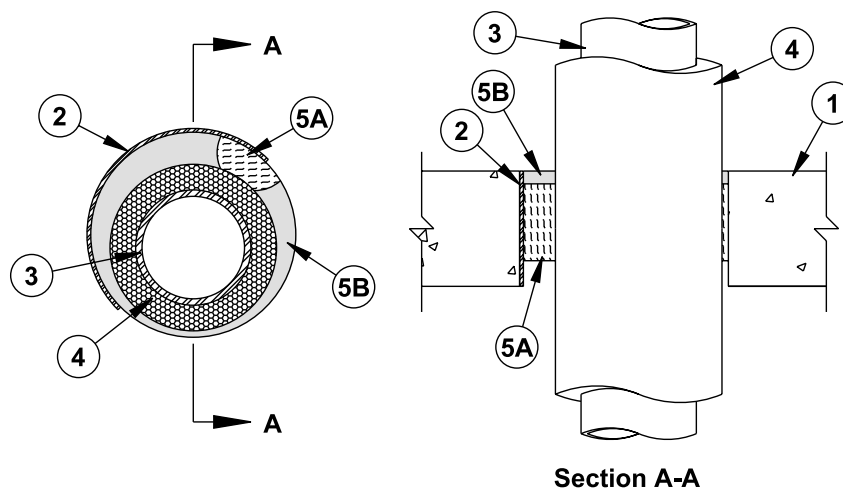
September 22, 2000

F Rating — 2 Hr

T Ratings — 3/4 and 1 Hr (See Item 2)

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\*** Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 14 in. Max diam of opening in floors constructed of hollow-core precast concrete units is 7 in.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 14 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces. **When steel sleeve is used, the T Rating is 3/4 hr. When steel sleeve is omitted, the T Rating is 1 hr.**
3. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 6 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.
4. **Pipe Covering Materials\*** — **Cellular Glass Insulation** — Nom 3 in. thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. Annular space shall be min 1/2 in. to max 1-5/8 in.  
**PITTSBURGH CORNING CORP — FOAMGLAS**
5. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 3 in. thickness. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 5B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material (Item 5B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 1/2 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/2 in. thickness of fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surfaces of floor.  
**SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant**
  - C. **Metal Jacket** — Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of similar material or min No. 18 AWG steel tie wire. Bands or tie wire to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket to be installed with edge abutting surface of fill material (Item 5B) on top surface of floor or both surfaces of wall. Metal jacket to be used in addition to any other jacketing material which may be required on the pipe covering.

\*Bearing the UL Classification Marking



**System No. C-AJ-5155**

December 05, 2000

F Rating — 2 Hr

T Rating — 3/4 Hr

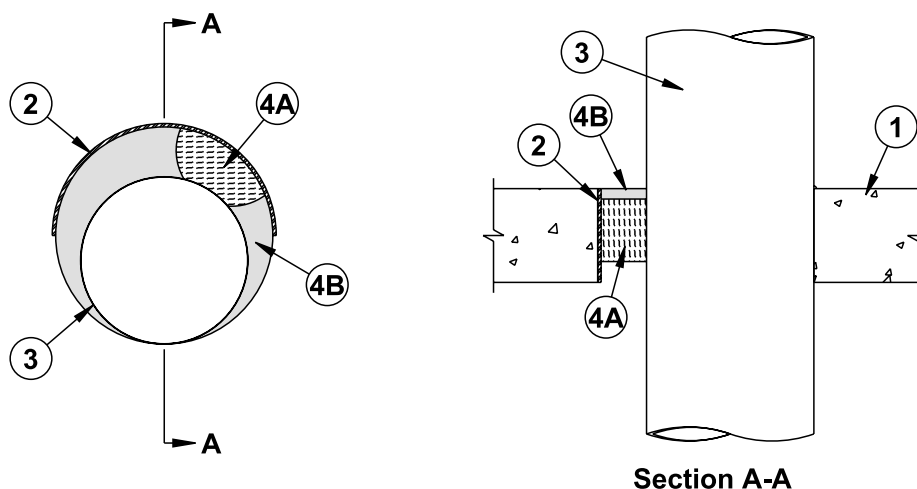
1. **Floor or Wall Assembly** — Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 6 in.  
See **Concrete Blocks (CAZT)** or **Precast Concrete Units (CFTV)** categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 6 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 2 in. diam (or smaller) regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 2 in. diam (or smaller) Type L (or heavier) copper tube.
4. **Tube Insulation-Plastics#** — Nom 1/2 or 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Annular space is dependent upon a number of variables, as shown in the table under Item 5B.  
See **Plastics (QMFZ2)** category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
5. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to the thickness shown in the table under Item 5B. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 5B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor, as required to accommodate fill material.
  - B. **Fill, Void or Cavity Material\*— Sealant** — Fill material applied within annulus, flush with top surface of floor assembly or both surfaces of wall assembly to the thickness shown in the table below. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both surfaces of floor. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/concrete interface on top surface of floor or both surfaces of wall or precast concrete units.

Floor or Wall Thkns, In.	Steel Sleeve	Pipe Covering Thkns In.	Annular Space, In.	Packing Depth, In.	Fill Material Depth, In.
2-1/2	Yes	3/4	1/4 to 5/8	1-1/2	1
4-1/2	Yes	3/4	1/4 to 1-5/8	3	1
4-1/2	No	1/2	0 to 2	3	1/2
4-1/2	Yes	1/2	1/4 to 1-5/8	3	1/2

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\*Bearing the UL Classification Mark

#Bearing the UL Recognized Component Mark



**System No. C-AJ-7040**

September 22, 2000

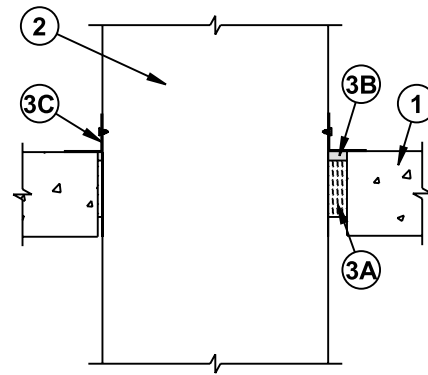
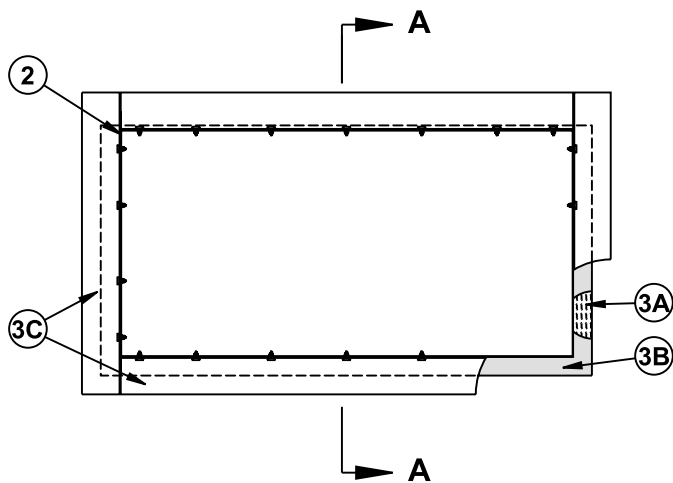
F Rating — 2 Hr

T Rating — 1/4 Hr

1. **Floor Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\*** Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 10 in. Max diam of opening in floors constructed of hollow-core concrete is 7 in.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces.
3. **Steel Duct** — One nom 8 in. diam (or smaller) No. 28 ga (or heavier) galv steel duct or one nom 4 in. diam (or smaller) No. 30 ga (or heavier) steel duct to be installed eccentrically or concentrically within the firestop system. The annular space between the steel duct and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Steel duct to be rigidly supported on both sides of the floor or wall assembly.
4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 3 in. thickness of min 4 pcf mineral wool batt insulation compressed and tightly packed into opening. Packing material recessed from top surface of floor or both surfaces of wall or precast concrete units. When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface.
  - B. **Fill, Void or Cavity Material\*** — **Sealant** — Min 1/2 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/2 in. thickness of fill material applied flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both sides of floor. At point contact location, apply min 1/4 in. diam bead of fill material at steel duct/concrete or steel duct/steel sleeve interface on top surface of floor or both surfaces of wall or precast concrete units.

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\*Bearing the UL Classification Marking



**Section A-A**

**System No. C-AJ-7041**

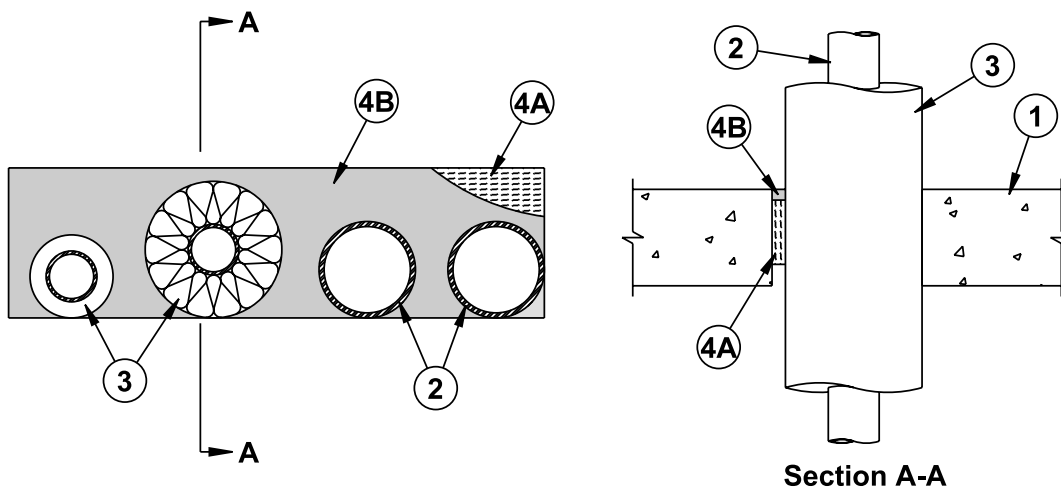
*September 22, 2000*

F Rating — 2 Hr

T Rating — 0 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max area of opening is 364 sq in. with a max dimension of 26 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Duct** — Nom 24 by 12 in. (or smaller) No. 24 ga (or heavier) galv steel duct installed eccentrically or concentrically within opening. Annular space between duct and periphery of opening to be min 1/4 in. to max 1-3/4 in. Duct to be rigidly supported on both sides of the floor or wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 3 in. thickness. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 3B).
  - B. **Fill Void or Cavity Materials\* — Sealant** — Min 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor assembly or both surfaces of wall assembly.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant
  - C. **Retaining Angles** — Min 16 GA galv steel angles sized to lap duct a min of 2 in. and lap periphery of opening a min of 1 in. Angles attached to all four sides of steel duct on top surface of floor or both surfaces of wall with No. 10 (or larger) steel sheet metal screws spaced 1 in. from each end and max 4 in. OC.

\*Bearing the UL Classification Marking



**System No. C-AJ-8083**

October 05, 2000

F Rating — 2 Hr

T Rating — 0, 1/4, 3/4 and 1-1/2 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max area of opening is 192 sq in. with a max dim of 24 in. Max area of opening in floors constructed of hollow-core concrete is 49 sq in. with a max dim of 7 in.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrants** — One or more pipes, conduits or tubing to be installed within the opening. The space between the pipes, conduits or tubes shall be min 1/4 in. to max 2 in. The annular space between the pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipes, conduits or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - A. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 4 in. diam (or smaller) rigid steel conduit, steel electrical metallic tubing (EMT) or flexible aluminum or steel conduit.
  - D. **Copper Pipe** — Nom 4 in. diam (or smaller) regular (or heavier) copper pipe.
  - E. **Copper tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.

**When through penetrant A, B or C is used without insulation, the T Rating is 1/4 hr. When through penetrant D or E is used without insulation, the T Rating is 0 Hr.**
3. **Pipe coverings** — One of the following types of pipe coverings may be used:
  - A. **Pipe and Equipment Covering Materials\*** — Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product.  
See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
  - B. **Pipe Covering Materials\*** — Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 18 AWG steel wire spaced max 12 in. OC.
  - C. **Sheathing Material\*** — Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer Circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.  
See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
  - D. **Tube Insulation-Plastics#** — Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tubing.  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

The pipe coverings may be installed on one or more of the through penetrants having a nom diam of 2 in. or less. The space between the insulated pipes or tubes shall be min 1/4 in. to max 2 in. The annular space between the insulated pipes or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 2 in.  
**When pipe covering A or B is used, the T Rating is 1-1/2 hr. When pipe covering D is used, the T Rating is 3/4 hr.**
4. **Firestop System** — The firestop system shall consist of the following:

**(System No. C-AJ-8083 Continued)**

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Created or Revised: 09/01/01

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3422

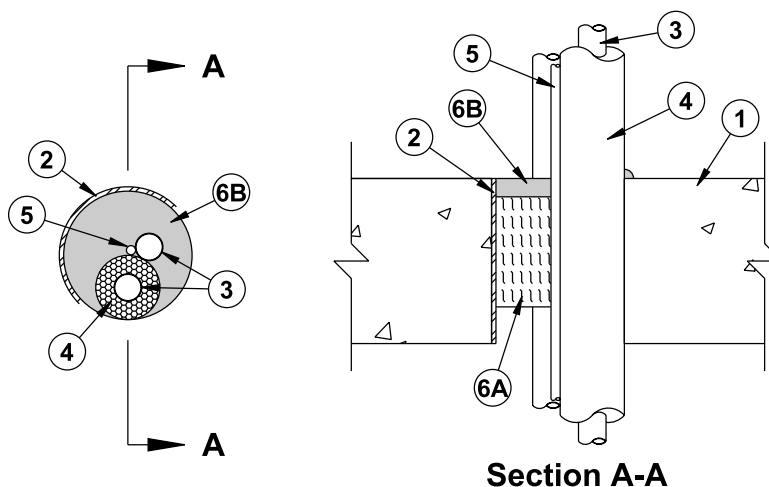
**(System No. C-AJ-8083 Continued)**

- A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 3 in. thickness. Packing material recessed from top surface of floor or both surfaces of wall or precast concrete unit as required to accomodate fill material (Item 4B).
- B. **Fill, Void or Cavity Material\*— Sealant** — Min 1/2 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or both surfaces of wall assembly. In floors constructed of hollow-core precast concrete, fill material installed symmetrically on both sides of floor assembly. At point contact locations, min 1/4 in. diam bead of fill material applied at insulated or bare metallic pipe/concrete interface on top surface of floor or both surfaces of wall or precast concrete units.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking

#Bearing the UL Recognized Component Mark



### System No. C-AJ-8084

October 2000

F Rating — 2 Hr

T Rating — 1/4 Hr

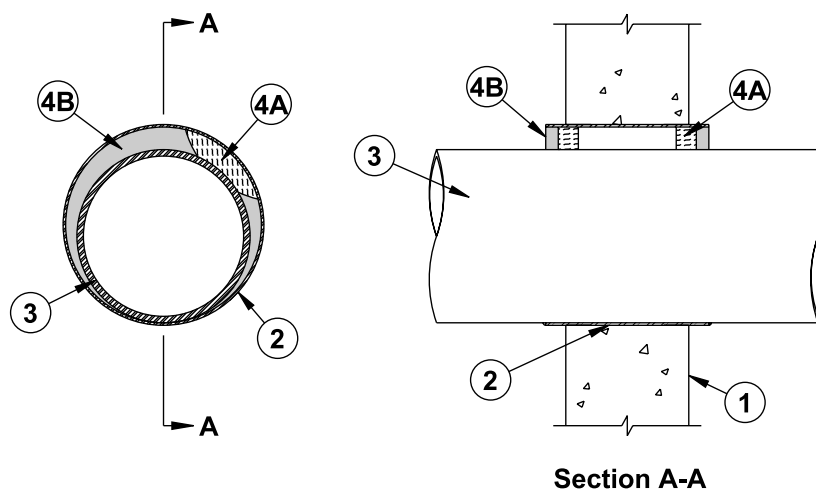
1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units**.\* Wall may also be constructed of any UL Classified **Concrete Blocks**.\* Max diam of opening is 3-1/2 in.  
See **Concrete Blocks** (CAZT) or **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 3-1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into concrete. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces.
3. **Through Penetrants** — A max of two pipes, conduits or tubing to be installed within the opening. The annular space between the pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 1-1/2 in. Pipes, conduits or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - A. **Steel Pipe** — Nom 3/4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 3/4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 3/4 in. diam (or smaller) rigid steel conduit or steel electrical metallic tubing (EMT).
  - D. **Copper Pipe** — Nom 3/4 in. diam (or smaller) regular (or heavier) copper pipe.
  - E. **Copper Tube** — Nom 3/4 in. diam (or smaller) Type L (or heavier) copper tube.
4. **Tube Insulation** — **Plastics**# — Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PBC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tubing. The annular space between the pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 1-1/2 in.  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
5. **Cables** — Max four pair No. 18 AWG (or smaller) copper conductor thermostat cable with PVC insulation and jacket. Cable space 0 in. (point contact) to max 1-1/2 in. from insulated and bare penetrants. The annular space between the cable and the periphery of the opening shall be min 0 in. (point contact) to max 1-1/2 in. Cable rigidly supported on both sides of floor or wall assembly.
6. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 3 in. thickness. Packing material recessed from top surface of floor or both surfaces of wall or precast concrete unit as required to accommodate fill material (Item 6B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface.
  - B. **Fill, Void or Cavity Material**\* — **Sealant** — Min 1/2 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/2 in. thickness of fill material applied within annulus flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete, fill material to be installed symmetrically on both sides, flush with floor surfaces. At point contact locations, min 1/4 in. diam bead of fill material applied at pipe/concrete or pipe/steel interface on top surface of floor or both surfaces of wall or precast concrete units.

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\*Bearing the UL Classification Marking

#Bearing the UL Recognized Component Mark





### System No. W-J-1099

October 11, 2000

F Rating — 2 Hr

T Ratings — 1/4, 3/4 and 1 Hr (See Item 3)

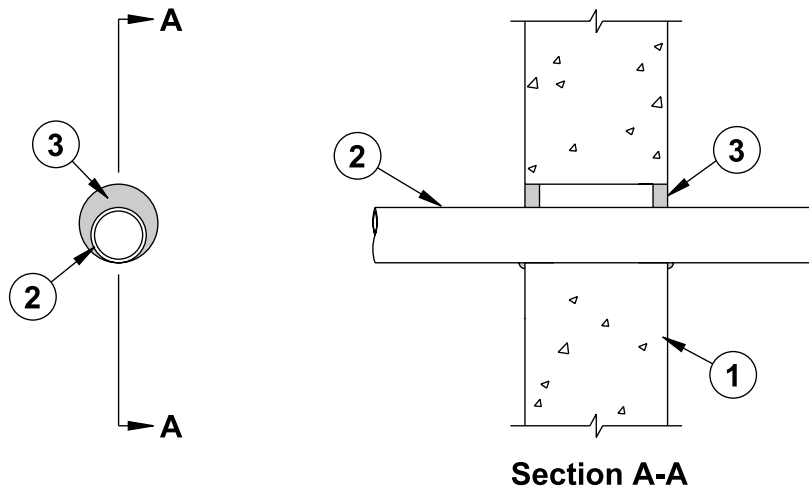
1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 2 in. larger than OD of through penetrant.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — Cylindrical sleeve fabricated from 0.0125 in thick (30 gauge) galv sheet steel and having a min 2 in. lap along the longitudinal seam. Length of the sleeve to be equal to or max 2 in. greater than the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular opening in concrete. The ends of the steel sleeve shall be flush with or extend a max 1 in. beyond each surface of the wall.  
As an alternate, steel sleeve may consist of nom 10 in. diam (or smaller) Schedule 5 (or heavier) steel pipe sleeve cast or grouted into concrete. The ends of the steel sleeve shall be flush with or extend a max 1 in. beyond each surface of the wall.
3. **Through Penetrant** — One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the steel sleeve shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
 

A. <b>Steel Pipe</b> — Nom 8 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
B. <b>Iron Pipe</b> — Nom 8 in. diam (or smaller) cast or ductile iron pipe.
C. <b>Conduit</b> — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. diam (or smaller) flexible steel conduit.
D. <b>Copper Pipe</b> — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
E. <b>Copper Tube</b> — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.

<b>Type of Penetrant</b>	<b>Max Diam</b>	<b>T Rating</b>
Steel or iron pipe, steel conduit or EMT	2 in.	1 hr
Steel or iron pipe, steel conduit or EMT	8 in.	3/4 hr
Copper pipe or tube	4 in.	1/4 hr
- 3A. **Through Penetrating Product\* — Flexible Metal Piping** — As an alternate to Item 3, one nom 2 in. diam (or smaller) steel flexible metal pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and the steel sleeve shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of the wall assembly. **When flexible metal piping is used, T Rating is 1 hr.**  
**OMEGA FLEX INC**  
**TITEFLEX CORP**  
**A BUNDY CO**  
**WARD MFG INC**
4. **Firestop System** — The firestop system consists of the following items:
  - A. **Packing Material** — Min 1 in. thickness of min 4 pcf mineral wool batt insulation compressed and tightly packed into each end of steel sleeve. When alternate steel pipe sleeve is used, packaging material may be omitted from the firestop system.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with each end of steel sleeve. At point contact location, min 1/4 in. diam bead of fill material applied at metallic pipe/steel sleeve interface on both surfaces of wall. Optionally, a min 1/4 in. diam bead of fill material shall be applied around the circumference of the steel sleeve at its egress from each side of the wall.

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**System No. W-J-2076**

October 11, 2000

F Rating — 2 Hr

T Ratings — 0, 1/4 and 1-3/4 Hr (See Item 2)

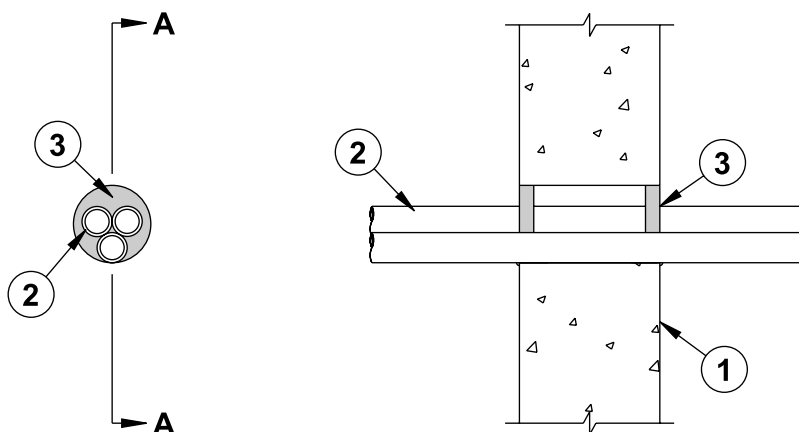
1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 3-1/2 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — One nonmetallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (point contact) to max 1 in.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (point contact) to max 1 in.
  - C. **Rigid Nonmetallic Conduit+** — Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (point contact) to max 1 in.
  - D. **Electrical Nonmetallic Tubing+** — Nom 2 in diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (point contact) to max 1 in.
  - E. **Cross Linked Polyethylene (PEX) Tubing** — Nom 1 in. diam (or smaller) SDR9 PEX tubing for use in. closed (process or supply) piping systems. Annular space shall be min 0 in. (point contact) to max 1 in.
  - F. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 1-1/2 in. diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 1/4 in. to max 3/4 in.

**When Item 2A or 2B is used, the T Rating is 1/4 hr. When Item 2C, 2D, or 2E is used, the T Rating is 1-3/4 hr. When Item 2F is used, T Rating is 0 hr.**

3. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at nonmetallic pipe/concrete interface on both surfaces of wall

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\*Bearing the UL Classification Marking



**Section A-A**

**System No. W-J-2077**

*October 11, 2000*

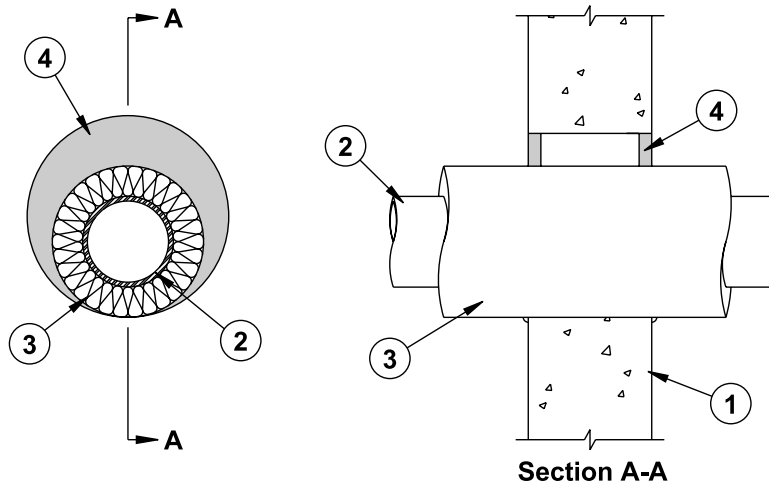
F Rating — 2 Hr

T Rating — 1-3/4 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 3-1/2 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — One to three nonmetallic pipes, conduits or tubes to be bundled together and installed eccentrically or concentrically within the firestop system. The annular space between the grouped pipes, conduits or tubes and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Separation between pipes, conduits or tubes to be min 0 in. (point contact) to max 1 in. Pipes, conduits or tubes to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 1 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 1 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.
  - C. **Rigid Nonmetallic Conduit+** — Nom 1 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Electrical Nonmetallic Tubing+** — Nom 1 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. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.
3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Sealant to be forced into interstices between penetrants to max extent possible. At point contact location, min 1/4 in. diam bead of fill material applied at nonmetallic pipe/concrete interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-J-5054**

October 11, 2000

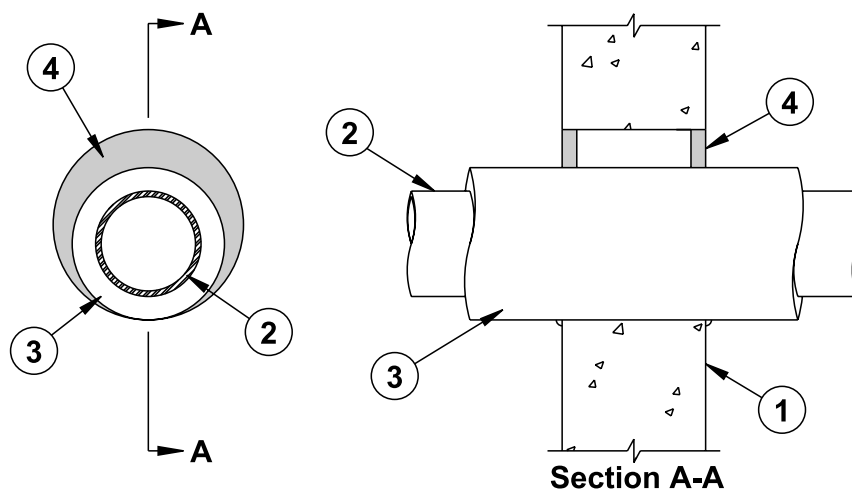
F Rating — 2 Hr

T Rating — 1 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 12 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 6 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Pipe Coverings** — One of the following types of pipe coverings shall be used:
  - A. **Pipe and Equipment Covering Materials\*** — Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
  - B. **Pipe Covering Materials\*** — Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. OC.
  - C. **Sheathing Material\*** — Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/concrete interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-J-5055**

October 11, 2000

F Rating — 2 Hr

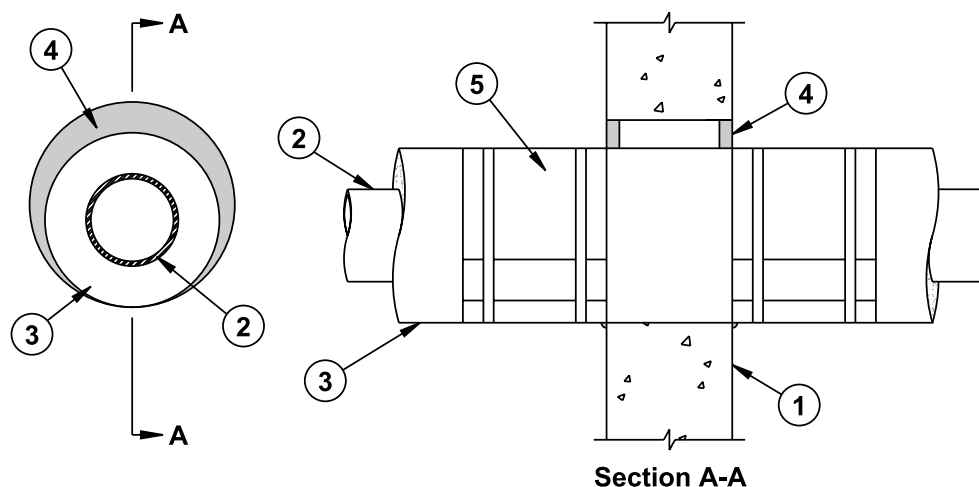
T Rating — 1/4 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 7-1/2 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 2 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 2 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Tube Insulation — Plastics#** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/concrete interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking

# Bearing the UL Recognized Component Marking



**System No. W-J-5056**

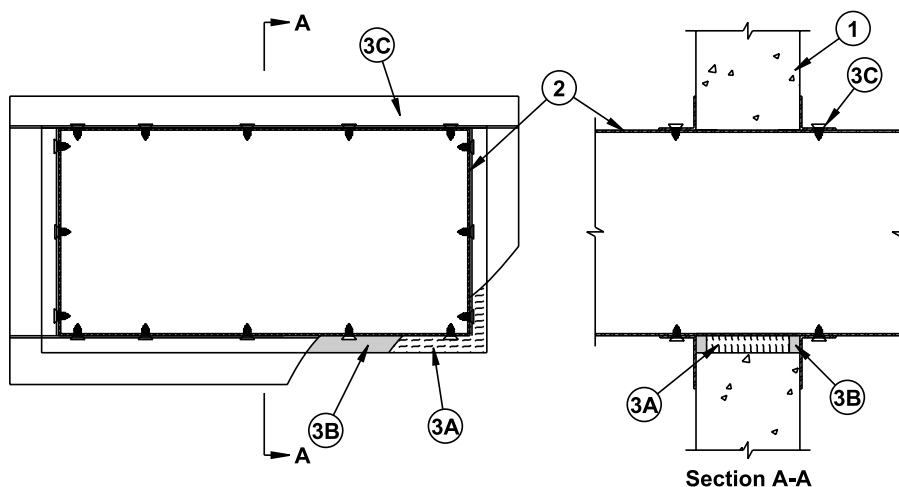
October 11, 2000

F Rating — 2 Hr

T Rating — 2 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 14 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 6 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Pipe Covering Materials\*** — **Cellular Glass Insulation** — Nom 3 in. thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
**PITTSBURGH CORNING CORP** — FOAMGLAS
4. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/concrete interface on both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant
5. **Metal Jacket** — Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of similar material or No. 18 AWG steel tie wire. Bands or tie wire to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket to be installed with the edge abutting surface of fill material (Item 5B) on both surfaces of wall. Metal jacket to be used in addition to any other jacketing material, which may be required on the pipe covering.

\*Bearing the UL Classification Marking



**System No. W-J-7031**

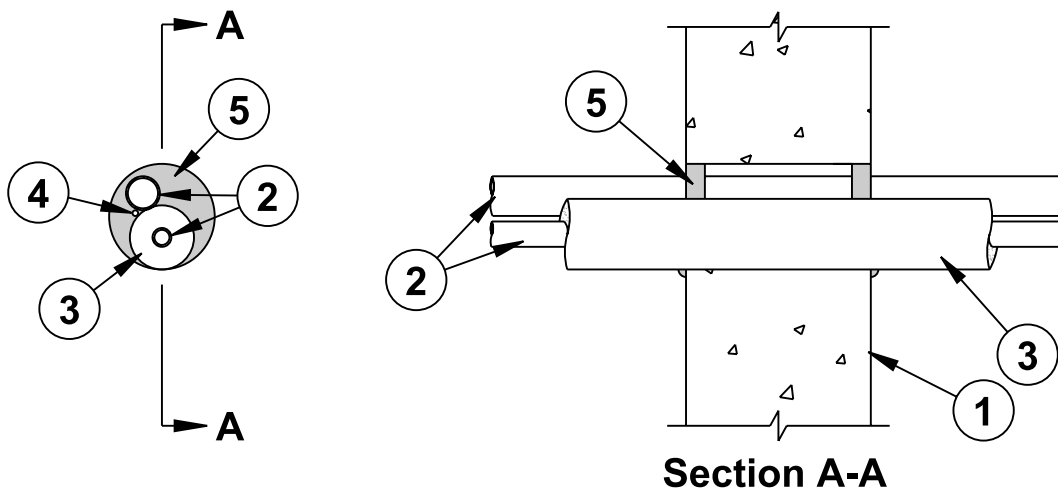
October 11, 2000

F Rating — 2 Hr

T Rating — 0 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 36 sq in. with a max dimension of 26 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Duct** — Nom 12 by 24 in. (or smaller) No. 24 gauge (or heavier) galv steel duct installed eccentrically or concentrically within the opening. Annular space between duct and periphery of opening to be min 0 in. (point contact) to max 2 in. Duct to be rigidly supported on both sides of the wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 4-3/4 in. thickness. Packing material recessed from both surfaces of wall as required to accommodate fill material (Item 3B).
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at steel duct/concrete interface on both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant
  - C. **Retaining Angles** — Min 16 GA galv steel angles sized to lap duct a min of 2 in. and lap periphery of opening a min 1 in. Angles attached to all four sides of steel duct on both surfaces of wall with No. 10 (or larger) steel sheet metal screws spaced 1 in. from each end and max 4 in. OC.

\*Bearing the UL Classification Marking



**System No. W-J-8011**

October 11, 2000

F Rating — 2 Hr

T Rating — 1/4 Hr

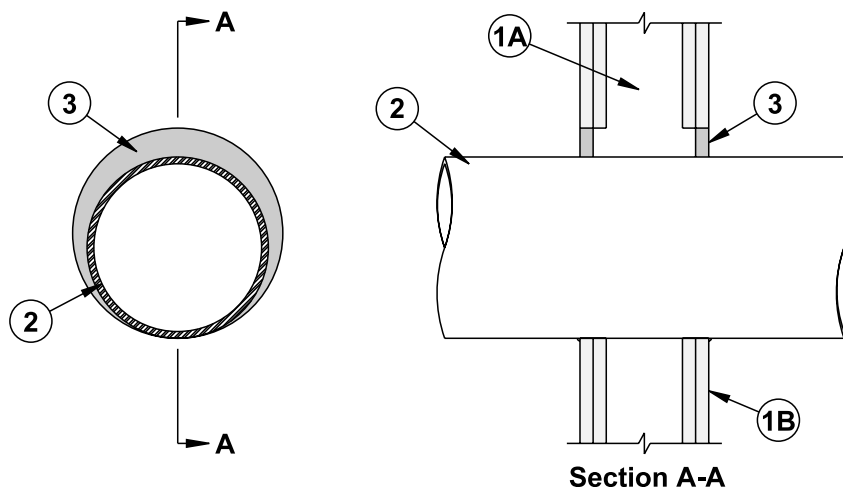
1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 3-1/2 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — A max of two pipes or tubes to be installed within the opening. Of the two pipes or tubes, only one may have a nom diam greater than 1/2 in. Annular space between pipes or tubing and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. Separation between uninsulated pipes or tubes shall be min 0 in. (point contact) to max 1-1/2 in. Pipes or tubing to be rigidly supported on both sides of the wall assembly. The following types and sizes of through penetrants may be used:
  - A. **Steel Pipe** — Nom 1 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 1 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 1 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 1 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Tube Insulation — Plastics#** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tube. The annular space between the insulated penetrating item and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. The space between insulated and uninsulated pipes or tubing shall be 0 in. (point contact).  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Cable** — One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials. Cable to be spaced min 0 in. (point contact) to max 1/2 in. from the other penetrants. The space between the cable and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. Cable to be rigidly supported on both sides of wall assembly.
5. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at through penetrant.concrete interface on both surfaces of wall. Additional fill material forced into grouped penetrant interstices to max extent possible.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking

#Bearing the UL Recognized Component Marking





**System No. W-L-1222**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Ratings — 1/4, 3/4 and 1 Hr (See Item 2)

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
- B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 10-5/8 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**

2. **Through Penetrant** — One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
  - A. **Steel Pipe** — Nom 8 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 8 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. diam (or smaller) flexible steel conduit.
  - D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - E. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.

Type of Penetrant	Max Diam	T Rating
Steel or iron pipe, steel conduit or EMT	2 in.	1 hr
Steel or iron pipe, steel conduit or EMT	8 in.	3/4 hr
Copper pipe or tube	4 in.	1/4 hr

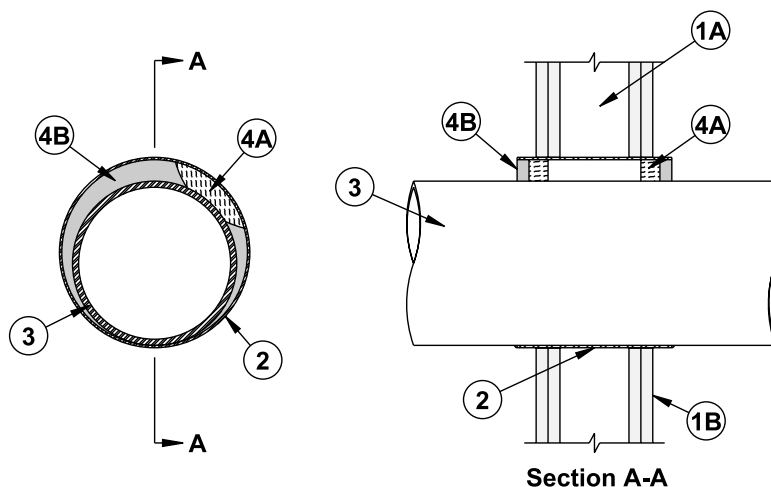
- 2A. **Through Penetrating Product\* — Flexible Metal Piping** — As an alternate to Item 2, one nom 1-1/4 in. diam (or smaller) steel flexible metal pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of the wall assembly.

**OMEGA FLEX INC  
TITEFLEX CORP  
A BUNDY CO  
WARD MFG INC**

3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at metallic pipe/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



#### System No. W-L-1223

October 04, 2000

F Ratings — 1 and 2 Hr

T Ratings — 1/4, 3/4 and 1 Hr (See Item 3)

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 10-5/8 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Steel Sleeve** — Cylindrical sleeve fabricated from 0.0125 in. thick (30 gauge) galv sheet steel and having a min 2 in. lap along the longitudinal seam. Length of the sleeve to be equal to or max 2 in. greater than the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with or extend a max 1 in. beyond each surface of the wall.  
As an alternate, steel sleeve may consist of nom 10 in. diam (or smaller) Schedule 5 (or heavier) steel pipe sleeve friction-fitted into circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with or extend a max 1 in. beyond each surface of the wall.
3. **Through Penetrant** — One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the steel sleeve shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
  - A. **Steel Pipe** — Nom 8 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 8 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. diam (or smaller) flexible steel conduit.
  - D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - E. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.

Type of Penetrant	Max Diam	T Rating
Steel or iron pipe, steel conduit or EMT	2 in.	1 hr
Steel or iron pipe, steel conduit or EMT	8 in.	3/4 hr
Copper pipe or tube	4 in.	1/4 hr
- 3A. **Through Penetrating Product\* — Flexible Metal Piping** — As an alternate to Item 3, one nom 2 in. diam (or smaller) steel flexible metal pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and the steel sleeve shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of the wall assembly. **When flexible metal piping is used, T Rating is 1 hr.**

**OMEGA FLEX INC**  
**TITEFLEX CORP**  
**A BUNDY CO**  
**WARD MFG INC**
4. **Packing Material** — Min 1 in. thickness of min 4 pcf mineral wool batt insulation compressed and tightly packed into each end of steel sleeve. Packing material recessed from each end of steel sleeve. When alternate steel pipe sleeve is used, packing material may be omitted from the firestop system.
  - A. **Packing Material** — Min 1 in. thickness of min 4 pcf mineral wool batt insulation compressed and tightly packed into each end of steel sleeve. Packing material recessed from each end of steel sleeve. When alternate steel pipe sleeve is used, packing material may be omitted from the firestop system.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with each end of steel sleeve. At point contact location, min 1/4 in. diam bead of fill material applied at metallic pipe/steel sleeve interface on both surfaces of wall. Optionally, a min 1/4 in. diam bead of fill material shall be applied around the circumference of the steel sleeve at its egress from each side of the wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

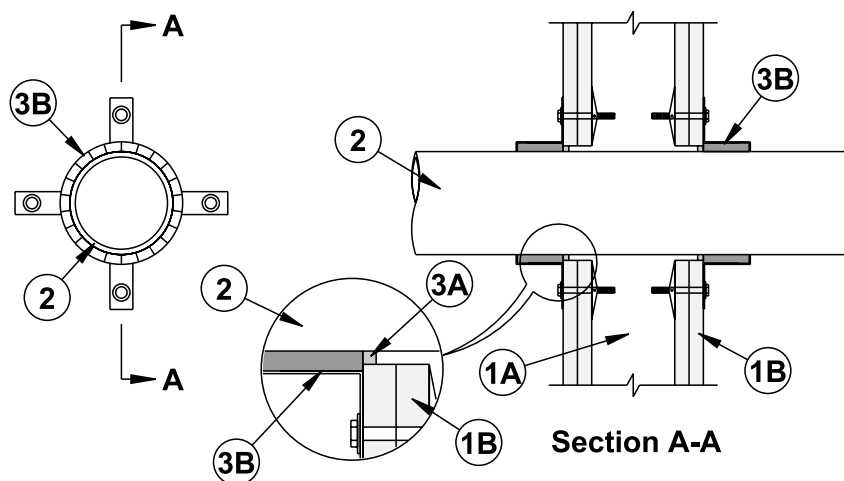
\*Bearing the UL Classification Marking

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Created or Revised: 09/01/01

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3450



**System No. W-L-2237**

October 13, 2000

F Ratings — 1 and 2 Hr (See Item 1)

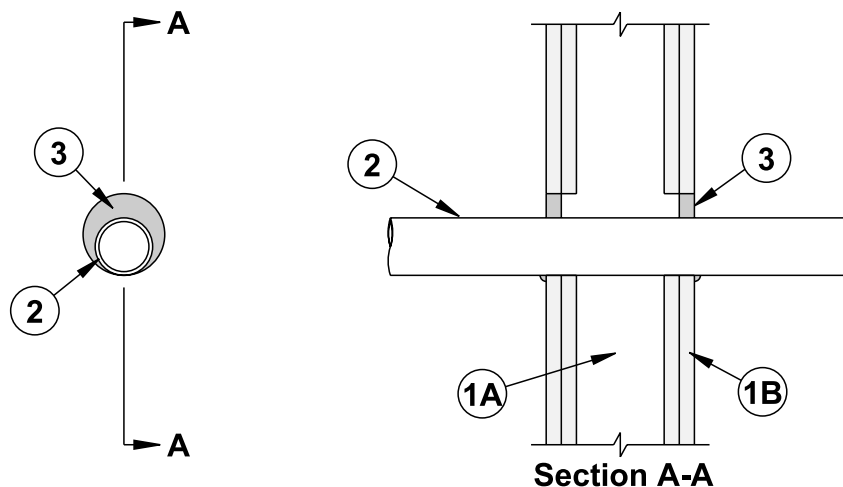
T Ratings — 1 and 2 Hr (See Item 1)

1. **Wall Assembly** — The 1 or 2 hr 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 incorporate 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Designs. For nom 2-1/2 in. diam and smaller pipes and conduits, diam of opening shall be max 1/4 in. larger than nom pipe diam. For pipes and conduits greater than nom 2-1/2 in. diam of opening shall be max 1/2 in. larger than nom pipe diam.

**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** — One nonmetallic pipe or conduit to be centered within opening with a max annular space between pipe or conduit and periphery of 1/8 in. for nom 2-1/2 in. diam and smaller pipes and conduits and 1/4 in. for pipes and conduits greater than 2-1/2 in. diam. Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes and conduits may be used.
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 4 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - C. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 4 in. diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - D. **Rigid Nonmetallic Conduit+** — Nom 4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
3. **Firestop System** — The firestop system consists of the following:
  - A. **Fill, Void or Cavity Material\* — Sealant** — Min 1/4 in. thickness applied within annulus, flush with both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant
  - B. **Firestop Device\*** — Galv steel collar lined with an intumescent material sized to fit the specific diam of the through penetrant. Device shall be installed around through penetrant in accordance with the accompanying installation instructions. Device incorporates anchor tabs for securement to both surfaces of wall assembly by means of 3/16 in. diam steel toggle bolts in conjunction with min 1-1/4 in. diam steel fender washers.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCC Collar

\*Bearing the UL Classification Marking

+Bearing the UL Listing Mark



**System No. W-L-2241**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Ratings — 0, 1/4, 1 and 1-3/4 Hr (See Item 2)

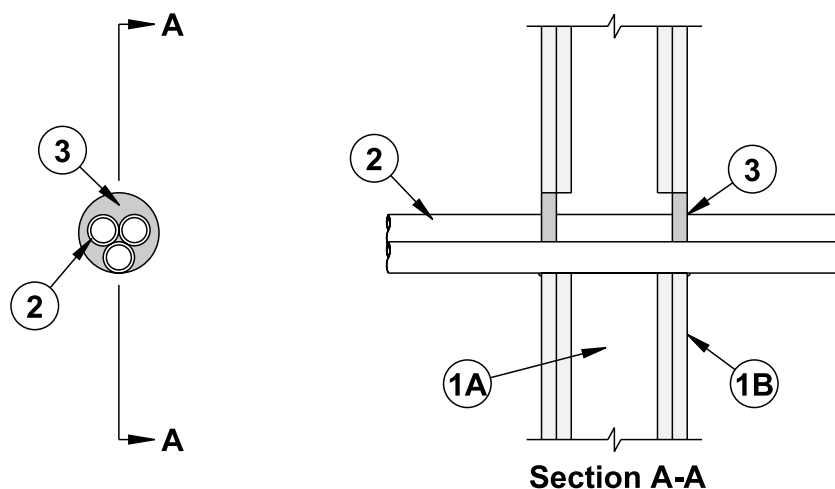
1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
  - 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 3-3/8 in.
2. **Through Penetrant** — One nonmetallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (point contact) to max 1 in.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (point contact) to max 1 in.
  - C. **Rigid Nonmetallic Conduit\*** — Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (point contact) to max 1 in.
  - D. **Electrical Nonmetallic Tubing\*** — Nom 2 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (point contact) to max 1 in.
  - E. **Cross Linked Polyethylene (PEX) Tubing** — Nom 1 in. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (point contact) to max 1 in.
  - F. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 1-1/2 in. diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 1/4 in. to max 3/4 in.

**When Item 2A or 2B is used, the T Rating is 1/4 hr. When Item 2C, 2D, or 2E is used, the T Rating is 1 hr and 1-3/4 hr for 1 hr and 2 hr fire rated walls, respectively. When Item 2F is used, T Rating is 0 hr.**

3. **Fill, Void or Cavity Material\*** — Sealant — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at nonmetallic pipe/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-L-2242**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Ratings — 1 and 1-3/4 Hr (See Item 2)

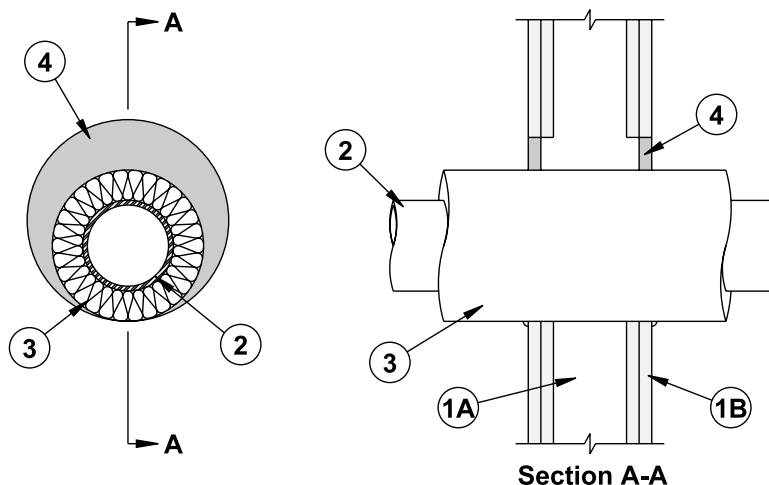
1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
  - 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 3 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — One to three nonmetallic pipes, conduits or tubes to be bundled together and installed eccentrically or concentrically within the firestop system. The annular space between the grounded pipes, conduits or tubes and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Separation between pipes, conduits or tubes to be min 0 in. (point contact) to max 1 in. Pipes, conduits or tubes to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 1 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 1 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.
  - C. **Rigid Nonmetallic Conduit+** — Nom 1 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Electrical Nonmetallic Tubing+** — Nom 1 in. 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. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.

**The T Rating is 1 hr and 1-3/4 hr for 1 hr and 2 hr fire rated walls, respectively.**
3. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Sealant to be forced into interstices between penetrants to max extent possible. At point contact location, min 1/4 in. diam bead of fill material applied at nonmetallic pipe/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-L-5121**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

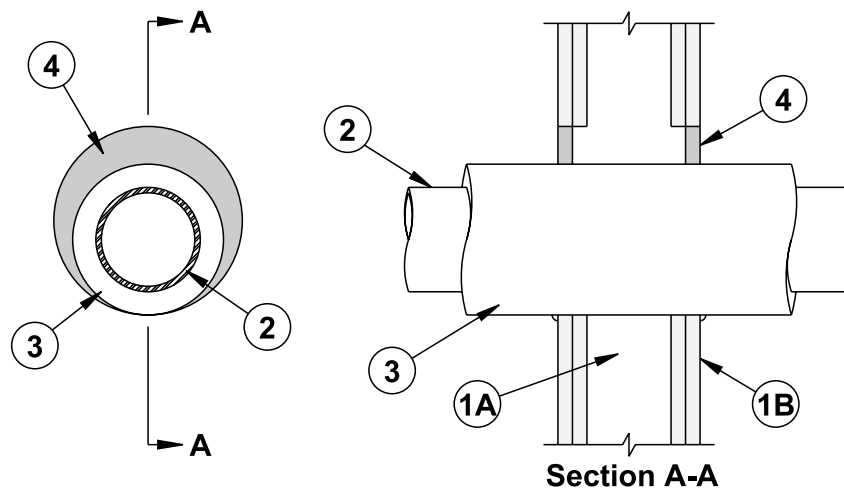
T Rating — 1 Hr

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 12 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 6 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Pipe Coverings** — One of the following types of pipe coverings shall be used:
  - A. **Pipe and Equipment Covering Materials\*** — Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
 See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
  - B. **Pipe Covering Materials\*** — Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. OC.
  - C. **Sheathing Material\*** — Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
 See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-L-5122**

October 04, 2000

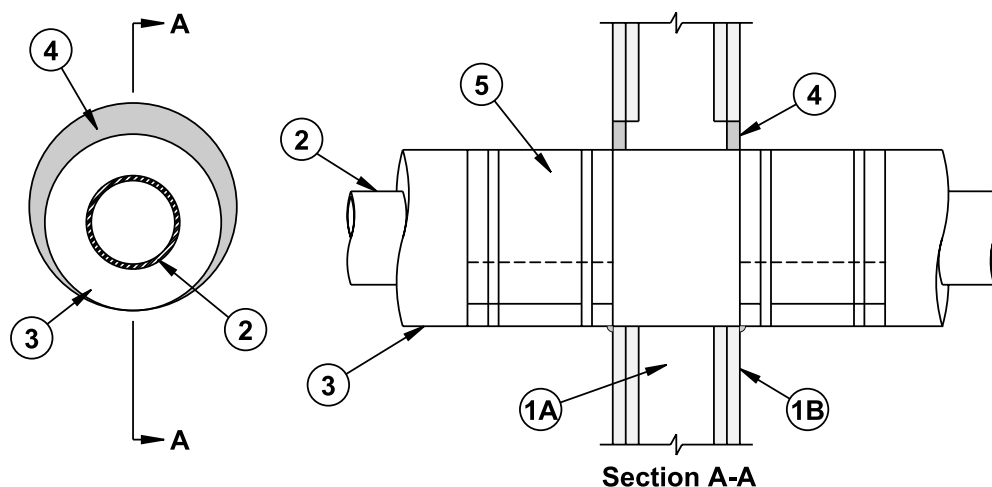
F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 1/4 Hr

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 7-1/2 in.
- The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 2 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 2 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Tube Insulation — Plastics#** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-L-5123**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

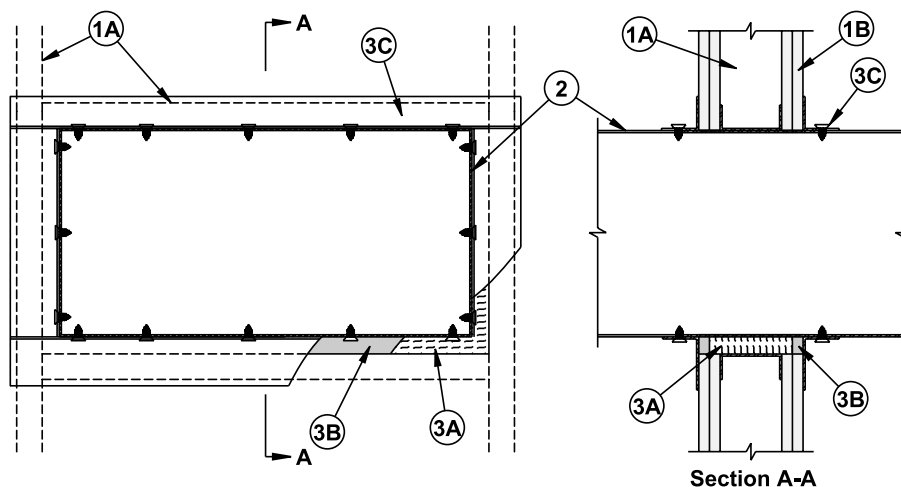
T Ratings — 1 and 2 Hr (See Item 1)

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 14-1/8 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
  - A. **Steel Pipe** — Nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 6 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.
3. **Pipe Covering Materials\*** — **Cellular Glass Insulation** — Nom 3 in. thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. Annular space shall be min 0 in. (point contact) to max 1-1/2 in.  
**PITTSBURGH CORNING CORP — FOAMGLAS**
4. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at insulated metallic pipe/gypsum board interface on both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant**
5. **Metal Jacket** — Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of similar material or No. 18 AWG steel tie wire. Bands or tie wire to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket to be installed with edge abutting surface of fill material (Item 5B) on both surfaces of wall. Metal jacket to be used in addition to any other jacketing material, which may be required on the pipe covering.

\*Bearing the UL Classification Marking





**System No. W-L-7060**

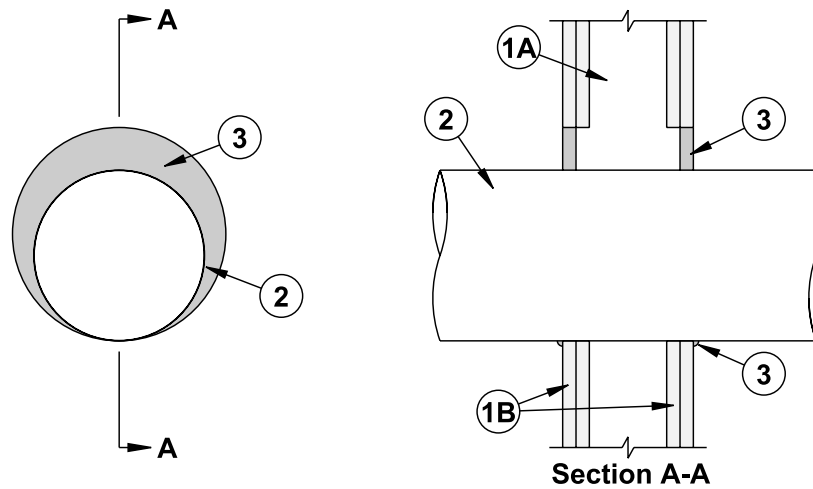
October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC. Additional horizontal framing members installed to form a rectangular box around the steel duct (Item 2).
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. When wood studs are used, interior of through opening to be lined with sheets of gypsum board around entire periphery to a total thickness of 5/8 in. or 1-1/4 in. for 1 or 2 hr wall assemblies, respectively. Max area of opening is 364 sq in. with a max dim of 26 in.
- The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Steel Duct** — Nom 12 by 24 in. (or smaller) No. 24 gauge (or heavier) galv steel duct installed eccentrically or concentrically within opening. Annular space between duct and periphery of opening to be min 0 in. (point contact) to max 2 in. Duct to be rigidly supported on both sides of the wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 3-5/8 in. or 4-7/8 in. thickness for 1 or 2 hr fire-rated assemblies, respectively. Packing material recessed from both surfaces of wall as required to accommodate fill material (Item 3B).
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at steel duct/gypsum board interface on both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant
  - C. **Retaining Angles** — Min 16 GA galv steel angles sized to lap duct a min of 2 in. and lap periphery of opening a min 1 in. Angles attached to all four sides of steel duct on both surfaces of wall with No. 10 (or larger) steel sheet metal screws spaced 1 in. from each end and max 4 in. OC.

\*Bearing the UL Classification Marking



**System No. W-L-7061**

October 04, 2000

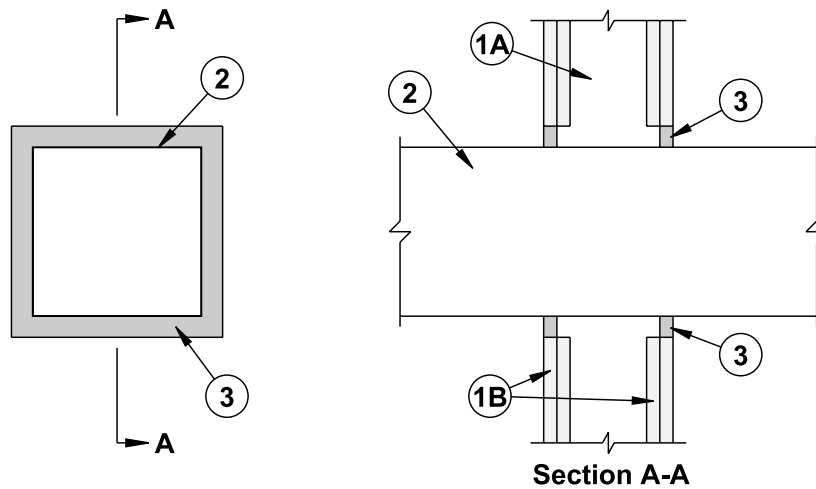
F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 3/4 Hr

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 2 in. larger than OD of steel duct (Item 2).
2. **Steel Duct** — Nom 8 in. diam (or smaller) No. 28 gauge (or heavier) or nom 4 in. diam (or smaller) No. 30 gauge (or heavier) spiral wound or long seam galv steel duct. Annular space between duct and periphery of opening to be min 0 in. (point contact) to max 2 in. Duct to be rigidly supported on both sides of the wall assembly.
3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at steel duct/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-L-7062**

*October 04, 2000*

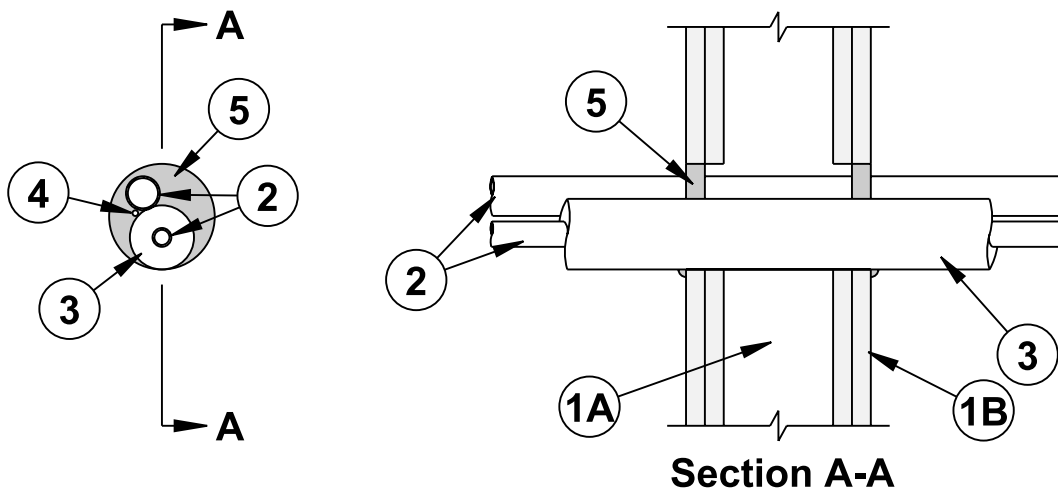
F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max area of opening is 100 sq in. with a max dim of 10 in.
2. **Steel Duct** — Nom 8 by 8 in. diam (or smaller) No. 28 gauge (or heavier) galv steel duct. Annular space between duct and periphery of opening to be nom 1 in. Duct to be rigidly supported on both sides of the wall assembly.
3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

\*Bearing the UL Classification Marking



**System No. W-L-8025**

October 11, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 1/4 Hr

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design 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 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 3-1/2 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — A max of two pipes or tubes to be installed within the opening. Of the two pipes or tubes, only one may have a nom diam greater than 1/2 in. Annular space between pipes or tubing and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. Separation between uninsulated pipes or tubes shall be min 0 in. (point contact) to max 1-1/2 in. Pipes or tubing to be rigidly supported on both sides of the wall assembly. The following types and sizes of through penetrants may be used:
  - A. **Steel Pipe** — Nom 1 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 1 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 1 in. diam (or smaller) Regular (or heavier) copper pipe.
  - D. **Copper Tube** — Nom 1 in diam (or smaller) Type L (or heavier) copper tube.
3. **Tube Insulation — Plastics#** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tube. The annular space between the insulated penetrating item and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. The space between insulated and uninsulated pipes or tubing shall be 0 in. (point contact).  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Cable** — One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials. Cable to be spaced min 0 in. (point contact) to max 1/2 in. from the other penetrants. The space between the cable and the periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. Cable to be rigidly supported on both sides of wall assembly.
5. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at through penetrant/gypsum board interface on both surfaces of wall. Additional fill material forced into grouped penetrant interstices to max extent possible.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant.

\*Bearing the UL Classification Marking

#Bearing the UL Recognized Component Marking



Specified  
Technologies  
Inc.

200 Evans Way, Suite 2  
Somerville, N.J. 08876  
Phone: (908) 526-8000  
Fax: (908) 526-9623  
Toll Free: (800) 992-1180

## GENERAL CERTIFICATE of CONFORMANCE

**Description:** SpecSeal® Firestop Products

**Included Products:**

*Series SSS Intumescent Sealant*  
*Series LCI Intumescent Sealant*  
*Series LC Latex Endothermic Sealant*  
*Series SSP Intumescent Putty*  
*Series EP Power Shield™ Box Insert*  
*Series SSWRED Intumescent Wrap Strips*  
*Series SSWBLU Intumescent Wrap Strips*  
*Series SSC Intumescent Firestop Collars*  
*Series LCC Intumescent Firestop Collars*

*Series SSB Intumescent Firestop Pillows*  
*Series AS100 Elastomeric Spray*  
*Series AS200 Elastomeric Spray*  
*Series ES100 Elastomeric Sealant*  
*Series SSM Firestop Mortar*  
*Pensil Series PEN200 Silicone Foam*  
*Pensil Series PEN300 Silicone Sealant*  
*Pensil Series PEN300SL Silicone Sealant*

**These products are tested to the following standards where applicable:**

**ASTM STANDARD:**

<b>E 814</b>	Fire Tests of Through-Penetration Fire Stops
<b>E 119</b>	Fire Tests of Building Construction and Materials
<b>E 1966</b>	Fire-Resistive Joint Systems
<b>E 84</b>	Surface Burning Characteristics of Building Materials
<b>E 1399</b>	Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems

**UL STANDARD**

<b>1479</b>	Fire Tests of Through-Penetration Firestops
<b>263</b>	Fire Tests of Building Construction and Materials
<b>2079</b>	Tests for Fire-Resistance of Building Joint Systems
<b>723</b>	Tests for Surface Burning Characteristics of Building Materials

**Chemical Content Statements:**

No asbestos, PCB's or water-soluble intumescent ingredients are used or contained in these products.

James P. Stahl, Jr.  
Technical Manager

February 1, 2002

Date



# Material Safety Data Sheet

01-JAN-2003

## SpecSeal® LCC FIRESTOP COLLAR

### CHEMICAL PRODUCT/COMPANY IDENTIFICATION

#### Material Identification

PRODUCT NAME.....SpecSeal® LCC Firestop Collar

CHEMICAL FAMILY.....Does not apply

#### Company Identification

#### MANUFACTURER/DISTRIBUTOR

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876

#### PHONE NUMBERS

Product Information : 1-908-526-8000

Emergency : 1-800-255-3924

### COMPOSITION/INFORMATION ON INGREDIENTS

Metal collar with contained rubber strip.

### HAZARDS IDENTIFICATION

\*\*\*\*\*EMERGENCY OVERVIEW\*\*\*\*\*

\* Non-hazardous metal collar with contained rubber strip. \*

\*\*\*\*\*

#### Potential Health Effects:

**EYE:** Contact may cause physical irritation.

**SKIN:** None anticipated.

**INGESTION:** Not likely.

**INHALATION:** None anticipated.

**CHRONIC (CANCER) INFORMATION:** None known.

**LONG TERM TOXIC EFFECTS:** None known.

### FIRST AID MEASURES

#### First Aid

**INHALATION:** None applicable.

**SKIN CONTACT:** None applicable.

**EYE CONTACT:** Irrigate eyes with running water for at least 15 minutes. Get medical attention if irritation develops.

**INGESTION:** None applicable.

## FIRE FIGHTING MEASURES

Flash point: Not established.

EXTINGUISHING MEDIA.....Dry Chemical; Carbon Dioxide; Foam; Water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: .....As for surrounding fire.

## ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

## HANDLING AND STORAGE

Store under ambient conditions. No special handling required.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION REQUIREMENTS:.....Safety glasses/goggles.

SKIN PROTECTION REQUIREMENTS: .....None.

RESPIRATOR REQUIREMENTS: .....None.

VENTILATION REQUIREMENTS:.....If needed, use local exhaust ventilation to keep airborne concentrations below the TLV.

Exposure Guidelines

Exposure Limits

None.

## PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM ..... Solid

SPECIFIC GRAVITY ..... NA

PERCENT VOLATILES..... 0

SOLUBILITY IN WATER..... Insoluble

## STABILITY AND REACTIVITY

STABILITY: ..... This is a stable material.

CONDITIONS TO AVOID:..... None.

HAZARDOUS POLYMERIZATION:..... Will not occur.

INCOMPATIBILITIES:.....None special.

## TOXICOLOGICAL INFORMATION

Mixture not tested but based on components:

Should only cause physical irritation only.

Components not designated as carcinogens by IARC, ACGIH, OSHA and NTP.

## ECOLOGICAL INFORMATION

No data but not anticipated to be an environmental hazard.

## DISPOSAL CONSIDERATIONS

Waste Disposal:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

## TRANSPORTATION INFORMATION

DOT – not regulated.

## REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Article.

Section 313 Supplier Notifications.

This product contains no toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

## OTHER INFORMATION

NPCA-HMIS Rating

Health : 0

Flammability : 1

Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

### STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): NJTSRN-LCC.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: May contain traces of substances known to the State of California to cause cancer.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

-----

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the data compiled. However, no representation, warranty, or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information.

### Responsibility for MSDS :

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876





# Material Safety Data Sheet

01-JAN-2003

## SpecSeal® TYPE LCI SEALANT

### CHEMICAL PRODUCT/COMPANY IDENTIFICATION

#### Material Identification

PRODUCT NAME.....SpecSeal® LCI Sealant

CHEMICAL FAMILY.....Mixture

#### Company Identification

#### MANUFACTURER/DISTRIBUTOR

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876

#### PHONE NUMBERS

Product Information : 1-908-526-8000

Emergency : 1-800-255-3924

### COMPOSITION/INFORMATION ON INGREDIENTS

#### INGREDIENT NAME

Proprietary mixture

#### CAS NUMBER

-----

### HAZARDS IDENTIFICATION

#### \*\*\*\*\*EMERGENCY OVERVIEW\*\*\*\*\*

\* Possible skin and eye irritant. Pale, red paste. \*

\*\*\*\*\*

#### Potential Health Effects:

**EYE:** Contact may cause irritation.

**SKIN:** Contact may cause irritation.

**INGESTION:** Relatively non-toxic.

**INHALATION:** Irritation of the nose, throat, and lungs may result from over-exposure to vapors or mist.

**CHRONIC (CANCER) INFORMATION:** Not classified as carcinogenic.

**LONG TERM TOXIC EFFECTS:** None known.

## FIRST AID MEASURES

### First Aid

**INHALATION:** Remove to fresh air.

**SKIN CONTACT:** Wash thoroughly.

**EYE CONTACT:** Irrigate eyes with running water for at least 15 minutes. Get medical attention if irritation develops.

**INGESTION:** None applicable.

## FIRE FIGHTING MEASURES

Not a fire hazard.

EXTINGUISHING MEDIA.....Dry Chemical; Carbon Dioxide; Foam; Water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: .....As for surrounding fire.

## ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

## HANDLING AND STORAGE

Store under ambient conditions. No special handling required.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

**EYE PROTECTION REQUIREMENTS:**.....Safety glasses/goggles.

**SKIN PROTECTION REQUIREMENTS:** .....Gloves.

**RESPIRATOR REQUIREMENTS:** .....None.

**VENTILATION REQUIREMENTS:**.....If needed, use local exhaust ventilation to keep airborne concentrations below the TLV.

### Exposure Guidelines

#### Exposure Limits

**PEL(OSHA)** : Particulates (Not Otherwise Classified) 15 mg/m<sup>3</sup>, 8 Hr. TWA, total dust 5 mg/m<sup>3</sup>, 8 Hr. TWA, respirable dust

**TLV(ACGIH)**: None Established

## PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM ..... Pale, red paste with minimal odor

SPECIFIC GRAVITY..... 1.10

PERCENT VOLATILES..... 22

EVAPORATION RATE..... >1

BOILING POINT ..... 100 deg. C

SOLUBILITY IN WATER..... Infinitely dilutable

## STABILITY AND REACTIVITY

STABILITY: ..... This is a stable material.

CONDITIONS TO AVOID..... Storage >55 deg. C

HAZARDOUS POLYMERIZATION:..... Will not occur.

INCOMPATIBILITIES:.....None special.

## TOXICOLOGICAL INFORMATION

Mixture not tested but based on components:

May be irritating to skin and eyes and may aggravate existing skin and eye conditions.

None of the components are listed as carcinogens.

## ECOLOGICAL INFORMATION

No data.

## DISPOSAL CONSIDERATIONS

### Waste Disposal:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

## TRANSPORTATION INFORMATION

DOT – not regulated.

## REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Reported/Included.

Section 313 Supplier Notifications.

This product contains no toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

## OTHER INFORMATION

### NPCA-HMIS Rating

Health : 1

Flammability : 0

Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

### STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): NJTSRN-LCI300

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: Possible traces of formaldehyde, ethyl acrylate, acetaldehyde, acrylamide and acrylonitrile.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

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This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the data compiled. However, no representation, warranty, or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information.

### Responsibility for MSDS :

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876



Specified Technologies, Inc.

# PRODUCT DATA SHEET



## Series LCI Intumescent Sealant



### 1. PRODUCT DESCRIPTION

SpecSeal® LCI Sealant is a versatile and economical intumescent product intended for firestopping a wide array of applications in small commercial or grouped residential construction and other structures with similar applications. SpecSeal® LCI Sealant is available in a single grade that has excellent caulking properties as well as high build properties on vertical or overhead surfaces. This single grade may be caulked (standard cartridge or bulk loaded), knifed or troweled. In addition, SpecSeal® LCI does not contain PCB's or asbestos.

SpecSeal® LCI Sealant is storage stable (when stored according to the manufacturer's recommendations), is asbestos free and will not separate or shrink when dried. SpecSeal® LCI Sealant will adhere to all common construction and penetrant materials and contains no solvents that might adversely effect plastic pipes or cable jackets.

### 2. APPLICATIONS

See Table A for a summary application list.

SpecSeal® LCI Sealant has a broad application base designed to seal a wide variety of common penetrations in light commercial and grouped residential construction. Penetrant types include insulated and non-insulated metallic pipes and tubes, non-metallic pipes and tubes, and common electrical service and power distribution, telephone, data, and TV cabling. This product is also used in conjunction with other SpecSeal® Products such as SpecSeal® Firestop Collars and Wrap Strips to protect larger plastic pipes.

### 3. PHYSICAL PROPERTIES

See Table B.

### 4. PERFORMANCE

SpecSeal® LCI Sealant is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479) as well as to the time-temperature requirements of ASTM E119 (UL263). LCI provides up to a 2-hour fire rating for typical service penetrations through concrete or wood floors, concrete or masonry walls, as well as gypsum board walls (3-hour for metallic pipe, conduit and tubing). LCI meets Class A finish requirements for Flame Spread and Smoke Development when tested in accordance with ASTM E84 (UL723). LCI Sealant is also acoustically tested, demonstrating excellent sound attenuation properties.

### 5. SPECIFICATIONS

The firestopping sealant shall be a water-resistant, intumescent latex sealant. The sealant when exposed to high heat or flame shall exhibit a free expansion of up to 8 times its original volume. The firestopping sealant shall contain no water soluble nor hygroscopic ingredients and shall be acoustically tested. The sealant shall be UL Classified and tested to the requirements of ASTM E814 (UL1479) and shall meet Class A finish requirements when tested in accordance with ASTM E84 (UL723).

#### SPECIFIED DIVISIONS

DIV.	7	07840	Through-Penetration Firestopping
DIV.	13	13900	Special Construction Fire Suppression & Supervisory Systems
DIV.	15	15250	Mechanical Insulation – Fire Protection
DIV.	16	16050	Basic Electrical Materials & Methods



**Facts On Demand**

Call STI's automated faxing system for the latest Product and System Information toll-free at 888-526-6800!

STI Product Data Sheet • Series LCI Intumescent Sealant • FOD-5062 03/2003

www.stifirestop.com • Toll Free 800-992-1180

Page 1 of 4



FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES INC. ® FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS.

3L73

SEE UL FIRE RESISTANCE DIRECTORY



CLASSIFIED FILL, VOID, OR CAVITY MATERIALS FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE UL DIRECTORY OF PRODUCTS CERTIFIED FOR CANADA AND UL FIRE RESISTANCE DIRECTORY



### FEATURES

- **Economical** High performance without the high price!
- **Highly Intumescent** Expands up to 10X.
- **Excellent Smoke Seal**
- **Safe** for contact with plastics.
- **Water Resistant** Will not re-emulsify when dry.
- **Water-Based** for easy installation, cleanup, and disposal.
- **Acoustically Tested** Reduces noise transmission
- **Safe...** Low VOC's, No Solvents, Non-Halogenated



Specified Technologies, Inc.

**Table A:**  
**APPLICATIONS**

- **Metallic Pipes**  
including steel, iron, or copper pipe and tubing.
- **Nonmetallic Pipes, Conduits & Tubing**  
including PVC, CPVC, ABS, and PEX.
- **Electrical & Electronic Cabling**  
including service entrance, power distribution, computer, telephone, and television.
- **Metal Ductwork**  
including HVAC, bath and dryer vents.
- **Insulated Pipes**  
including heating, cooling, and condensation applications.
- **Complete Wood Floor firestopping package**  
for electrical, plumbing, HVAC, telephone, and television.

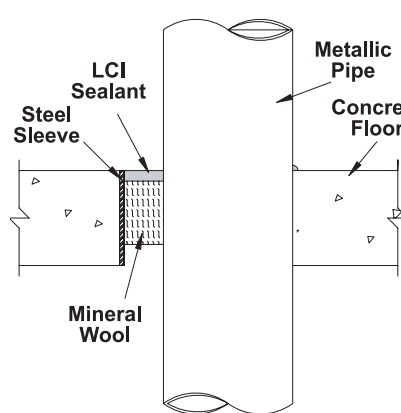
**Table B: Physical Properties**

<b>Product Name</b>	Series LCI Sealant
<b>Color</b>	Pale Red
<b>Odor</b>	Mild Latex
<b>Density</b>	9.0 Lb/Gal
<b>pH</b>	9.0
<b>Expansion Begins</b>	320°F (160°C)
<b>Volume Expansion</b>	10X Free Expansion
<b>In-Service Temp.</b>	≤ 130°F (54°C)
<b>Flame Spread</b>	0*
<b>Smoke Development</b>	5*
<b>STC Rating</b>	50
<b>VOC Content**</b>	0.00lbs/gal (0.0 g/l)

\* Tested to ASTM E84 (UL723) at 14% surface coverage (modified test for sealants and caulks)

\*\*ASTM D 3960 and EPA Federal Reference Method 24

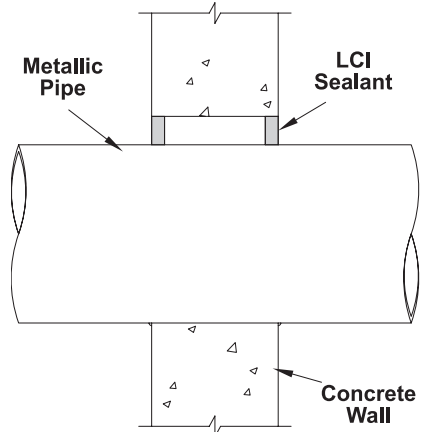
**Fig 1: METALLIC PIPES - Concrete/Masonry Floors & Walls**



**UL System No. C-AJ-1353**

F Rating: 3 Hr • T Rating: 0 Hr  
Steel or Iron Pipe: <12", Copper Pipe: <4"  
Annulus: 0" to 2"  
Sealant Depth: 1/4"

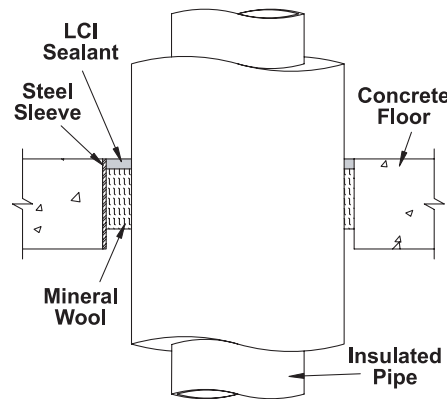
Forming Material: Nom 4 pcf mineral wool (2 1/4" Depth)



**UL System No. W-J-1098**

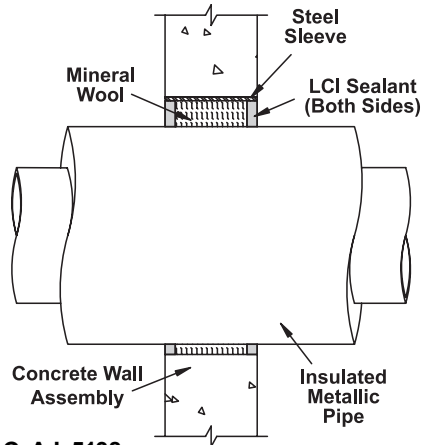
F Rating: 2 Hr • T Rating: 1/4, 3/4 & 1 Hr  
Steel or Iron Pipe: <8", Copper Pipe: <4"  
Steel or Iron Pipe: <12", Copper Pipe: <4"  
Annulus: 0" to 2"  
Sealant Depth: 5/8"

**Fig 2: INSULATED METALLIC PIPES - Concrete/Masonry Floors & Walls**



**UL System No. C-AJ-5138**

F Rating: 2 Hr • T Rating: 3/4 or 1 Hr  
Steel or Iron Pipe: 6", Copper Pipe: 4"  
Pipe Covering: Max. 2" fiber glass or mineral wool pipe insulation.  
Annulus: 1/4" to 1-5/8" • Sealant: 1/2"  
Forming: Nom. 4 pcf mineral wool (3" depth)

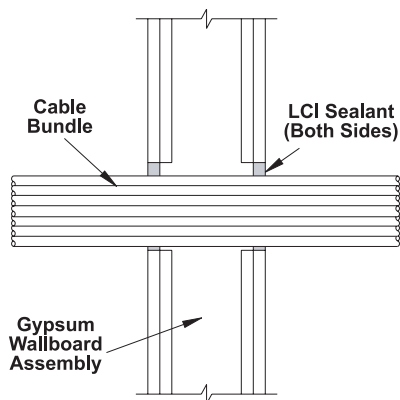


**Table C: SEALANT REQUIREMENTS IN CUBIC INCHES PER 1/4 INCH OF INSTALLED DEPTH\***

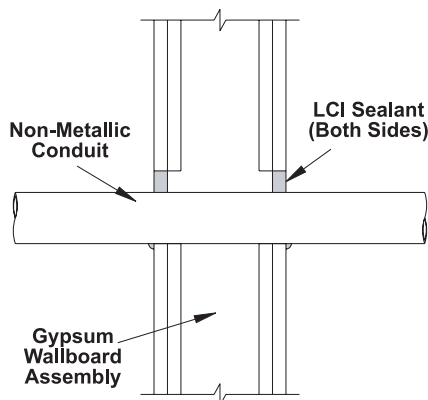
Pipe Size		Diameter of Opening (in.)											
Trade Size	Pipe O.D.	1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	10	12	14	26
0.5"	0.840	0.3	0.6	1.6	3.0	4.8	6.9	9.5	12.4	19.5	28.1	38.3	132.6
1"	1.315	0.1	0.4	1.4	2.8	4.6	6.7	9.3	12.2	19.3	27.9	38.1	132.4
1.5"	1.900			1.1	2.4	4.2	6.4	8.9	11.9	18.9	27.6	37.8	132.0
2"	2.375			0.7	2.0	3.8	6.0	8.5	11.5	18.5	27.2	37.4	131.6
2.5"	2.875			0.1	1.5	3.3	5.4	8.0	10.9	18.0	26.7	36.9	131.1
3"	3.500				0.7	2.5	4.7	7.2	10.2	17.2	25.9	36.1	130.3
3.5"	4.000					1.8	3.9	6.5	9.4	16.5	25.1	35.3	129.6
4"	4.500					0.8	3.0	5.6	8.5	15.6	24.2	34.4	128.7
6"	6.625							1.1	4.0	11.1	19.7	29.9	124.2
8"	8.625									4.9	13.6	23.8	118.0
10"	10.750										5.6	15.8	110.0
12"	12.750											6.6	100.8
24"	24.000												19.6

**\*Different Sealant Depth?**  
1/2" Multiply by 2  
5/8" Multiply by 2.5  
1" Multiply by 4  
1-1/4" Multiply by 5

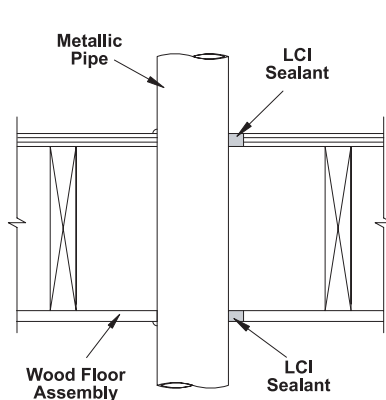
IMPORTANT NOTE: This table is for estimation purposes only. Consult UL Fire Resistance Directory or STI Product & Application Guide for specific installation requirements and limitations

**Fig. 3: ELECTRICAL, DATA OR COMMUNICATIONS - Gypsum Walls****UL System No. W-L-3169**

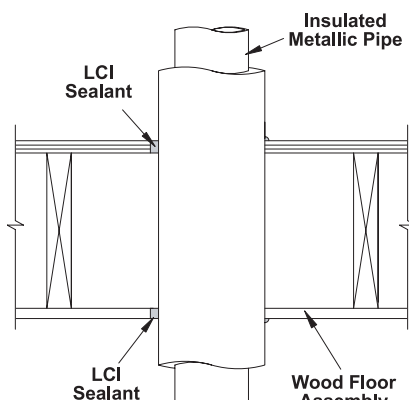
F Rating: 1, 2 Hr • T Rating: ¼ and ¾  
Up to 4" cable bundle  
Annulus: 0" to 4½" • Sealant: 5/8"

**UL System No. W-L-2241**

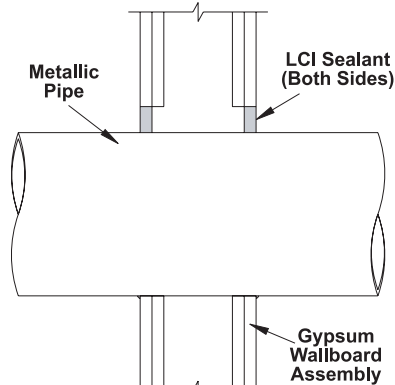
F Rating: 1, 2 Hr • T Rating: ¼, 1, 1-3/4  
<2" Rigid PVC or ENMT, CPVC, ABS  
Annulus: 0-1" • Sealant 5/8"

**Fig. 4: BARE & INSULATED METALLIC PIPES - Wood Floor Assemblies****UL System No. F-C-1074**

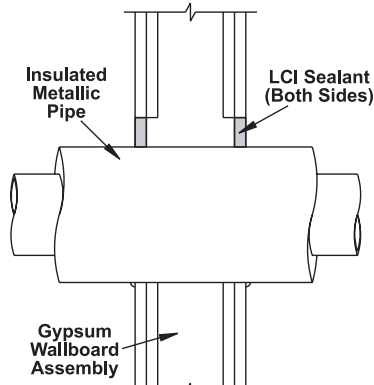
F Rating: 1 & 2 Hr • T Rating: ¼, ½ and 1 Hr  
Steel, Iron or Copper: 4" • Chase wall optional.  
Annulus: 0" to 1" • Sealant: 5/8" bottom, ¾" top

**UL System No. F-C-5043**

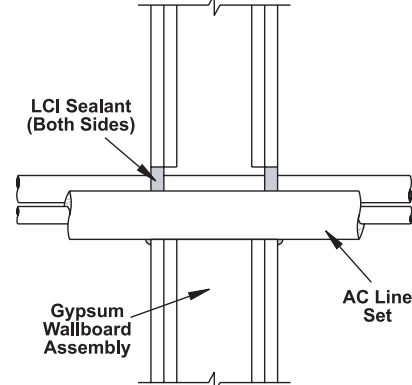
F Rating: 1 Hr • T Rating: ¾ and 1 Hr  
Steel, Iron or Copper: 4"  
Pipe covering: 1" Fiber Glass, Mineral fiber or AB/PVC • Chase wall optional.  
Annulus: 0" to 1" • Sealant: 5/8" bottom, ¾" top.

**Fig. 5: BARE & INSULATED METALLIC PIPES - Gypsum Walls****UL System No. W-L-1222**

F Rating: 1, 2 Hr • T Rating: ¼, ¾, 1 Hr  
Steel or Iron pipe: 8", Copper pipe: 4"  
Annulus: 0" to 2" • Sealant: 5/8"

**UL System Nos. W-L-5121, W-L-5122**

F Rating: 1, 2 Hr • T Rating: ¾ and 1 Hr  
Steel or Iron pipe: 6", Copper pipe: 4"  
Pipe covering: Max. 2" fiber glass, ¾" AB/PVC or 2" mineral fiber  
Annulus: 0" to 1-1/2" • Sealant: 5/8"

**UL System No. W-L-8025**

F Rating: 1, 2 Hr • T Rating: ¼ Hr  
AC Line Set: Two copper tubes, one with ¾" AB/PVC and thermostat wire  
Annulus: 0" to 1" • Sealant 5/8"

**6. INSTALLATION INSTRUCTIONS**

**GENERAL:** Areas to be protected must be clean and free of oil, loose dirt, rust or scale. Installation temperatures must be between 35°F (2°C) and 100°F (38°C). Allow product to dry a minimum of 24 hours before exposure to moisture.

**SYSTEM SELECTION:** Selection of an appropriate firestop system design is critical to the fire protection process. Space limitations preclude highly detailed information pertaining to individual application systems. Please consult the Product & Application Guide as well as the UL® Fire Resistance Directory for additional information.

**FORMING:** Some installations may require forming as either an integral part of the system or as an option to facilitate installation. In systems where forming is required, mineral wool batts with a minimum nominal density of 4 PCF are generally required. Cut forming material oversize to allow for tight packing. Position forming material to allow for the proper depth of fill material.

**FILL MATERIAL:** SpecSeal® LCI may be installed by caulking using a standard caulking gun or from bulk containers using a bulk loading caulk gun, or by manually troweling using a mason's trowel or putty knife. If the sealant tends to pull back from a surface, clean the surface with a damp rag or sponge and reapply. Work sealant into all areas exercising care to eliminate voids or seams. The surface of the sealant can be smoothed using a putty knife dipped in water. Adding water to the sealant itself is not recommended. Sealant (when dry) may be painted using most non-solvent based paints.



In gypsum wallboard penetrations, apply a minimum cove bead of 1/4" at the interface of the penetrant with both exterior wall surfaces.

**SMOKE SEALING:** In some applications including firestop collars, SpecSeal® LCI Sealant is recommended as a smoke seal. It is suggested in these applications that the sealant be applied to both sides of walls. In floor applications, a sealing bead is suggested top and bottom.

**LIMITATIONS:** SpecSeal LCI Sealant is water-based and cures through the evaporation of water. Low temperatures as well as high humidity may retard drying. Non-porous or impermeable backing materials, plates, or coatings may retard the drying process. Do not paint or seal in any way that prevents contact with air until sealant has dried through completely.

## 7. MAINTENANCE

No maintenance is normally required, however a periodic inspection of rated barriers is recommended to make sure that any new openings, modifications of previously installed firestops, or areas exhibiting physical damage, have been properly sealed or repaired. Subsequent sealing or repairs should be accomplished using SpecSeal® products per the original approved design.

**RETROFIT:** When adding or removing penetrants, care should be taken to minimize damage to the seal. Reseal using SpecSeal® products per the approved design. NOTE: New penetrants of a different nature than the original design may require a totally new firestop design or extensive modifications to the existing design. Reseal all openings as per the requirements of the modified design.

## 8. TECHNICAL SERVICE

Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. UL Systems, Material Safety Data Sheets and other technical information is available at the Technical Library at [www.stifirestop.com](http://www.stifirestop.com) or through STI's automated attendant fax back system at 888-526-6800.

## 9. PRECAUTIONARY INFORMATION

Consult Material Safety Data Sheet for additional information on the safe handling and disposal of this material.

## 10. AVAILABILITY

SpecSeal® Series LCI Sealant is available from authorized STI distributors. Consult factory for the names and locations of the nearest sales representatives or distributors. Available packages

### TABLE D: ORDERING INFORMATION

CAT. NO.	DESCRIPTION	
LCI300	Sealant 10.1 oz Tube	18.2 Cu In (300 ml)
LCI305	Sealant 5 Gal Pail	1,155 Cu In (19.0 Liters)
LCI320	Sealant 20 oz Sausage	36 Cu in. (592 ml)
LCI329	Sealant 29 oz Quart Tube	52 Cu in. (858 ml)



#### Additional SpecSeal Products...

##### Series SSS Sealant

The industry's most versatile sealant provides the firestopping solutions for a wide range of combustible and noncombustible applications. Water-based intumescent sealant expands up to 8X!

##### Intumescent Wrap Strips

Two grades of intumescent wrap strips provide an unmatched combination of flexibility, economy, and expansion (up to 30X). Systems for plastic pipes including FR Polypropylene up to 8" trade size!

##### SSC & LCC Firestop Collars

Easy to install, economical protection for ABS and PVC pipes (both solid and foam core) as well as CPVC, PVDF, and FRPP. LCC Collars are available up to 4" and SSC Collars are available up to 6" trade size.

##### Firestop Mortar

Lightweight, versatile and economical! The best choice for large or complex installations.

##### SSP Firestop Putty

Available both in bar form and in pads, putty provides easy retrofit for through-penetrations and economical protection for electrical boxes.

##### Pensil® Silicones

Sealants and foam for through-penetrations and construction joints. Unexcelled aging characteristics and flexibility.

##### Elastomeric Joint Seals

New economical products for sealing construction joints. Choose caulk or spray applied products tested to UL2079.

### CITY OF NEW YORK MEA 130-96M

**Important Notice:** All statements, technical information, and recommendations contained herein are based upon testing believed to be reliable, but the accuracy and completeness thereof is not guaranteed.

**WARRANTY:** Specified Technologies Inc. manufactures its goods in a manner to be free of defects. Should any defect occur in its goods (within one year), Specified Technologies Inc., upon prompt notification, will at its option, exchange or repair the goods or refund the purchase price.

**Limitations and Exclusions:** THIS WARRANTY IS IN LIEU OF ALL OTHER REPRESENTATIONS EXPRESSED OR IMPLIED (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE) AND UNDER NO CIRCUMSTANCES SHALL SPECIFIED TECHNOLOGIES INC. BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL PROPERTY DAMAGE OR LOSSES. PRIOR TO USE, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND THE USER ASSUMES ALL RISKS AND LIABILITY FOR SUBSEQUENT USE.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

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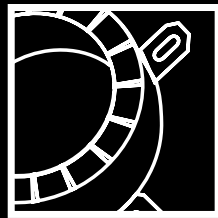
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Inc.

200 Evans Way • Somerville, NJ 08876

Phone: (800) 992-1180 • Fax: (908) 526-9623

STI on the WEB: [www.stifirestop.com](http://www.stifirestop.com)





**SpecSeal**  
FIRESTOP PRODUCTS

## **SERIES LCC FIRESTOP COLLARS**

Product  
Data  
Sheet



### **FEATURES**

- **Rapid Expansion:**  
Closes off burning pipes quickly.
- **Small Profile:**  
Use it in all the tight spots!
- **Flexible & Durable:**  
No loose flakes (eye hazards).
- **Water Resistant:**  
No water soluble or hygroscopic ingredients.
- **Economical:**  
Lower installed cost.
- **High Volume Char:**  
Expands up to 60 times!



FIRESTOP DEVICE CLASSIFIED BY  
UNDERWRITERS LABORATORIES INC. ®  
FOR USE IN THROUGH-PENETRATION  
FIRESTOP SYSTEMS. SEE UL FIRE  
RESISTANCE DIRECTORY

**Table A: PHYSICAL PROPERTIES**

#### **Available Sizes**

1.5", 2", 3", and 4"

#### **Shell Construction**

Galvanized Steel

#### **Expansion Begins**

320°F (160°C)

#### **Volume Expansion**

32 to 64X (free expansion)

#### **In Service Temp**

≤120°F (49°C)

### **1. PRODUCT DESCRIPTION**

The SpecSeal® Series LCC Firestop Collar is a factory-manufactured device designed to protect plastic pipes penetrating fire-rated walls and floors. Utilizing a heavy gauge galvanized metal collar to house a molded intumescent insert, the SpecSeal® LC Collar is specifically sized to fit 1-1/2", 2", 3", and 4" trade sized pipes. When exposed to temperatures in excess of 320°F (160°C), the SpecSeal® LC Collar's molded insert begins to expand (intumesce) rapidly to form a dense, highly insulative char. Its free expansion ranges from 32-64 times original (pre-expanded) volume. Expansion continues up to 1,000°F.

### **2. APPLICATIONS**

SpecSeal® LC Collars are used to protect a variety of plastic pipes including PVC, PVC Foam Core (ccPVC), CPVC, ABS, and ABS Foam Core (ccABS) in both vented (DWV) and closed (electrical conduit and water supply) installations.

SpecSeal® LC Collars are suitable for use in all common constructions including concrete floors, concrete over steel deck, concrete walls, concrete block walls, gypsum board walls, as well as wood floor assemblies.

### **3. PHYSICAL PROPERTIES**

See Table A. This material is extremely stable. Long term aging studies indicate no significant loss of physical properties nor significant change in expansion properties after elevated temperature and/or humidity testing. Consult factory for additional information.

### **4. PERFORMANCE**

SpecSeal® LC Collars are the basis for systems that meet the exacting criteria of ASTM E814 (UL1479). Systems have been tested for all common forms of masonry construction and the most common plastic pipes with ratings up to two hours. Consult factory for information not available in UL Fire Resistance Directory as of this printing.

### **5. SPECIFICATIONS**

The firestop system shall be a factory assembled firestop collar utilizing a molded, flexible intumescent insert. The intumescent insert shall provide a minimum of 30X free expansion and shall contain no water soluble expansion ingredients. The specified material shall be approved for a wide range of applications including PVC, PVC Foam Core, CPVC, ABS, and ABS Foam Core pipes when used by itself or in combination with other products from the same manufacturer. The collar shall be UL Classified and tested to the requirements of ASTM E814 (UL1479).

### **SPECIFIED DIVISIONS**

DIV. 7 07840 Thermal & Moisture Protection – Firestopping  
DIV. 13 13900 Special Construction Fire Suppression & Supervisory Systems  
DIV. 15 15250 Mechanical Insulation – Fire Protection  
DIV. 16 16050 Basic Electrical Materials & Methods

### **6. INSTALLATION**

**GENERAL:** The installation of this product may require the application of a smoke seal utilizing SpecSeal® Series LCI Sealant as well as suitable mechanical fasteners for attachment to the floor or wall surface. Sealant and floor or wall attachment hardware must be purchased separately. SpecSeal® LC Collars are very compact in design and therefore require relatively small cored openings. See Table C for collar dimensions and recommended opening sizes.

**SYSTEM SELECTION:** Proper methods and materials are critical to firestopping. A number of methods have been developed to suit a wide variety of firestopping applications. Consult the UL Fire Resistance Directory, STI's LC Intumescent Product & Application Guide, or the Technical Library at [www.stifirestop.com](http://www.stifirestop.com) for the latest in tested application designs. Additional product literature or information may also be obtained by calling your local distributor, sales rep. or STI toll free at (800) 992-1180.

**SMOKE SEALING:** Some applications may require the application of sealant into the annulus around the pipe as a smoke seal. Consult the UL Classified design for installation requirements including depth and location of caulking. Where required, apply sealant to a clean surface, free of dirt, oil, rust, or scale. Caulk annulus completely shut. Sealant may be smoothed out or the collar may be set directly into the wet sealant.

**For the latest Product and System Information, Call STI'S FACTS-ON-DEMAND  
automated information attendant system by dialing toll-free (888)526-6800!**



**PACKING MATERIALS:** In some applications where the collar diameter is insufficient to completely cover the opening around the pipe, some tested designs may require mineral wool packing material to be installed into the annulus prior to the installation of the collar.

**FASTENERS:** Always use the correct type of fasteners shown in the appropriate UL Classified design. All fasteners should be steel (lead or plastic fasteners are unsuitable and should not be used). 1 1/4" or 1 1/2" fender washers are used in conjunction with all wall or floor fasteners. All fasteners should be installed as per the recommendations of the manufacturer.

**CONCRETE:** Expanding wedge type anchors (1/4" x 1 3/4") are recommended. Self-tapping steel concrete fasteners are also approved for some installations. Powder activated fasteners may be used at the discretion of the installer and subject to the recommendations of the fastener manufacturer.

**GYPSUM WALLBOARD:** Toggle bolts or molly-type expanding anchors are suitable for collar attachment.

**GYPSUM BOARD-WOOD FLOOR FLOOR/CEILING ASSEMBLIES:** Toggle bolts are suggested for gypsum wallboard ceiling attachment. Collars mounted internally and fastened to wood may use standard #8 x 1/2" round head wood screws for attachment.

#### INSTALLATION FOR SURFACE MOUNTING:

1. Install SpecSeal® Firestop Sealant (if required).
2. With anchor tabs facing the mounting surface, flex collar open and wrap around pipe (See Fig. 1)
3. Collar uses a double hook tab and slot closure. Overlap collar so that the slots align over hook tabs (See Fig. 2)
4. Press slots down and back (towards mounting surface) over hooks and lock into the closed position (See Fig. 3)
5. Slide collar to mounting surface and mark fastener locations. Rotate collar or slide away from mounting surface to allow holes to be drilled. Reposition collar and install fasteners and fender washers. Tighten fasteners completely to finish collar installation.

## 7. MAINTENANCE

**INSPECTION:** Installations should be inspected periodically for subsequent damage. Any damage should be repaired using SpecSeal® products per the original approved design.

## 8. TECHNICAL SERVICE

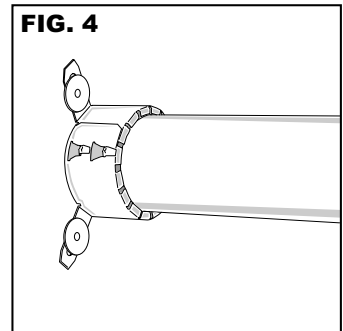
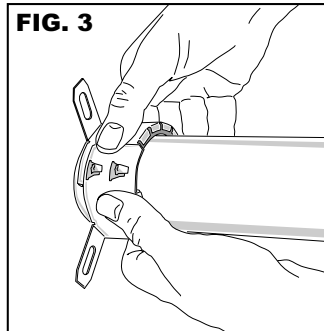
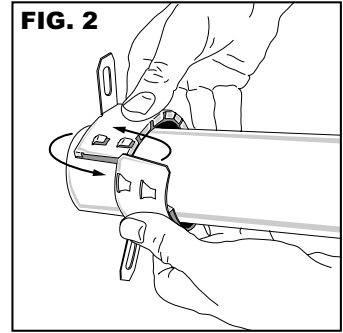
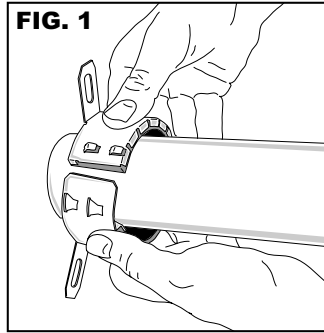
Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. UL System designs suitable for submittal or specification purposes are available on request. A complete library of technical information is provided at the company's website [www.stifirestop.com](http://www.stifirestop.com).

## 9. PRECAUTIONARY INFORMATION

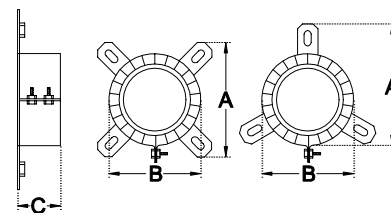
No unusual hazards are known or expected. Observe normal safety procedures during installation.

## 10. AVAILABILITY

SpecSeal® Firestop Collars are available from authorized STI distributors nationwide. Consult factory for the names and locations of the nearest sales representatives or distributors.



**Table B: COLLAR DIMENSIONS & RECOMMENDED CORE SIZES**



The following dimensions are provided for installation purposes only. All dimensions have been rounded up to the next 1/10th in.

Cat No. LCC	150	200	300	400
Trade Size	1.5"	2"	3"	4"
Opening Size	2"	2.5"	4"	5"
A	4"	4.4"	5.4"	6.2"
B	2.3"	2.8"	4.3"	5.5"
C	1.5"	1.5"	1.5"	1.5"

**Table D: ORDERING INFORMATION**

Cat. No.	Description
LCC150	For 1.5" Trade Size Plastic Pipe
LCC200	For 2.0" Trade Size Plastic Pipe
LCC300	For 3.0" Trade Size Plastic Pipe
LCC400	For 4.0" Trade Size Plastic Pipe

**Series LCI Sealant:** A versatile and economical intumescent product for firestopping a wide array of applications in small commercial or grouped residential construction.

**Important Notice:** All statements, technical information, and recommendations contained herein are based upon testing believed to be reliable, but the accuracy and completeness thereof is not guaranteed.

**WARRANTY:** Specified Technologies Inc. manufactures its goods in a manner to be free of defects. Should any defect occur in its goods (within one year), Specified Technologies Inc., upon prompt notification, will at its option, exchange or repair the goods or refund the purchase price.

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200 Evans Way • Somerville, NJ 08876  
Phone: (800) 992-1180 • Fax: (908) 526-9623  
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