



## WHi Listing Index Penetrations

Concrete		Penetrants								GrabberGard Products			
		No Penetrants	Metallic Pipe/Conduit	Non-Metallic Pipe	Electrical Cables	Cable Trays	Insulated Pipe	Mechanical Ducts	Multiple Items	I F C	E F C	E F S	Hourly Rating
Floors & Walls	JWA/PHV 120-01									✓			2
	JWA/PHV 120-02									✓			2
	JWA/PHV 120-05									✓	✓	✓	2
	JWA/PHV 120-06									✓	✓	✓	2
	JWA/PHV 120-08									✓	✓		2
	JWA/PHV 120-09									✓	✓	✓	2
	JWA/PHV 120-10									✓	✓		2
	JWA/PHV 120-11											✓	2
	Floors	JWA/PH 120-01								✓			2
	JWA/PH 120-02									✓	✓		2
	JWA/PH 120-04									✓	✓		2

Frame Construction		Penetrants								GrabberGard Products			
		No Penetrants	Metallic Pipe/Conduit	Non-Metallic Pipe	Electrical Cables	Cable Trays	Insulated Pipe	Mechanical Ducts	Multiple Items	I F C	E F C	E F S	Hourly Rating
Floors	JWA/PH 60-01									✓	✓		1
	JWA/PH 60-02									✓	✓		1
Walls	JWA/PV 60-01									✓			1
	JWA/PV 60-03									✓	✓		1
	JWA/PV 120-01									✓			1 & 2
	JWA/PV 120-02									✓	✓		1 & 2
	JWA/PV 120-03									✓			1 & 2
	JWA/PV 120-06									✓	✓		1 & 2



## Design No.: JWA/PH 60-01

### Single Penetrations

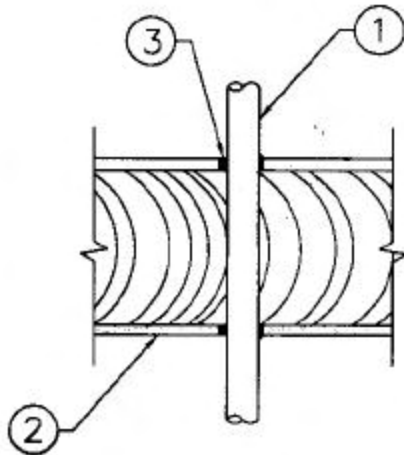
Horizontal (floor/ceiling)

Test Standards: ASTM E-814, UL 1479: Non-metallic Open and Closed Systems

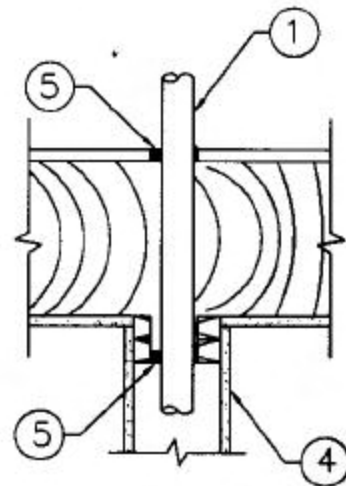
ULC S115-M95: Non-metallic Closed Pipe

Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Design Number	Max Hole Size	Annular Space	ASTM E-814		ULC S115-M95		
				"F"	"T"	"F"	"FH"	"FT"
PVC up to 1-1/2 in.	A	2-1/2"	0" – 1/2"	1 hour	50 min	1 hour	1 hour	50 min
PVC up to 2 in.	A	3"	0" – 1/2"	N/A	N/A	1 hour	N/A	15 min
Nonmetallic Rigid Conduit up to 1-1/2 in.	A	2-1/2"	0" – 1/2"	1 hour	50 min	1 hour	1 hour	50 min
Nonmetallic Rigid Conduit up to 2 in.	A	3"	0" – 1/2"	N/A	N/A	1 hour	N/A	15 min
PEX up to 1 in	A	2"	0" – 1/2"	1 hour	10 min	1 hour	1 hour	10 min
CPVC up to 2 in.	A	3"	0" – 1/2"	N/A	N/A	1 hour	N/A	15 min
PEX up to 1 in	B	2"	0" – 1/2"	1 hour	40 min	1 hour	1 hour	40 min
PE/Al/PE up to 3/4 in.	B	1-3/4"	0" – 3/4"	1 hour	1 hour	1 hour	1 hour	1 hour
PEX/Al/PEX up to 3/4 in.	B	1-3/4"	0" – 3/4"	1 hour	1 hour	1 hour	1 hour	1 hour



DESIGN A



DESIGN B



John Wagner & Associates Inc.  
dba GRABBER CONSTRUCTION PRODUCTS  
205 Mason Circle, Concord, CA 94520

GrabberGard EFC  
GrabberGard IFC

JWA/PH 60-01

### ***System Design Instructions***

- 1. Penetrating Item:** Centered or offset in hole, see table above. Single penetrations only, maximum hole size not to exceed table above.
- 2. Floor/Ceiling Assembly:** 1 hour fire rated ASTM E-119 or CAN/ULC S101 wood framed gypsum wallboard (GWB) floor/ceiling assemblies with or without concrete topping, having a minimum depth of 10¾" (275mm).

### ***Design A***

- 3. Firestop System Component 1:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* fully filling the annular space to the full depth of the membrane. On 0" to 1/4" (6 mm) annular space a min 1/2" (12 mm) diam bead of sealant must be placed around penetrating item.

### ***Design B***

- 4. Wall Assembly:** Rated or non-rated metal or wood framed gypsum wallboard (GWB) wall assemblies.
- 5. Firestop System Component 1:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* fully filling the annular space to the full depth of the membrane. Fill header and sill plate contained in wall assembly min 5/8 in. (16 mm) depth. On 0" to 1/4" (6 mm) annular space a min 1/2" (12 mm) diam bead of sealant must be placed around penetrating item.

**\*WH Labeled Component**



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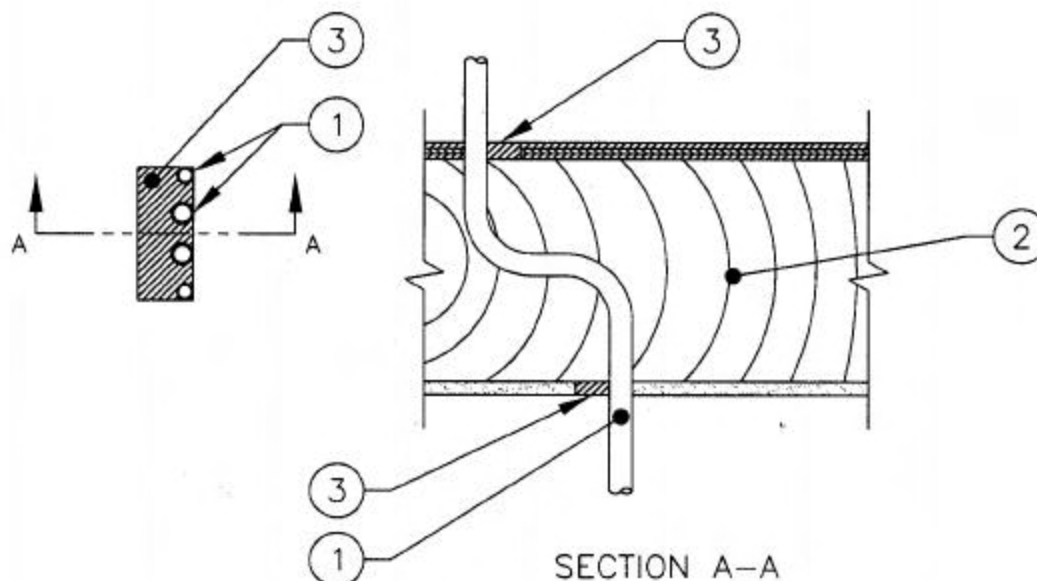
**GrabberGard EFC**  
**GrabberGard IFC**

**Design No.: JWA/PH 60-02**

Single or Multiple Penetrations Only  
 Horizontal (floor/ceiling)

Test Standards: ASTM E-814, UL 1479: Non-metallic Open and Closed Systems  
 ULC S115-M95: Non-metallic Closed Pipe  
 Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	"F" Rating	"T" Rating
IPEX PE/Al/PE up to 1" ID	See Item 1	0 - 1-1/4"	1 hour	41 min
IPEX PEX/Al/PEX up to 1" ID	See Item 1	0 - 1-1/4"	1 hour	41 min



**System Design Instructions**

- 1. Penetrating Item:** Centered or offset in hole, see table above. Up to 4 penetrations of polyethylene tubing, 1 in. (25mm) ID or less in diameter. Maximum opening size to be 15 sq in. ((9375 sq mm) with max dimension of 6 in. (150 mm). All penetrating items to be reliably supported.
- 2. Floor/Ceiling Assembly:** 1 hour rated ASTM E-119 wood framed floor/ceiling assembly.
  - a) Subfloor with or without concrete topping mixture.
  - b) Wood or composite wood joists.
  - c) Gypsum wallboard.
- 3. Firestop System, Component:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* - Min. 3/4 in thickness of fill material applied within the annulus, flush with top surface of floor. Min 5/8 in. thickness of fill material applied within the annulus, flush with bottom surface of ceiling. Min. 1/2 in. diam. bead of fill material applied at the penetrant/floor and penetrant/ceiling interfaces at point contact locations on both sides of assembly.

**\*WH Labeled Component**



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GrabberGard IFC

## Design No. JWA/PH 120-01

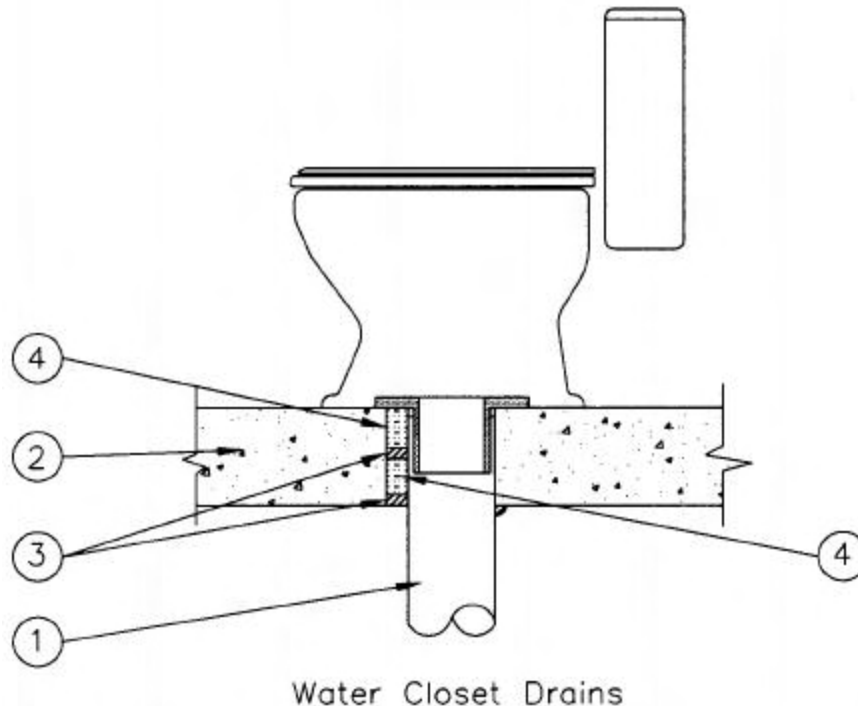
Single Penetrations Only

Horizontal (floor/ceiling)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
Steel and Cast Iron Pipe to 4" Sch 10 & up	6"	0" – 1-1/2"	2 Hour	2 Hour	2 Hour



Water Closet Drains

### System Design Instructions

- 1. Penetrating Item:** See table above. Single penetrations only.
- 2. Floor/Ceiling Fire Separations:** Cast in place normal or light density concrete floor/ceiling assemblies having a minimum thickness of 4-1/2" (115mm).
- 3. Firestop System, Component 1:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS– GrabberGard IFC\* installed at a minimum thickness of 1/2" (13mm) within the annulus to completely cover the underside of both mineral wool inserts. On 0" to 1/4" (6mm) annular spaces a 3/8" (10mm) diameter fillet bead must be placed around the penetrating item on the bottom surface of the concrete.
- 4. Firestop System, Component 2:** Filler material, mineral wool insulation with a minimum density of 46 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space in two pieces at a minimum total thickness of 3-1/2" (90mm). Top insert of mineral wool to be min 2 in. (51mm) thick and bottom insert of mineral wool to be min 1-1/2 in. (39mm) thick. Recess filler material 1/2" (13mm) from the bottom surface of the concrete for sealant placement.

\*WH Labeled Component



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GrabberGard EFC  
GrabberGard IFC

## Design No. JWA/PH 120-02

Pipe Insulation Through Penetrations

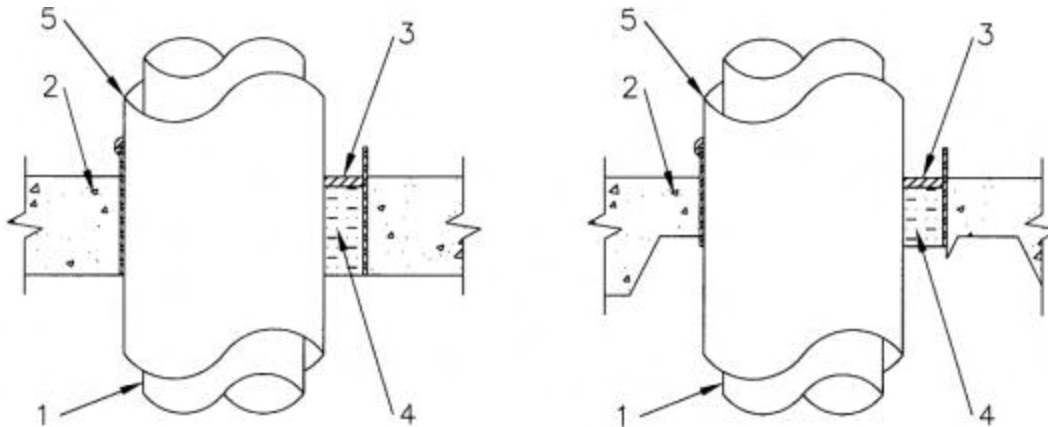
Single Penetrations Only

Horizontal (floor/ceiling)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
Steel and Cast Iron Pipe to 8" Sch 10 & up	10"	0" – 1/2"	2 Hour	2 Hour	69 min



### System Design Instructions

- 1. Penetrating Item:** See table above. Single penetrations only.
  - a) Metal Sleeve: Min 24 gauge or heavier metal sleeve fit tightly into the opening flush with or max 1-1/2" (38mm) above the top surface of the floor assembly.
- 2. Floor/Ceiling Fire Separations:**
  - a) Min 20 gauge or heavier galvanized steel decking with min 1-1/2" (38mm) flute height firmly supported, with min 3" (77mm) concrete cover.
  - b) Cast in place normal or light density concrete floor/ceiling assemblies having a minimum thickness of 4-1/2" (115mm).
- 3. Firestop System, Component 1:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* installed at a minimum thickness of 1/2" (13mm) within the annulus on the top surface of the floor assembly. On 0" to 1/4" (6mm) annular spaces a 3/8" (10mm) diameter fillet bead must be placed around the penetrating item on the surface of the concrete.
- 4. Firestop System, Component 2:** Filler material, mineral wool insulation with a minimum density of 46 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 3 1/2" (90mm). Recess filler material 1/2" (13mm) for sealant placement.
- 5. Through Insulating Material:** Koolphen K rigid phenolic foam insulation having a 1" (25mm) wall thickness.

\*WH Labeled Component



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GrabberGard EFC  
GrabberGard IFC

## Design No. JWA/PH 120-04

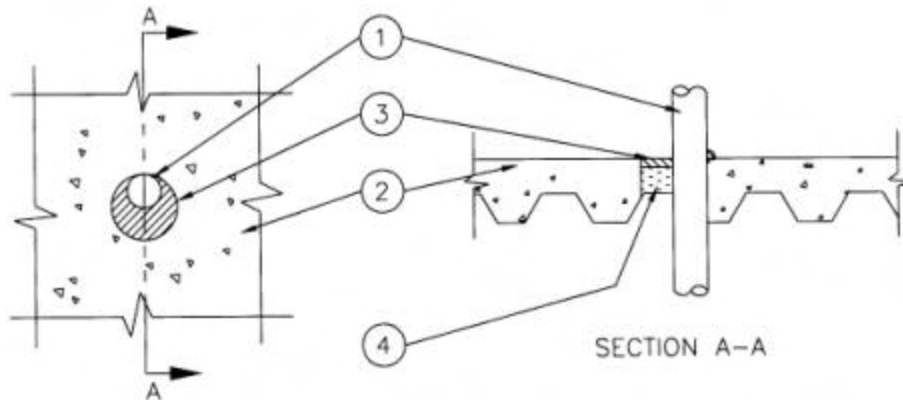
### Single Penetrations

Horizontal (floor)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	ASTM E 814/UL1479		ULC S115-M95	
			"F"	"T"	"FH"	"FTH"
Steel & Cast Iron Pipe (1" to 24") Sch 40 & up	29"	0" – 4"	2 Hour	30 min.	2 Hour	30 min.



### System Design Instructions

- 1. Penetrating Item:** Centered or offset in hole, see table above. Single penetrations only, maximum hole size not to exceed table above.
- 2. Floor/Ceiling Fire Separations:** Min 20 gauge or heavier galvanized steel decking with up to 3½" (88mm) flute height firmly supported with min 2½" concrete cover.
- 3. Firestop System, Component 1:** John Wagner & Assoc. Inc. – dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* product must be installed at a minimum thickness of ½" (13mm) within the annulus on top surface of floor assembly. On 0 - ¼" (6mm) annular spaces, a ½" (13mm) diameter fillet bead must be placed around the penetrating item.
- 4. Firestop System, Component 2:** Filler material, mineral rock wool insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 2½" (61mm). Recess filler material ½" (13mm) for sealant placement.

\*WH Labeled Component



## Design No. JWA/PHV 120-01

Single Penetrations Only

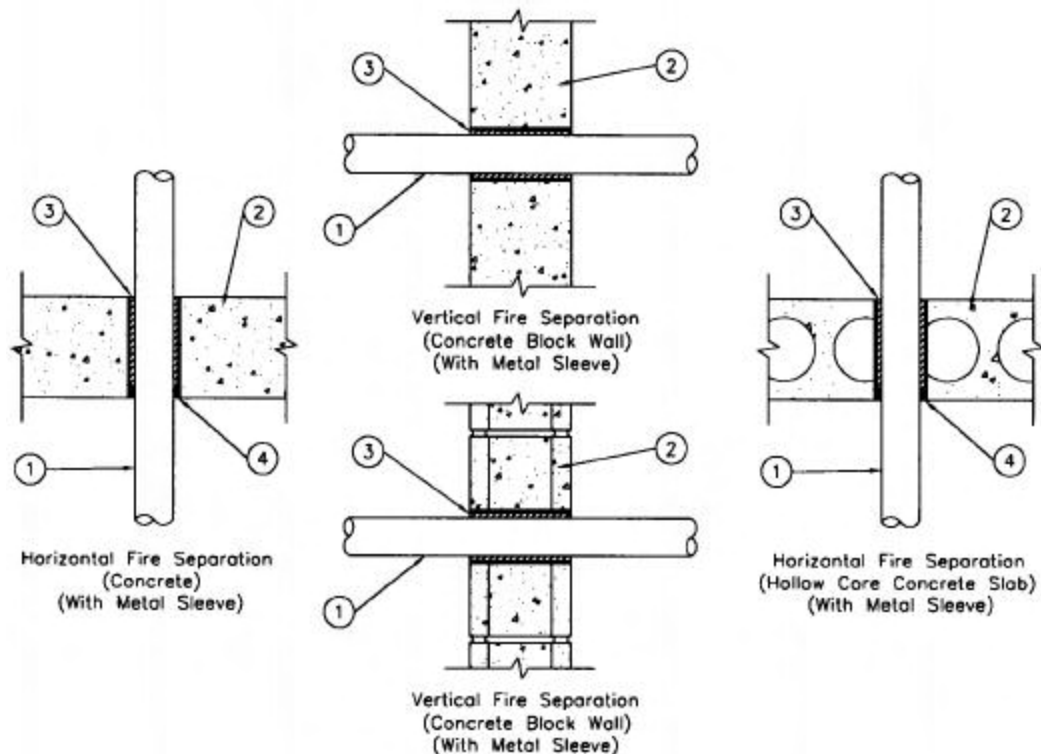
Horizontal (floor/ceiling) or Vertical (wall)

Test Standards: ASTM E-814, UL 1479: open and closed systems

ULC S115-M95: closed systems

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
PVC Plastic pipe to 2"	3"	1/2"	2 Hours	2 Hours	2 Hours
ccPVC Plastic pipe to 2"	3"	1/2"	2 Hours	2 Hours	2 Hours
CPVC Plastic pipe to 2"	3"	1/2"	2 Hours	2 Hours	2 Hours



### System Design Instructions

- Penetrating Item:** Centered in hole, see table above. Single penetrations only, maximum hole size not to exceed table above.
  - Metal sleeve: Min 28 gauge or heavier metal sleeve cast in place or fit tightly into the opening.
- Floor/Ceiling Fire Separations:**
  - Hollow core pre-cast concrete floor/ceiling assembly having a min cross-section thickness of 8 in. (200mm).
  - Cast in place normal or light density concrete floor/ceiling assemblies having a minimum thickness of 8" (200mm).
  - Cast in place concrete wall assemblies having a minimum cross section thickness of 8" (200mm) or,
  - Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8" (200mm).
- Firestop System Component 1:** John Wagner & Assoc Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard IFC\* installed at a minimum thickness of 7" (175mm) within the annulus flush with both top and bottom surfaces of floor or both sides of wall assembly.
- Firestop System Component 2:** Filler material: Optional, for damming only, mineral fiber insulation with a minimum density of 4-6 PCF (68 kg/m3).

\*WH Labeled Component





## Design No. JWA/PHV 120-02

Single Penetrations Only

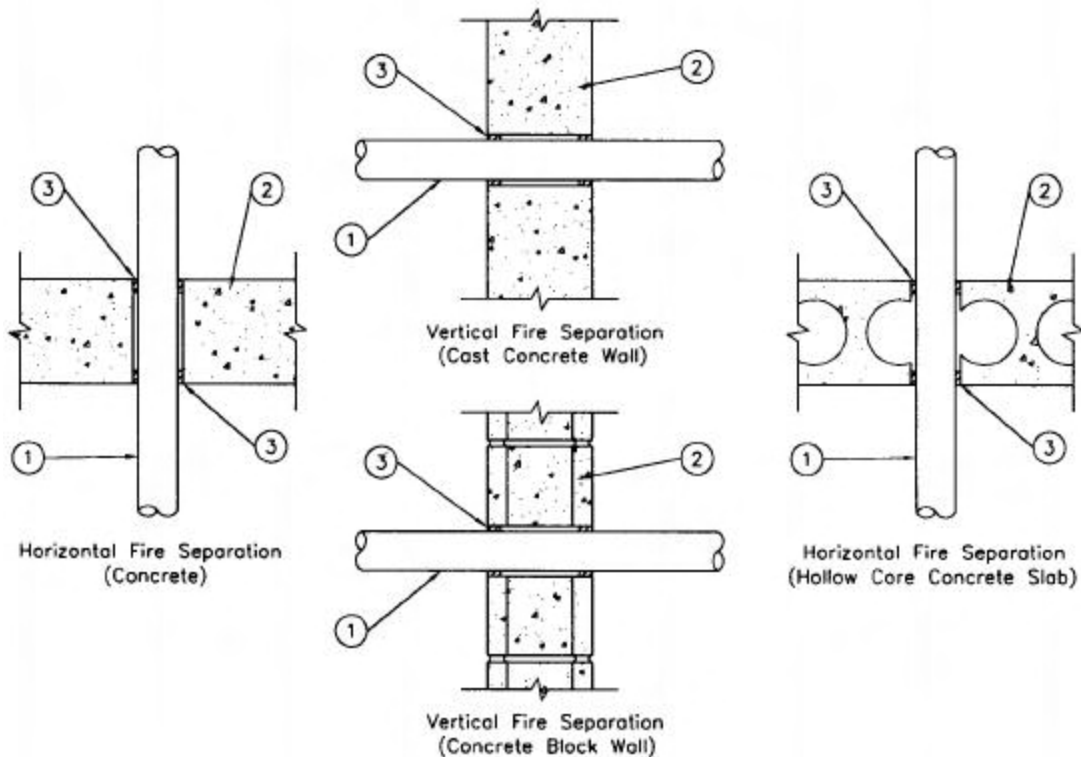
Horizontal (floor/ceiling) or Vertical (wall)

Test Standards: ASTM E-814, UL 1479: open and closed systems

ULC S115-M95: closed systems

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
PVC Plastic pipe to 2"	3"	1/2"	2 Hours	2 Hours	2 Hours
ccPVC Plastic pipe to 2"	3"	1/2"	2 Hours	2 Hours	2 Hours
CPVC Plastic pipe to 2"	3"	1/2"	2 Hours	2 Hours	2 Hours



### System Design Instructions

- 1. Penetrating Item:** Centered in hole, see table above. Single penetrations only, maximum hole size not to exceed table above.
- 2. Floor/Ceiling Fire Separations:**
  - a) Hollow core pre-cast concrete floor/ceiling assembly having a min cross-section thickness of 8 in. (200mm).
  - b) Cast in place normal or light density concrete floor/ceiling assemblies having a minimum thickness of 8" (200mm).
  - c) Cast in place concrete wall assemblies having a minimum cross section thickness of 8" (200mm) or,
  - d) Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8" (200mm).
- 3. Firestop System:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard IFC\* installed at a minimum thickness of 1" (25mm) within the annulus flush with both top and bottom surfaces of floor or both sides of wall assembly.

\*WH Labeled Component



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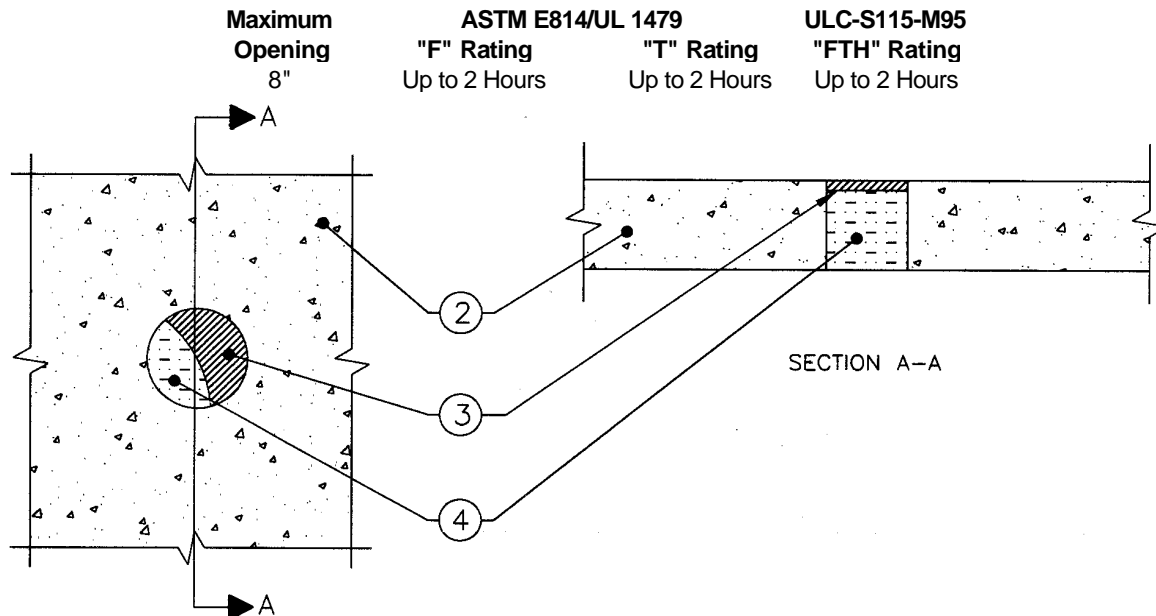
GrabberGard EFC  
GrabberGard IFC  
GrabberGard EFS

## Design No. JWA/PHV 120-05

Horizontal or Vertical (floor/ceiling and walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum



### System Design Instructions

**1. Penetrating Item:** None.

**2. Floor/Ceiling Assemblies:**

- Cast in place normal or light density concrete floor/ceiling assemblies having a minimum cross section thickness of 4 ½" (114mm).
- Cast in place concrete wall assemblies having a minimum cross section thickness of 6" (150mm) or;
- Hollow or Concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8" (200mm).

**3. Firestop System Component 1:**

- John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* for vertical or horizontal applications. GrabberGard EFC\* or GrabberGard IFC\* must be installed at a minimum thickness of ½" (13 mm) on top surface of floor or both surfaces of wall.
- John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFS\* (sprayable mastic) for vertical or horizontal applications. GrabberGard EFS\* to be sprayed into place with a minimum wet film thickness of ¼" (6 mm) on top surface of floor or both surfaces of wall. Do not thin GrabberGard EFS\* firestop mastic when spraying, use equipment capable of applying material as supplied.

**4. Firestop System Component 2:** Filler Material, mineral rock wool or ceramic fiber insulation with a minimum density of 46 PCF (68 kg/m<sup>3</sup>) compressed to a minimum of 30% into the annular space at a minimum depth of 4" (100mm). Recess filler material ½" (13mm) for GrabberGard EFC\* or GrabberGard IFC\* caulk placement. Recess filler material ¼" (6mm) for GrabberGard EFS\* spray applications.

\*WH Labeled Component



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GrabberGard EFC  
GrabberGard IFC  
GrabberGard EFS

## Design No. JWA/PHV 120-06

### Single and Multiple Penetrations

Horizontal or Vertical (floor/ceiling and walls)

Test Standards: ASTM E-814, UL 1479, CAN/ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

### Configuration 1

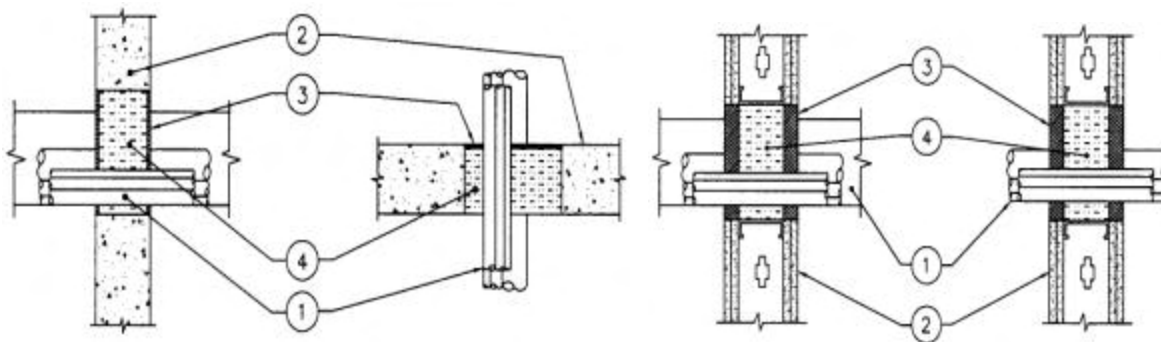
Penetrating Material & Size	E814 & UL 1479			CAN/ULC S115-M95		
	Annular Space	Fire "F" Rating	Temp "T" Rating	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
EMT/Steel Conduit and Pipe (1/2 to 1) Sch 10 & up	0" - 3"	Up to 2 Hour	90 Min	Up to 2 Hour	Up to 2 Hour	90 Min
EMT/Steel Conduit and Pipe (1-1/4 to 6) Sch 40	0" - 3"	Up to 2 Hour	25 Min	Up to 2 Hour	Up to 2 Hour	25 Min
Copper Pipe and Tubing up to 2" ID	0" - 3"	Up to 2 Hour	55 Min	Up to 2 Hour	Up to 2 Hour	55 Min
Multiple BX/Teck Cable to 3-3/8 OD	0" - 3"	Up to 2 Hour	45 Min	Up to 2 Hour	Up to 2 Hour	45 Min

### Configuration 2

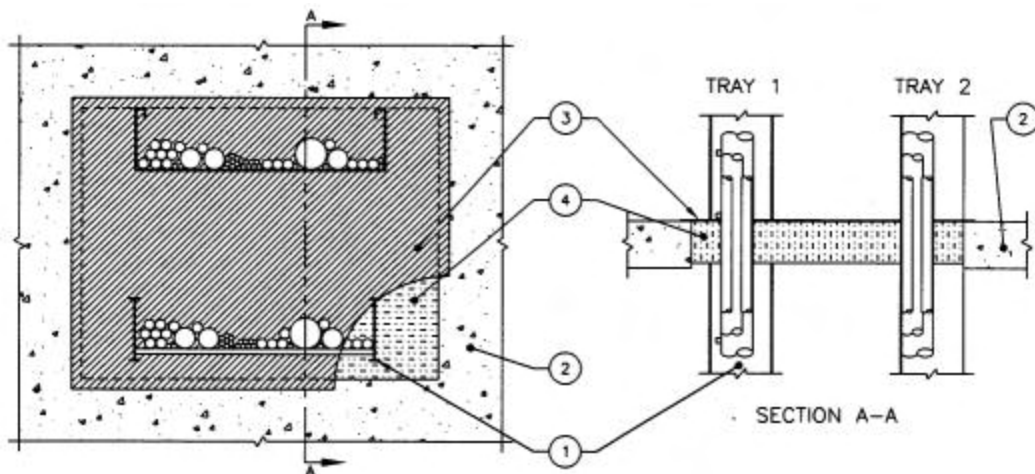
L Rating At Ambient – 7.1 CFM

L Rating At 400° F – 5.8 CFM

Penetrating Material & Size	E814 & UL 1479			CAN/ULC S115-M95		
	Annular Space	Fire "F" Rating	Temp "T" Rating	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
Cable Trays	See Item 1	Up to 2 Hour	15 Min	Up to 2 Hour	Up to 2 Hour	15 Min
EMT/Steel Conduit and Pipe (1/2 to 4) Sch 10 & up	See Item 1	Up to 2 Hour	15 Min	Up to 2 Hour	Up to 2 Hour	15 Min
EMT/ Flexible Steel Conduit (1/2 to 4)	See Item 1	Up to 2 Hour	15 Min	Up to 2 Hour	Up to 2 Hour	15 Min
Insulated Copper Pipe and Tubing up to 4" ID	See Item 1	Up to 2 Hour	90 Min	Up to 2 Hour	Up to 2 Hour	90 Min
Multiple BX/Teck Cable to 3-3/8 OD	See Item 1	Up to 2 Hour	15 Min	Up to 2 Hour	Up to 2 Hour	15 Min



Configuration 1.



Configuration 2.



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GrabberGard EFC  
GrabberGard IFC  
GrabberGard EFS

JWA/PHV 120-06

## System Design Instructions

### Configuration 1

- 1) **Penetrating Item:**
  - a. Steel cable tray 4 in. x 30 in. (100 x 750 mm) filled to a maximum of 50% with any of the items in the table above or,
  - b. Bundled cables, tubing, conduits and pipes listed in table above installed within the opening such that aggregate cross sectional area of penetrants in the opening is max 58 percent of the cross sectional area of the opening in assembly. The annular space between penetrants and the periphery of the opening are to be min 0 in. (point contact) to max 3 in. (75 mm).
  - c. The maximum opening is 480 in<sup>2</sup> (0.31 m<sup>2</sup>). All penetrating items must be reliably supported.
- 2) **Floor/Ceiling or Wall Assemblies:** 1 and 2 hour rated ASTM E-119 or CAN/ULC S101 wall or floor/ceiling assemblies as follows:
  - a. Metal or wood framed gypsum wall board (GWB) wall assemblies with opening within the wall assembly completely framed to form a rectangular box or;
  - b. Cast in place normal or light density concrete floor/ceiling assemblies having a minimum cross section thickness of 4-1/2 in. (112mm) or;
  - c. Cast in place concrete wall assemblies having a minimum cross section thickness of 6 in. (150mm) or;
  - d. Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8 in. (200mm).
- 3) **Firestop System Component 1:** John Wagner & Associates Inc. dba GRABBER CONSTRUCTION PRODUCTS –
  - a. GrabberGard EFC\* or GrabberGard IFC\* for vertical or horizontal applications. Each product must be installed at a minimum wet film thickness of 1/4 in. (6mm).
  - b. GrabberGard EFS\* (mastic) for vertical or horizontal applications sprayed into place with a minimum wet film thickness of 1/8 in. (3mm). Always overlap GrabberGard EFS\* onto the surface of the substrate a minimum of 1/2 in. (13mm). Do not thin GrabberGard EFS\* firestop mastic when spraying, use equipment capable of applying material as supplied.
- 4) **Firestop System Component 2:** Filler Material, mineral rock wool or ceramic fiber insulation with a minimum density of 46 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 4 in. (100 mm). Recess filler material 1/4 in. (6mm) for GrabberGard EFC\* or GrabberGard IFC\* sealant placement. Do not recess filler material for GrabberGard EFS\* applications.



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205 Mason Circle, Concord, CA, 94520

GrabberGard EFC  
GrabberGard IFC  
GrabberGard EFS

**JWA/PHV 120-06**

## **Configuration 2**

- 1) **Penetrating Item:**
  - a. **Cable Tray:** Maximum 2 cable trays per opening. Maximum 24 in. wide by 6 in. steel, aluminum or stainless steel cable tray solid back or ladder type. Cable tray spacing to be minimum 6 in. to a maximum 11 in. apart. The cable trays are to be installed a minimum of 0 in. (point contact) to max 6 in. from the periphery of the opening. Maximum cable tray fill to be 40% by area. All penetrating items must be reliably supported. Cable trays to may be filled with any combination of the following:
    - **Cables:** Communication or power cables, single or in bundles and installed with rigid support on both sides of opening.
    - **Steel Conduit / EMT:** Nominal 4 in. diameter or smaller flexible steel or steel tubing. Steel conduit or EMT to be installed with such that a min 1/2 in. annular space is maintained between steel conduit/EMT and other penetrants.
    - **Insulated Metallic Pipes:** Maximum 4 in. diameter (or smaller) copper piping or tubing. Pipes to be insulated with nominal 1 in. thick mineral wool pipe insulation.
- 2) **Floor/Ceiling or Wall Assemblies:** 1 and 2 hour rated ASTM E-119 or CAN/ULC S101 wall or floor/ceiling assemblies having a maximum opening size 884 sq. in. with max dimension of 34 in. as follows:
  - a. Cast in place normal or light density concrete floor/ceiling assemblies having a minimum cross section thickness of 4-1/2 in. (112mm) or;
  - b. Cast in place concrete wall assemblies having a minimum cross section thickness of 6 in. (150mm) or;
  - c. Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8 in. (200mm).
- 3) **Firestop System Component 1:** John Wagner & Associates Inc. dba GRABBER CONSTRUCTION PRODUCTS –
  - a. GarbberGard EFC\* or GrabberGard IFC\* for vertical or horizontal applications. Each product must be installed at a minimum wet film thickness of 1/4 in. (6mm).
  - b. GrabberGard EFS\* (mastic) for vertical or horizontal applications sprayed into place with a minimum wet film thickness of 1/8 in. (3mm). Always overlap GrabberGard EFS\* onto the surface of the substrate a minimum of 1/2 in. (13mm). Do not thin GrabberGard EFS\* firestop mastic when spraying, use equipment capable of applying material as supplied.
- 4) **Firestop System Component 2:** Filler Material, mineral rock wool or ceramic fiber insulation with a minimum density of 46 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 4 in. (100 mm). Recess filler material 1/4 in. (6mm) for GrabberGard EFC\* or GrabberGard IFC\* sealant placement. Do not recess filler material for GrabberGard EFS\* applications.

**\*WH Labeled Component**



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 205 Mason Circle, Concord, CA, 94520

**GrabberGard EFC**  
**GrabberGard IFC**

## Design No. JWA/PHV 120-08

Single Penetrations

Horizontal or Vertical (floor/ceiling and walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

### Penetrating Material and Size

Steel Pipe Sch 40 (or heavier) up to 4"

Cast Iron Pipe Sch 40 (or heavier) up to 4 "

- Produced by Canadian Foundry

Association Member Companies

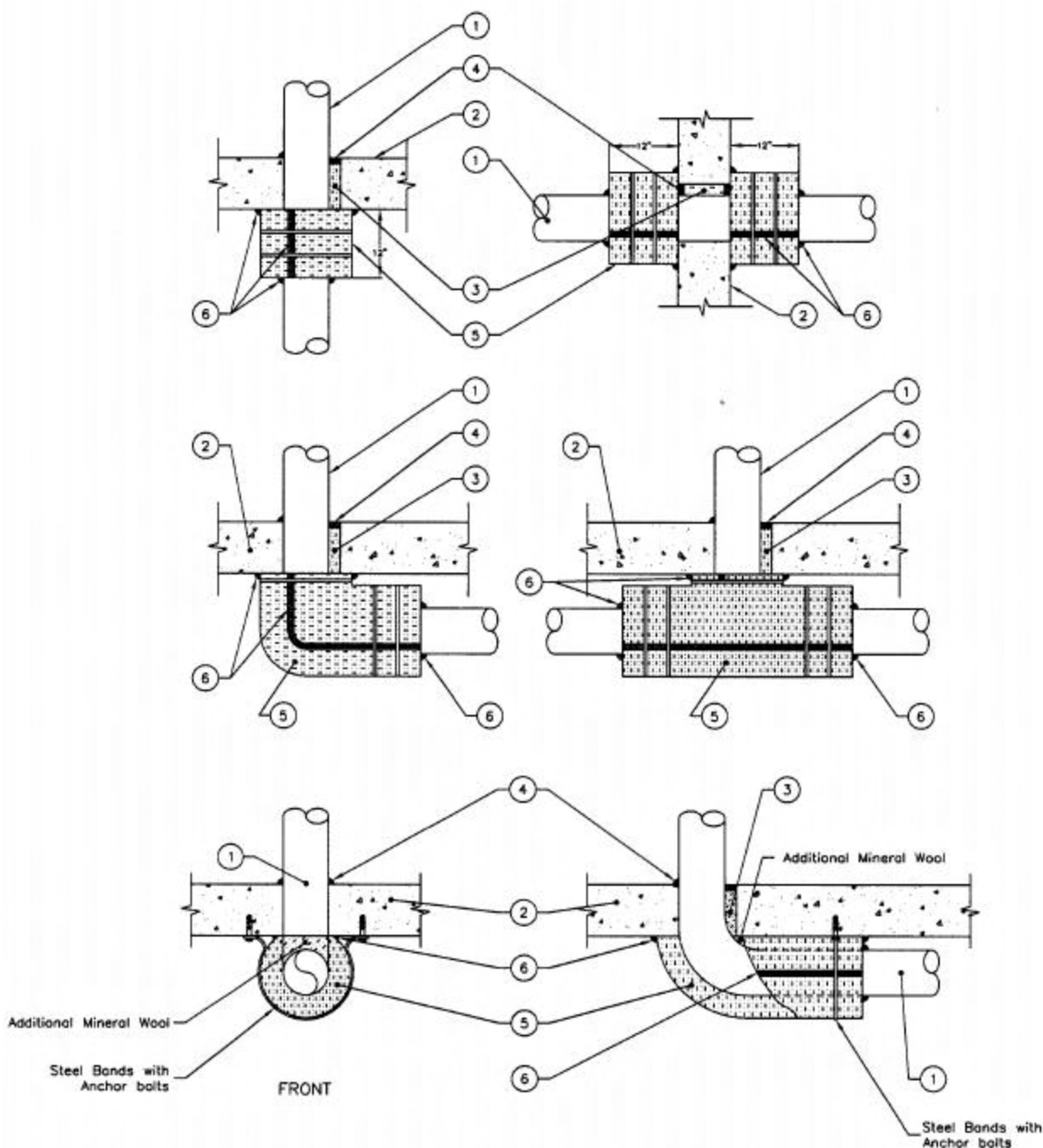
**Max Hole  
Size**  
5"

**Annular  
Space**  
0" – 1"

**ASTM E814 / UL 1479  
"F" Rating**  
2 hours

**"T" Rating**  
2 hours

**ULC S115-M95  
"FTH" Rating**  
2 hours





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205 Mason Circle, Concord, CA, 94520

GrabberGard EFC  
GrabberGard IFC

JWA/PHV 120-08

### **System Design Instructions**

1. **Penetrating Item:** Centered or offset in hole, see table above. Single penetrations only, maximum hole size not to exceed table above. Penetrating item may be connected to an elbow, coupler or tee fitting below slab.
2. **Floor/Ceiling or Wall Fire Separation:** Fire rated ASTM E-119 and CAN/ULC S101 floor/ceiling/wall assemblies as following:
  - a) Cast in place normal or lightweight density concrete floor/ceiling assembly having a minimum cross section thickness of 7 in. (179 mm);
  - b) Cast in place concrete wall assembly having a minimum cross section thickness of 7 in. (179 mm) or;
  - c) Concrete block wall assembly solidly filled with cementitious grout having a minimum cross section of 8 in. (200 mm).
3. **Firestop System, Component 1:** Filler material, mineral rock wool insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 6 in. (150 mm). Recess filler material 1/2 in. (13 mm) from top surface of floor and both sides of wall assembly for sealant placement.
4. **Firestop System, Component 2:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* to be installed at a minimum thickness of 1/2 in. (13 mm) within the annulus on top surface of floor or both surfaces of wall assembly. On 0 – 1/4 in. (6 mm) annular spaces, a 1/2 in. (13 mm) diameter fillet bead must be placed around the penetrating item on top surface of floor or both surfaces of wall assembly.
5. **Firestop System, Component 3:** Sleeve, min 2 in. thick by min 12 in. (306 mm) long mineral rock wool insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) installed around penetrating item. Sleeve to be held in place with steel hose clamps spaced min 6 in. (153 mm) OC and butted to the underside of the concrete floor or both surfaces of wall assembly. If pipe is connected to an elbow or tee under slab that is closer than 2" (50 mm) below slab, mineral wool may be fastened to underside of slab. If concrete slab is greater than 7" (180 mm) in thickness, the 12" (305 mm) length of insulation may be reduced by the value of that slab exceeds 7" (180 mm) in thickness.
6. **Firestop System, Component 4:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* min 1/2 in. (13 mm) diam bead applied at sleeve/concrete and sleeve/penetrant interface. An additional 1/16 in. (1-1/2 mm) thickness by 1/2 in. (13 mm) wide layer to be applied along seam of sleeve.

\*WH Labeled Component



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GrabberGard EFC  
GrabberGard IFC  
GrabberGard EFS

## Design No. JWA/PHV 120-09

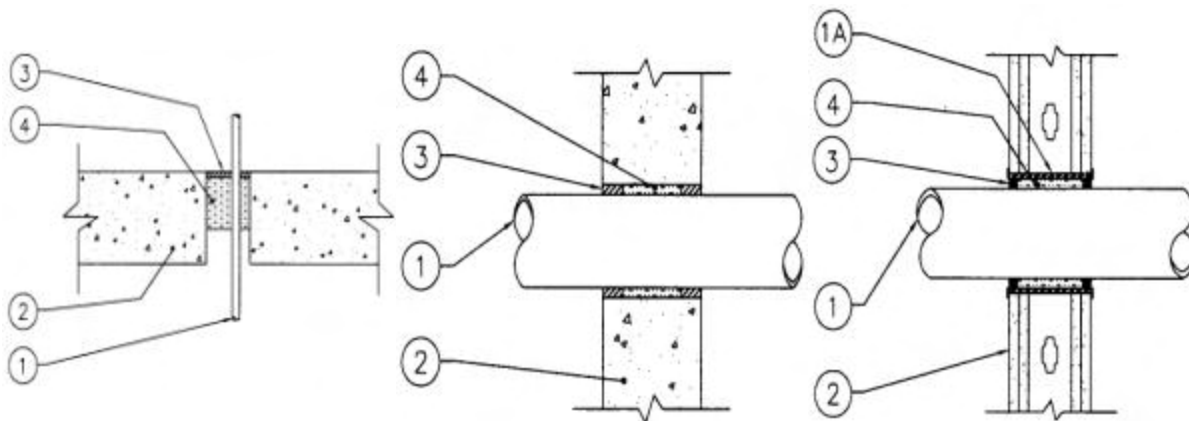
### Single and Multiple Penetrations

Horizontal or Vertical (floor/ceiling and walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	ASTM E 814/UL 1479		ULC S115 M95	
			"F" Rating	"T" Rating	"FH" Rating	"FTH" Rating
Steel and Cast Iron Pipe (1" to 3") Sch 10 & up	11"	¼" - 4"	2 Hour	35 Min	2 Hour	35 Min
Steel and Cast Iron Pipe (3½" to 8") Sch 10 & up	16"	¼" - 4"	2 Hour	19 Min	2 Hour	19 Min
Steel and Cast Iron Pipe (8½" to 24") Sch 10 & up	26"	¼" - 1"	2 Hour	15 Min	2 Hour	15 Min
EMT/Steel Conduit Pipe (½" to 1") Sch 10 & up	9"	¼" - 4"	2 Hour	60 Min	2 Hour	60 Min
EMT/Steel Conduit Pipe (1¼" to 6") Sch 10 & up	8"	¼" - 1"	2 Hour	15 Min	2 Hour	15 Min
Copper Pipe and Tubing up to 4" ID	12"	¼" - 4"	2 Hour	50 Min	2 Hour	50 Min
BX/Teck Cables up to 3-3/8" OD (Plastic Jacket)	7"	¼" - 2½"	2 Hour	2 Hour	2 Hour	2 Hour
Loomex/Romex Electrical Wiring to 1½"	6½"	¼" - 2½"	2 Hour	2 Hour	2 Hour	2 Hour
25Pr Telephone Cable (Plastic Jacket)	4"	1/8" - 1"	2 Hour	2 Hour	2 Hour	2 Hour
5/16" OD Cablevision Wire (Plastic Jacket)	4"	1/8" - 1"	2 Hour	2 Hour	2 Hour	2 Hour



### System Design Instructions

1. **Penetrating Item:** Centered or offset in hole, see table above. Single penetrations for steel pipes 6" to 16" (150 to 400mm), up to 5 penetrations for steel pipe, conduit or electrical wiring 1" (25mm) or less in diameter, up to 3 penetrations for copper pipe when 2 are ½" (13mm) or less. Steel pipes over 8" (200mm) in diameter, require ceramic fiber filler material (Item 4).
  - a) Metal Sleeve: Minimum 28 Ga or heavier metal sleeve fit tightly into the opening with a maximum annular space around sleeve to GWB of 1/16" (1.5mm). Metal sleeve used to support mineral wool filler material (Item 4) within hollow cavities.
2. **Floor/Ceiling or Wall Fire Separations:**
  - a) 1 and 2 hour rated ASTM E-119 or CAN/ULC S101 metal or wood framed fire rated gypsum wallboard (GWB) wall assemblies. (Note all GWB assemblies require metal sleeves when using 4100NS\*)
  - b) Cast in place normal or light density concrete floor/ceiling assemblies minimum thickness of 4½" (114mm) or;
  - c) Cast in place concrete wall assemblies having a minimum cross section thickness of 6" (150mm) or;
  - d) Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8" (200mm).





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205 Mason Circle, Concord, CA, 94520

GrabberGard EFC  
GrabberGard IFC  
GrabberGard EFS

## JWA/PHV 120-09

### 3. Firestop System Component1: John Wagner & Associates Inc. dba GRABBER CONSTRUCTION PRODUCTS –

- a. GrabberGard EFC\* or GrabberGard IFC\* for vertical or horizontal applications. GrabberGard EFC\* or GrabberGard IFC\* must be installed at a minimum wet film thickness of 1/4 in. (6mm).
- b. GrabberGard EFS\* (mastic) for vertical or horizontal applications sprayed into place with a minimum wet film thickness of 1/8 in. (3mm). Always overlap GrabberGard EFS\* onto the surface of the substrate a minimum of 1/2 in. (13mm). Do not thin GrabberGard EFS\* firestop mastic when spraying, use equipment capable of applying material as supplied.

### 4. Firestop System Component 2: Filler Material, mineral rock wool or ceramic fiber insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 4 in. (100 mm). Recess filler material 1/4 in. (6mm) for GrabberGard EFC\* or GrabberGard IFC\* sealant placement. Do not recess filler material for GrabberGard EFS\* applications. On GWB and metal sleeve installations fill to full depth of sleeve allowing 1/4" (6mm) for sealant placement on each side.

**\*WH Labeled Component**



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GrabberGard EFC  
GrabberGard IFC

## Design No. JWA/PHV 120-10

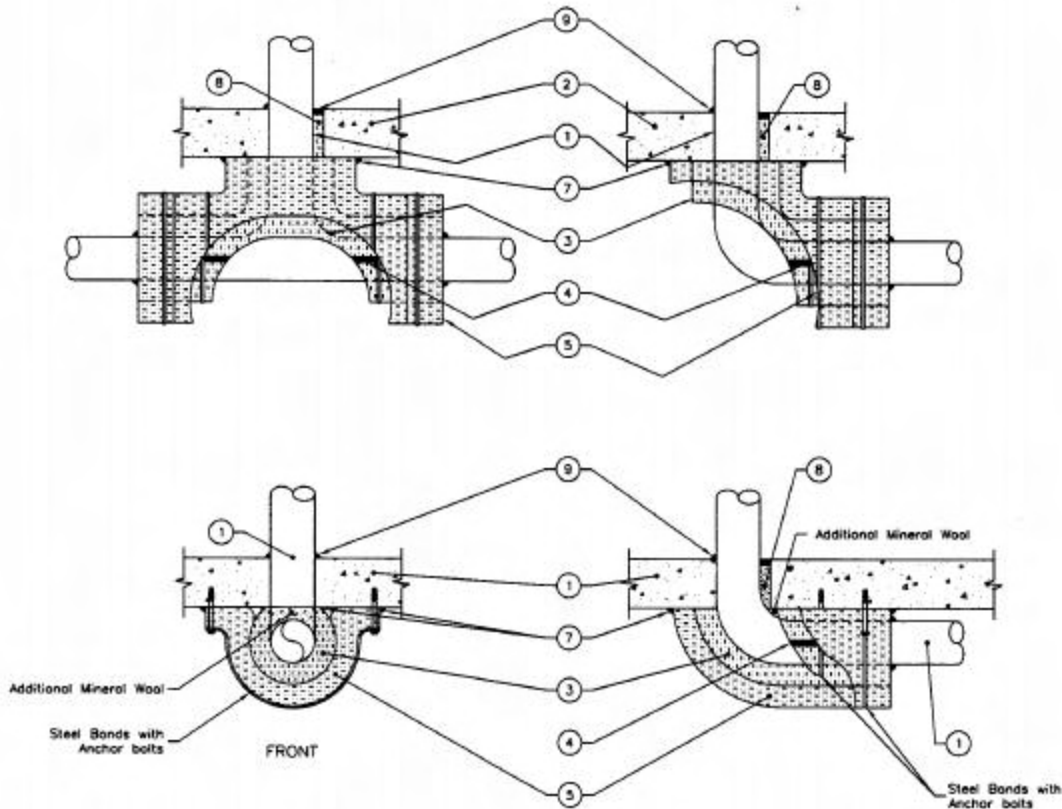
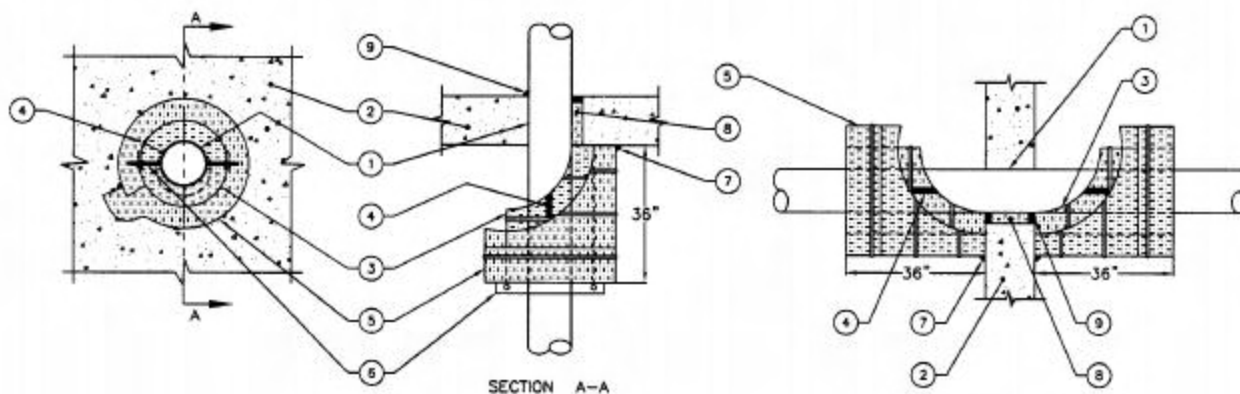
Single Penetrations

Horizontal (floor/ceiling) or Vertical (walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material and Size	Max Hole Size	Annular Space	ASTM E814 / UL 1479 "F" Rating	ASTM E814 / UL 1479 "T" Rating	ULC S115-M95 "FTH" Rating
Copper Pipe or Tubing up to 4"	5"	0" – 1"	2 hours	2 hours	2 hours
Rigid Steel Conduit or EMT up to 4"	5"	0" – 1"	2 hours	2 hours	2 hours



System Design Instructions

ITS Intertek Testing Services



## JWA/PHV 120-10

1. **Penetrating Item:** Centered or offset in hole, see table above. Single penetrations only, maximum hole size not to exceed table above. Firestop system components may be installed over tees, elbows and couplers for pipes sized not to exceed table above.
2. **Floor/Ceiling or Wall Fire Separation:** 2 hour fire rated ASTM E119 and CAN/ULC S101 floor/ceiling/wall assemblies as follows:
  - a) Cast in place normal or lightweight density concrete floor/ceiling assembly having a minimum cross section thickness of 5-1/2 in. (138 mm);
  - b) Cast in place concrete wall assembly having a minimum cross section thickness of 5-1/2 in. (138 mm) or
  - c) Concrete block wall assembly solidly filled with cementitious grout having a minimum cross section of 8 in. (200 mm).
3. **Firestop System, Component 1:** Min 2 in. thick by min 36 in. (650 mm) long hollow cylindrical mineral wool sleeve insulation with a minimum density of 8 PCF (128 kg/m<sup>3</sup>) installed around penetrating item. Aluminum foil surface jacket is optional. Mineral wool to be tightly butted at longitudinal joint. Sleeve to be held in place with steel hose clamps spaced min 8 in. (200 mm) OC and butted to the underside of the concrete floor assembly. If pipe is connected to a tee or elbow that is closer than 4" (100 mm) below slab, sleeve to be fastened to underside of slab with 1/2 in. (13 mm) wide steel band and anchor bolts spaced max 8 in. (200 mm) OC. If pipe is connected to a tee or elbow that is closer than 2" (50 mm) below slab, additional mineral wool is to be packed between pipe and underside of slab and the "U" shape sleeve to be attached to be fastened to underside of slab with 1/2 in. (13 mm) wide steel band and anchor bolts spaced max 8 in. (200 mm) OC.
4. **Firestop System, Component 2:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* min 1/16 in. (1-1/2 mm) thickness by 1/2 in. (13 mm) wide layer to be applied along seam of sleeve of firestop component 1.
5. a) **Firestop System, Component 3a:** Min 2 in. thick by min 36 in. (650 mm) long hollow cylindrical mineral wool sleeve insulation with a minimum density of 8 PCF (128 kg/m<sup>3</sup>) installed around first sleeve. Aluminum foil surface jacket is optional. Mineral wool to be tightly butted at longitudinal joint. Sleeve to be held in place with steel hose clamps spaced min 8 in. (200 mm) OC and butted to the underside of the concrete floor assembly. If pipe is connected to a tee or elbow that is closer than 4" (100 mm) below slab, sleeve to be fastened to underside of slab with 1/2 in. (13 mm) wide steel band and anchor bolts spaced max 8 in. (200 mm) OC.  
b) **Firestop System, Component 3b:** As an alternative to Item 5a, min 2 in. thick by min 36 in. (650 mm) long mineral wool insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) wrapped around first sleeve. Mineral wool to overlap min 2 in. at longitudinal joints and be tightly butted at transverse joints. Sleeve to be held in place with steel hose clamps spaced min 8 in. (200 mm) OC and butted to the underside of the concrete floor assembly. If pipe is connected to a tee or elbow that is closer than 4" (100 mm) below slab, sleeve to be fastened to underside of slab with 1/2 in. (13 mm) wide steel bands and anchor bolts spaced max 8 in. (200 mm) OC.
6. **Firestop System, Component 4:** Riser Clamp, for vertical pipes only, where elbows and/or tees are not used, min 4 in. (100 mm) galv steel riser clamp installed below mineral wool sleeves to retain the material in position against the underside of the floor. Min 1/2 in (13mm) thick, min 4 PCF mineral wool to be installed between clamp and pipe to ensure a tight fit.
7. **Firestop System, Component 5:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* min 1/2 in. (13 mm) diam bead applied at sleeve/concrete and sleeve/penetrant interface.
8. **Firestop System, Component 6:** Filler material, mineral rock wool insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 5 in. (125 mm). Recess filler material 1/2 in. (13 mm) for sealant placement.
9. **Firestop System, Component 7:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* to be installed at a minimum thickness of 1/2 in. (13 mm) within the annulus on top surface of floor assembly. On 0 – 1/4 in. (6 mm) annular spaces, a 1/2 in. (13 mm) diameter fillet bead must be placed around the penetrating item on top surface of floor assembly.

\*WH Labeled Component



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205 Mason Circle, Concord, CA, 94520

GrabberGard EFS

## Design No. JWA/PHV 120-11

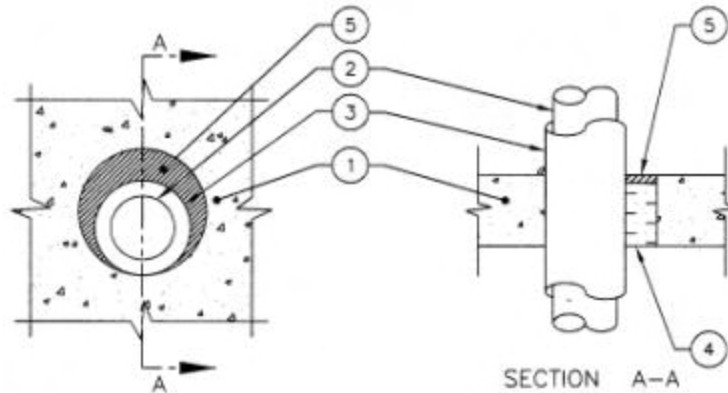
### Single Penetrations

Horizontal or Vertical (floor/ceiling and walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	ASTM E 814/UL 1479		ULC S115 M95	
			"F" Rating	"T" Rating	"FH" Rating	"FTH" Rating
Steel and Cast Iron Pipe up to 4" Sch 10 & up	8"	0" – 1½"	2 Hour	35 Min	2 Hour	35 Min
Copper Pipe and Tubing up to 4" ID	8"	0" – 1½"	2 Hour	35 Min	2 Hour	35 Min



### System Design Instructions

#### 1. Floor/Ceiling or Wall Fire Separations:

- Cast in place normal or light density concrete floor/ceiling assemblies minimum thickness of 4½" (114mm) or;
- Cast in place concrete wall assemblies having a minimum cross section thickness of 6" (150mm) or;
- Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8" (200mm).

#### 2. Penetrating Item: Centered or offset in hole, see table above. Single penetration only, maximum hole size not to exceed table above.

#### 3. Through Insulating Materials: Max 1" wall thickness fiberglass or batt insulation (paper faced), tightly wrapped around the penetrating item, having a minimum density of 3.5 lbs/pcf and listed to provide a flame spread rating of 25 and a smoke developed rating of 50 or less.

#### 4. Firestop System Component 1: Filler Material, mineral rock wool or ceramic fiber insulation with a minimum density of 4-6 PCF (68 kg/m<sup>3</sup>) compressed a minimum of 25% into the annular space at a minimum depth of 4 in. (100 mm). Recess filler material 1/4 in. (6mm) for Firetemp® SI\* sealant placement on each side.

#### 5. Firestop System Component 2: John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFS\* (mastic) for vertical or horizontal applications sprayed into place with a minimum wet film thickness of 1/4 in. (6mm). Always overlap GrabberGard EFS\* onto the surface of the substrate a minimum of 1/2 in. (13mm). Do not thin GrabberGard EFS\* firestop mastic when spraying, use equipment capable of applying material as supplied.

\*WH Labeled Component



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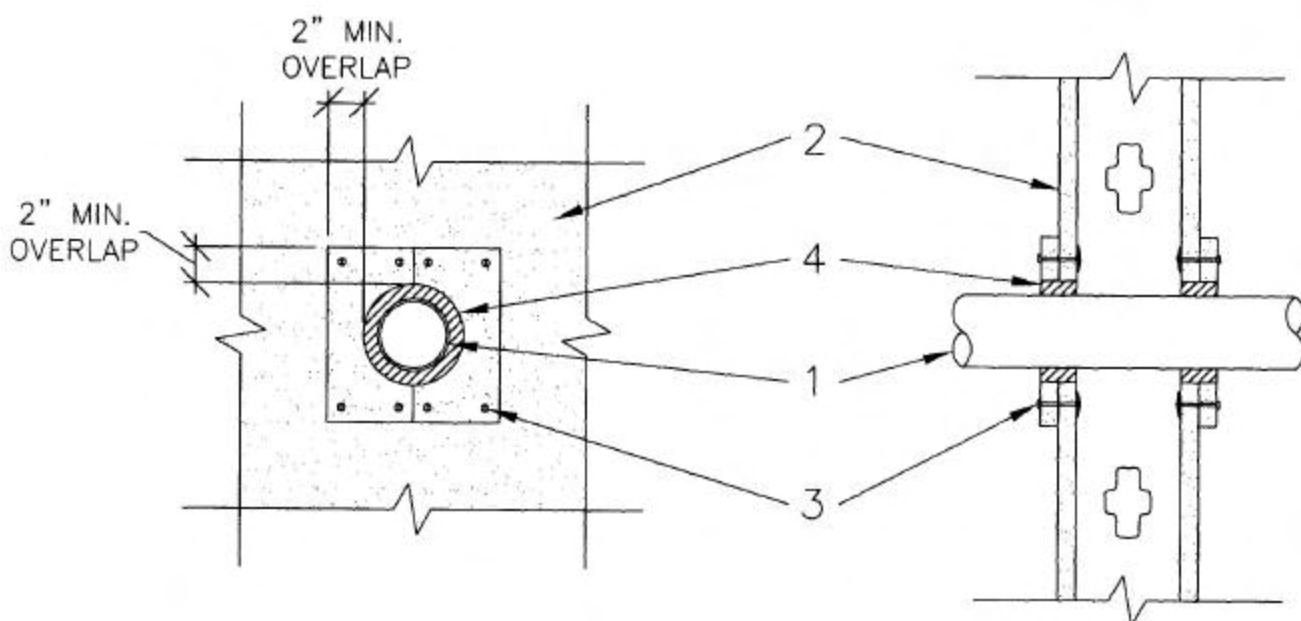
GrabberGard IFC

## Design No. JWA/PV 60-01

Single Penetrations  
Vertical (walls)

Test Standards: ASTM E-814, UL 1479: open and closed systems, ULC S115-M95: closed systems  
Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	E 814 & UL 1479 "F" Rating	"T" Rating	S115-M95 "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
PVC Plastic pipe to 2"	3-5/8"	1/4" to 1/2"	Up to 1 Hr	Up to 1 Hr	Up to 1 Hr	Up to 1 Hr	Up to 1 Hr
CPVC Plastic pipe to 2"	3-5/8"	1/4" to 1/2"	Up to 1 Hr	22 min	Up to 1 Hr	Up to 1 Hr	22 min
X-Linked Polyethylene tubing to 1" ID	2-1/2"	1/4" to 1/2"	Up to 1 Hr	Up to 1 Hr	Up to 1 Hr	Up to 1 Hr	Up to 1 Hr



### System Design Instructions

- 1. Penetrating Item:** Centered in hole, see table above.
- 2. Wall Fire Separations:** 1 hour rated ASTM E-119 or CAN/ULC S101 metal or wood framed insulated gypsum wall board (GWB) wall assemblies.
- 3. Firestop System; Component 1:** One layer of 5/8" Type "X" gypsum wallboard collar securely fastened to gypsum wallboard with drywall anchors. Caulk a 3/8" (10mm) bead around perimeter edges of GWB collar after installation.
- 4. Firestop System; Component 2:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard IFC\* fully filling the annular space to the full depth of the membrane.

\*WH Labeled Component



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GrabberGard EFC  
GrabberGard IFC

## Design No. JWA/PV 60-03

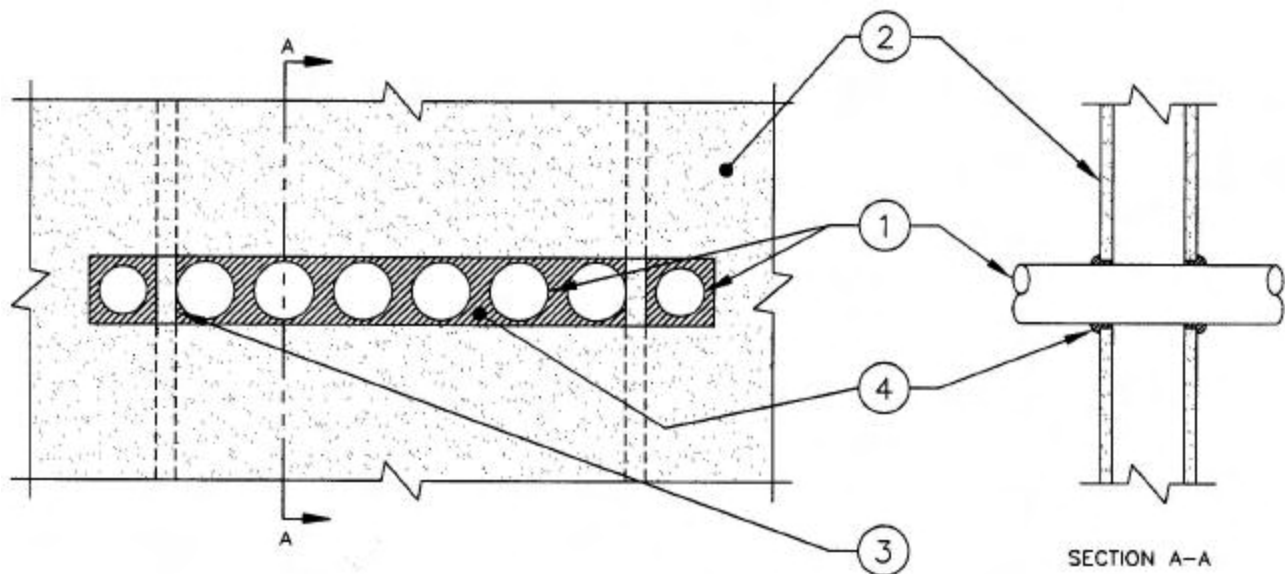
Multiple Penetrations

Vertical (wall)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Positive Pressure Differential – 2.5 pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Size Area	Annular Space	ASTM 814/UL1479		ULC S115-M95	
			“F” Rating	“T” Rating	“F” & “FH” Rating	“FT” Rating
Copper Pipe up to 3"	32" x 3-1/2"	0" – 3/4"	60 minutes	20 minutes	60 minutes	20 minutes
Cast Iron Pipe up to 3"	32" x 3-1/2"	0" – 3/4"	60 minutes	20 minutes	60 minutes	20 minutes
Steel Pipe up to 3"	32" x 3-1/2"	0" – 3/4"	60 minutes	20 minutes	60 minutes	20 minutes



### System Design Instructions

- 1. Penetrating Item:** Centered or offset in hole, see table above. Multiple penetrations, maximum hole size not to exceed table above.
- 2. Wall Assembly:** Code conforming 1 hour rated nominal 2 in. by 4 in. metal or wood framed gypsum wallboard (GWB) wall assemblies.
- 3. Wall Assembly:** Where studs are exposed through opening a min 5/8 in. thick Type X gypsum wallboard to be fastened to exposed area on both sides of wall.
- 4. Firestop System, Component 1:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* installed at a minimum thickness of 5/8" (18mm) within the annulus on both surfaces of wall assembly. Between 0 1/2" (12mm) annulus spaces, a 1/2" (13mm) diameter fillet bead must be placed around the penetrating item.

\*WH Labeled Component



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GrabberGard IFC

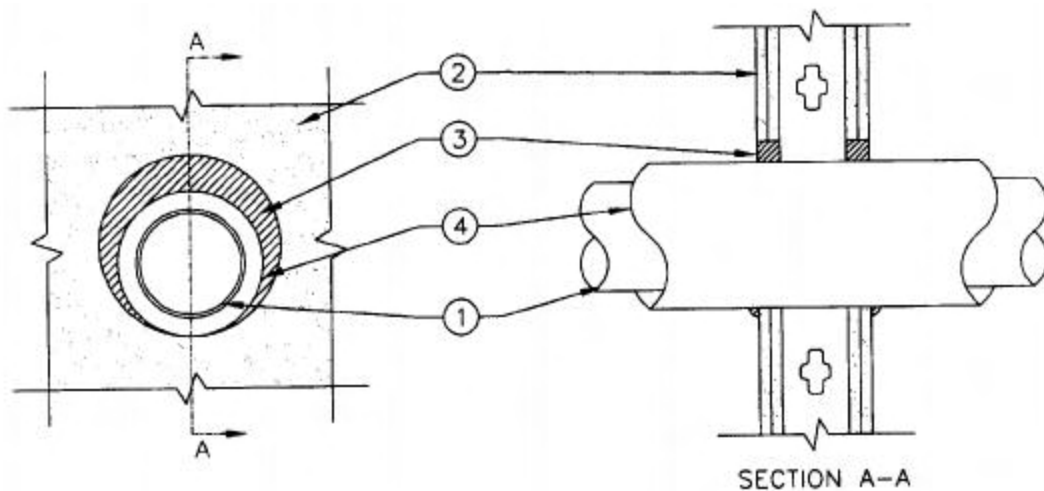
## Design No. JWA/PV 120-01

Pipe Insulation Through Penetrations  
Single Penetrations Only  
Vertical (walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
Steel and Cast Iron Pipe up to 8" Sch 10 & up	11"	0" – 1/2"	2 Hour	2 Hour	2 Hour



### System Design Instructions

- 1. Penetrating Item:** See table above. Single penetrations only.
- 2. Wall Assemblies:** 2 hour rated ASTM E-119 or CAN/ULC S101 metal or wood framed gypsum wall board (GWB) wall assemblies.
- 3. Firestop System:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard IFC\* fully filling the annular space to the full depth of the membrane. On 0 – 1/4" (6mm) annular spaces, a 3/8" (10mm) diameter fillet bead must be placed around the penetrating item on the surface of the gypsum wall board.
- 4. Through Insulating Material:** Koolphen K rigid phenolic foam insulation having a 1" (25mm) wall thickness.

\*WH Labeled Component



John Wagner & Associates Inc.  
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GrabberGard EFC  
GrabberGard IFC

## Design No. JWA/PV 120-02

Pipe Insulation Through Penetrations

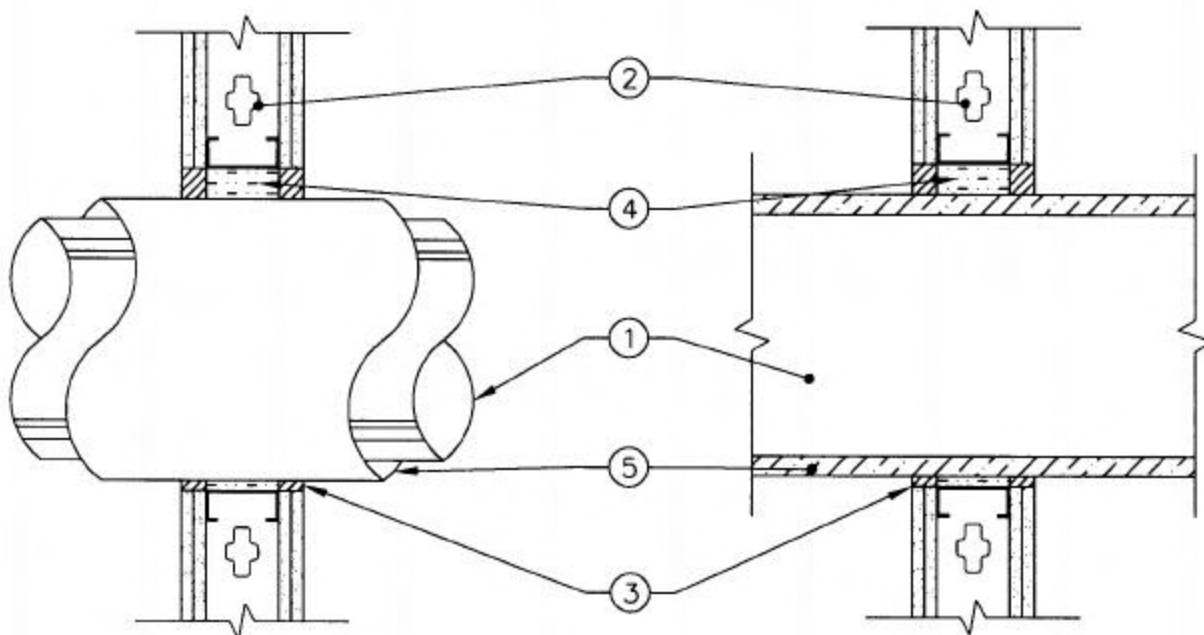
Single Penetrations Only

Vertical (walls)

Test Standards: ASTM E-814, UL 1479, ULC S115-M95

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	Fire "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
24" x 24" Steel Duct – 16 gauge (or heavier)	27-1/4" x 27-1/4"	1/2" – 3/4"	Up to 2 Hours	Up to 2 Hours	*
16" Steel Duct – 24 gauge (or heavier)	20"	1/2" – 1-1/2"	Up to 2 Hours	Up to 2 Hours	Up to 2 Hours



### System Design Instructions

- 1. Penetrating Item:** Centered or offset in hole, see table above. Single penetrations only.  
\* Temperature rating is 52 min. and 2 hours for 1 hour and 2 hour wall assemblies respectively.
- 2. Wall Assemblies:** 1 and 2 hour rated ASTM E-119 or CAN/ULC S101 metal or wood framed gypsum wall board (GWB) wall assemblies.
- 3. Firestop System, Component 1:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* fully filling the annular space to the full depth of the gypsum wall board (GWB) on both sides of the fire separation.
- 4. Firestop System, Component 2:** Filler material:
  - a) Mineral fiber wool insulation with a minimum density of 4-6 pcf firmly packed into the annular space at a minimum depth of 3-5/8" (92mm).
- 5. Through Insulating Material:** Fiberglass duct wrap insulation having a 2" (51mm) wall thickness with a minimum density of .75 - 1.5 pcf installed as per manufacturer's installation instructions.

\*WH Labeled Component





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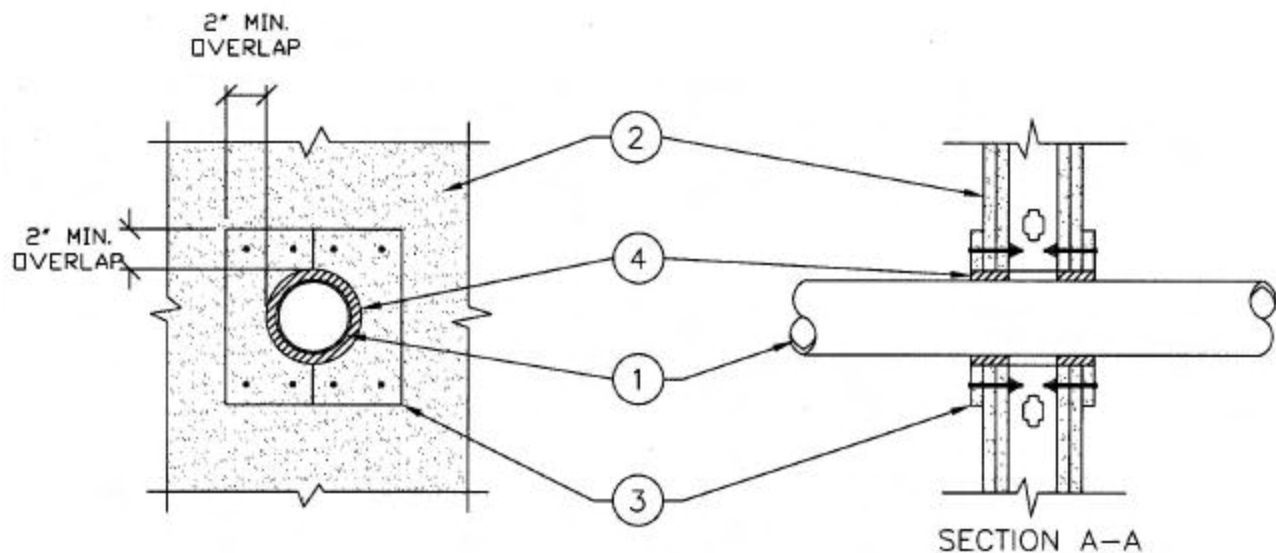
GrabberGard IFC

## Design No. JWA/PV 120-03

Single Penetrations  
Vertical (walls)

Test Standards: ASTM E-814, UL 1479: open and closed system, ULC S115-M95: closed systems  
Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Hole Size	Annular Space	E 814 & "F" Rating	UL 1479 "T" Rating	S115-M95 "F" Rating	Fire/Hose "FH" Rating	Temp Rating "FTH" Rating
PVC Plastic pipe to 2"	3"	1/4"	0 Hr	Up to 40 min	Up to 2 Hr	0 Hr	Up to 40 min
CcPVC Plastic pipe to 2"	3"	1/4"	0 Hr	Up to 40 min	Up to 2 Hr	0 Hr	Up to 40 min
CPVC Plastic pipe to 2"	3-5/8"	1/2"	Up to 2 Hr	Up to 20 min	Up to 2 Hr	Up to 2 Hr	Up to 20 min
CPVC Plastic pipe to 2"	3"	1/4"	0 Hr	Up to 115 min	Up to 2 Hr	0 Hr	Up to 115 min
X-Linked Polyethylene tubing to 1" ID	2-1/2"	1/2"	0 Hr	Up to 70 min	Up to 2 Hr	0 Hr	Up to 70 min
X-Linked Polyethylene tubing to 1" ID	2"	1/2"	Up to 2Hr	Up to 15 min	Up to 2Hr	Up to 2Hr	Up to 15 min



### System Design Instructions

- 1. Penetrating Item:** Centered in hole, see table above.
- 2. Wall Fire Separations:** 2 hour rated ASTM E-119 or CAN/ULC S101 metal or wood framed insulated gypsum wall board (GWB) wall assemblies.
- 3. Firestop System; Component 1:** One layer of 5/8" Type "X" gypsum wallboard collar securely fastened to gypsum wallboard with drywall anchors. Caulk a 3/8" (10mm) bead around perimeter edges of GWB collar after installation.
- 4. Firestop System; Component 2:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard IFC\* fully filling the annular space to the full depth of the membrane.

\*WH Labeled Component



John Wagner & Associates Inc.  
dba GRABBER CONSTRUCTION PRODUCTS  
205 Mason Circle, Concord, CA, 94520

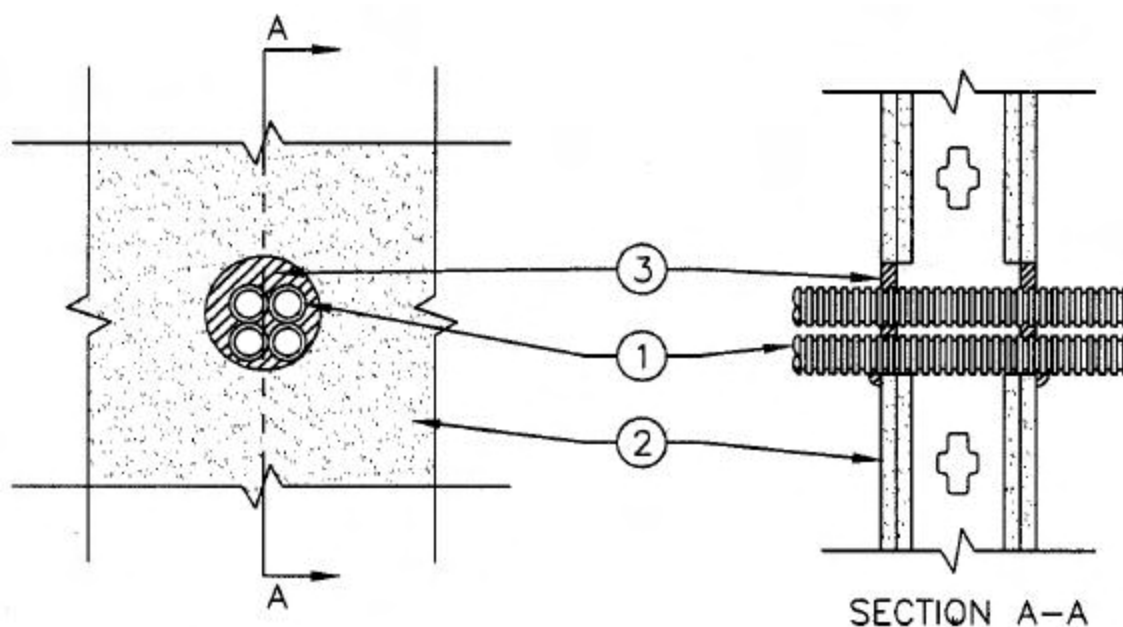
GrabberGard EFC  
GrabberGard IFC

## Design No. JWA/PV 120-06 Single and Multiple Penetrations

Vertical (walls)

Test Standards: ASTM E-814, UL 1479: closed systems  
Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Penetrating Material & Size	Max Size	Hole Annular Space	"F" Rating	"T" Rating
Up to 1" Diam. Electrical Non-metallic Tubing (PVC) up to 4	4-1/2"	0" – 1"	Up to 2 Hr	75 min



### System Design Instructions

- 1. Penetrating Item:** Either singly or combination, including all. Centered or offset in hole, see table above. All penetrating items must be reliably supported.
- 2. Wall Assemblies:** 2 hour rated ASTM E-119 or CAN/ULC S101 wall assemblies as follows:
  - a) metal or wood framed gypsum wall board (GWB) wall assemblies.
  - b) cast in place lightweight or normal weight concrete wall assemblies having a minimum cross section thickness of 4-1/2 in.
  - c) hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8 in.
- 3. Firestop System:** John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFC\* or GrabberGard IFC\* installed at a minimum thickness of 5/8" within the annulus on both surfaces of wall assembly. Between 0" to 1/4" annular spaces, a 1/2 diameter fillet bead must be placed around the interface between penetrating item and the surface of the wall.

\*WH Labeled Component



## Design No. JWA/PV 240-01

Concrete Deck to Vertical Wall Assemblies

Test Standards: ASTM E-814, UL 2079, CAN/ULC S115-M95

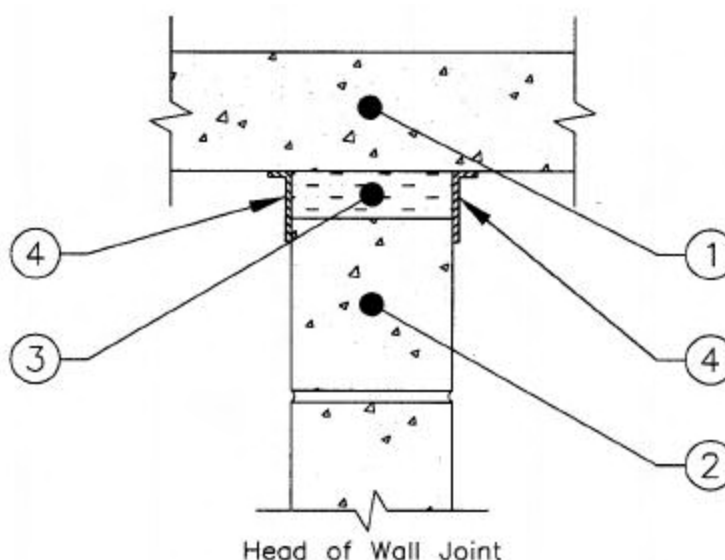
L-Rating At Ambient < 1 CFM/Lin Ft

L-Rating At 400° F < 1 CFM/Lin Ft

Test Furnace Internal Positive Pressure Differential – 2.5 Pa (0.01 in. of water) Minimum

Max. Joint Movement – 12.5% Compression or Extension

Construction Joint	UL 2079		CAN/ULC S115-M95		
	Max Width	Assembly Rating	Fire "F" Rating	Fire/Hose "FH" Rating	Temp. "FTH" Rating
Horizontal Joints	2"	4 Hrs	4 Hrs	4 Hrs	4 Hrs



### System Design Instructions

- Floor/Ceiling Assemblies:** Cast in place normal or light density concrete floor/ceiling assemblies having a minimum cross section thickness of 5" (125 mm)
- Wall Assemblies:** ASTM E-119 or CAN/ULC S101 up to 4 hour rated wall assemblies conforming to as follows:
  - Cast in place concrete wall assemblies having a minimum cross section thickness of 6-3/4" (171mm) or;
  - Hollow or concrete filled unit masonry (concrete block) wall assemblies laid up with mortar having a minimum cross section thickness of 8" (200mm).
- Firestop System – Component 1** – Filler material mineral rock wool or ceramic fiber insulation with a min density of 4 PCF (64 kg/m<sup>3</sup>) compressed a minimum of 40% into the joint space flush with both sides of wall assembly.
- Firestop System – Component 2** – John Wagner & Assoc. Inc. dba GRABBER CONSTRUCTION PRODUCTS – GrabberGard EFS\* – Minimum dry film thickness 1/16" (1.5mm) sprayed or brushed into place completely covering fillet material and overlapping onto all concrete surface a minimum of 1" (25mm).

\*WH Labeled Component

# Calculation Guide Through Penetrations

## Step 1:

For sealant depth of 1 in.

Use this chart to calculate the volume (cu. in.) of Grabber sealant required for each penetration.

Diameter of Hole  (inches)	Nominal Diameter of Penetrating Items (inches)												
	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00	6.00	8.00	10.00	12.00
	Actual Outside Diameter of Sch 40 Penetrating Items (inches)												
	0.840	1.050	1.315	1.900	2.375	2.875	3.500	4.000	4.500	6.625	8.625	10.75	12.75
1.00	0.23												
1.50	1.21	0.90	0.41										
2.00	2.59	2.28	1.78	0.31									
2.50	4.35	4.04	3.55	2.07	0.48								
3.00	6.51	6.20	5.71	4.23	2.64	0.58							
3.50	9.07	8.76	8.26	6.79	5.19	3.13							
4.00	12.01	11.70	11.21	9.73	8.14	6.07	2.95						
4.50	15.35	15.04	14.55	13.07	11.47	9.41	6.28	3.34					
5.00	19.08	18.77	18.28	16.80	15.20	13.14	10.01	7.07	3.73				
5.50	23.20	22.89	22.40	20.92	19.33	17.27	14.14	11.19	7.85				
6.00	27.72	27.41	26.92	25.44	23.84	21.78	18.65	15.71	12.37				
6.50	32.63	32.32	31.82	30.35	28.75	26.69	23.56	20.62	17.28				
7.00	37.93	37.62	37.13	35.65	34.05	31.99	28.86	25.92	22.58	4.01			
7.50	43.62	43.31	42.82	41.34	39.75	37.69	34.56	31.61	28.27	9.71			
8.00	49.71	49.40	48.91	47.43	45.84	43.77	40.64	37.70	34.36	15.79			
8.50	56.19	55.88	55.39	53.91	52.31	50.25	47.12	44.18	40.84	22.27			
10.00	77.99	77.67	77.18	75.70	74.11	72.05	68.92	65.97	62.64	44.07	20.11		
12.00	112.54	112.23	111.74	110.26	108.67	106.61	103.48	100.53	97.19	78.63	54.67	22.33	
14.00	153.38	153.07	152.58	151.10	149.51	147.45	144.32	141.37	138.03	119.47	95.51	63.18	26.26

Note: These calculations are for a sealant depth of 1in. only.

For a different sealant depth, go to **Step 2**.

To calculate number of containers required, go to **Step 3**.

## Step 2:

For a depth of:	Multiply by:
1/8"	0.13
1/4"	0.25
1/2"	0.50
3/4"	0.75
2"	2.00
3"	3.00
4"	4.00

## Step 3:

Container Size:	Volume:
10.1fl.oz tube (300ml)	18 cu. in.
20 fl.oz foil pack (600ml)	36 cu. in.
29 fl.oz tube (850ml)	51 cu. in.
1 gallon pail (3.8L)	231 cu. in.
3 gallon pail (11.4L)	693 cu. in.
5 gallon pail (18.9L)	1155 cu. in.

## Use this chart to calculate:

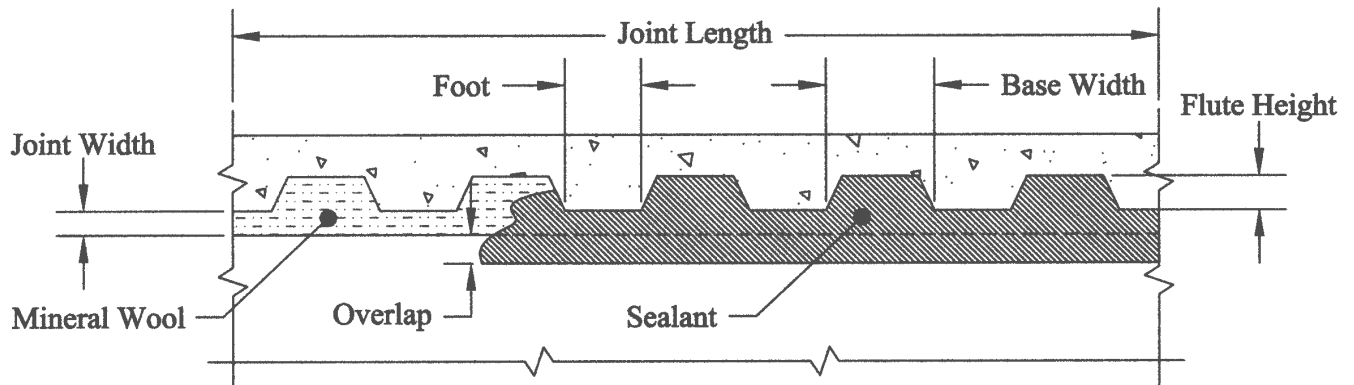
The lineal feet of coverage per US gallon (3.8L) of Grabber Sealant

For GrabberGard EFS use the next larger joint width to allow for 1/2 in. (12.5mm) overlap on both sides of gap.

JOINT WIDTH			DEPTH OF SEALANT							
MM	INCHES		0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000
3.17	1/8"	0.125	1232.0	616.0	410.7	308.0	246.4	205.3	176.0	154.0
6.35	1/4"	0.250	616.0	308.0	205.3	154.0	123.2	102.7	88.0	77.0
9.52	3/8"	0.375	410.7	205.3	136.9	102.7	82.1	68.4	58.7	51.3
12.70	1/2"	0.500	308.0	154.0	102.7	77.0	61.6	51.3	44.0	38.5
15.87	5/8"	0.625	246.4	123.2	82.1	61.6	49.3	41.1	35.2	30.8
19.05	3/4"	0.750	205.3	102.7	68.4	51.3	41.1	34.2	29.3	25.7
22.22	7/8"	0.875	176.0	88.0	58.7	44.0	35.2	29.3	25.1	22.0
25.40	1"	1.000	154.0	77.0	51.3	38.5	30.8	25.7	22.0	19.3
28.57	1-1/8"	1.125	136.9	68.4	45.6	34.2	27.4	22.8	19.6	17.1
31.75	1-1/4"	1.250	123.2	61.6	41.1	30.8	24.6	20.5	17.6	15.4
34.92	1-3/8"	1.375	112.0	56.0	37.3	28.0	22.4	18.7	16.0	14.0
38.10	1-1/2"	1.500	102.7	51.3	34.2	25.7	20.5	17.1	14.7	12.8
41.27	1-5/8"	1.625	94.8	47.4	31.6	23.7	19.0	15.8	13.5	11.8
44.45	1-3/4"	1.750	88.0	44.0	29.3	22.0	17.6	14.7	12.6	11.0
47.62	1-7/8"	1.875	82.1	41.1	27.4	20.5	16.4	13.7	11.7	10.3
50.80	2"	2.000	77.0	38.5	25.7	19.3	15.4	12.8	11.0	9.6
76.20	3"	3.000	51.3	25.7	17.1	12.8	10.3	8.6	7.3	6.4
101.60	4"	4.000	38.5	19.3	12.8	9.6	7.7	6.4	5.5	4.8
127.00	5"	5.000	30.8	15.4	10.3	7.7	6.2	5.1	4.4	3.9
152.40	6"	6.000	25.7	12.8	8.6	6.4	5.1	4.3	3.7	3.2
177.80	7"	7.000	22.0	11.0	7.3	5.5	4.4	3.7	3.1	2.8
203.20	8"	8.000	19.3	9.6	6.4	4.8	3.9	3.2	2.8	2.4
228.60	9"	9.000	17.1	8.6	5.7	4.3	3.4	2.9	2.4	2.1
254.00	10"	10.000	15.4	7.7	5.1	3.9	3.1	2.6	2.2	1.9
279.40	11"	11.000	14.0	7.0	4.7	3.5	2.8	2.3	2.0	1.8
304.80	12"	12.000	12.8	6.4	4.3	3.2	2.6	2.1	1.8	1.6
330.20	13"	13.000	11.8	5.9	3.9	3.0	2.4	2.0	1.7	1.5
			LINEAL FEET PER US GALLON (3.8L)							

**Note:** 231 cu. in. per US gallon (3.8L)  
61 cu. in. per quart (1L)

## Calculation Guide Spraying Fluted Metal Deck Joints



### GrabberGard EFS

Sprayable mastic for top of gypsum wallboard wall assemblies cut straight across or concrete wall assemblies to fluted metal decks.

Quantity calculations include:

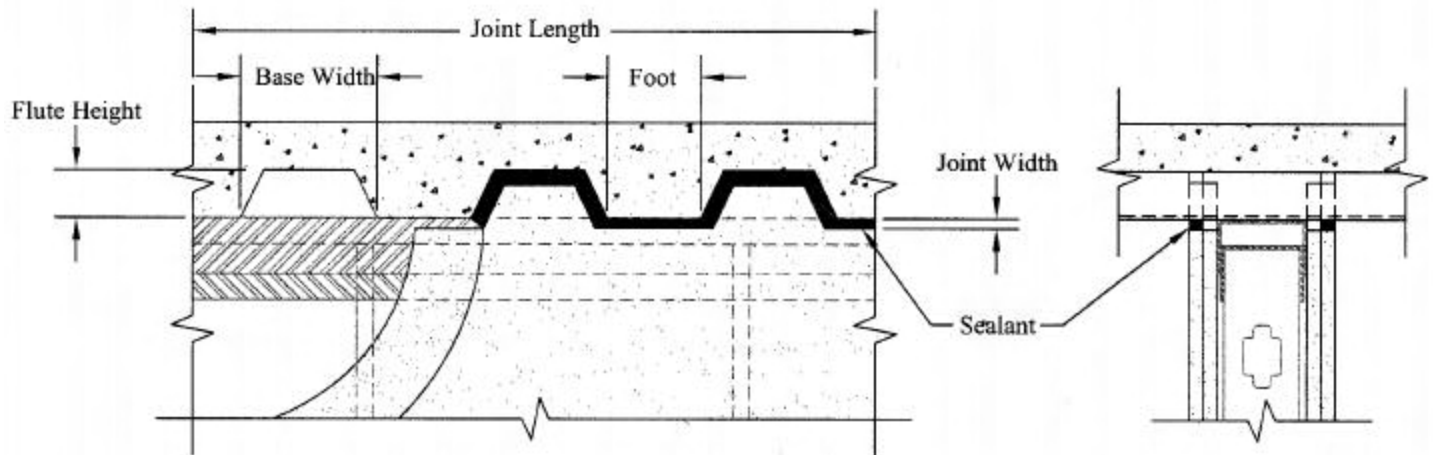
- Both sides of the wall assembly
- Variable flute heights (see chart)
- 3/4 in. construction gap
- 1 in. overlap (1 in. sprayed on deck and 1 in. on the wall assembly)
- 1/16 in. thickness of spray material
- 10% wastage factor

100 LINEAL FEET OF DECKING FLUTE SIZE (inches)			GrabberGard EFS QUANTITY REQUIRED	
Height	Base Width	Foot	US gallons	Liters
1.5	4.3	1.7	3.40	12.87
3	3.9	2.2	4.44	16.81
3	5.9	2.2	4.46	16.88

### Available sizes:

Container Size:	Volume:
5 gallon pail (18.9L)	1155 cu. in.

## Calculation Guide Caulking Fluted Metal Deck Joints



GrabberGard EFC or IFC sealant top of gypsum wallboard wall assemblies cut to the profile of metal decking. Quantity calculations are for both sides of the wall assembly.

100 LINEAL FEET OF DECKING FLUTE SIZE (inches)			GAP SIZE	SEALANT DEPTH	CAULK QUANTITY REQUIRED	
Height	Base Width	Foot	Inches	Inches	US gallons	Liters
1.5	4.3	1.7	0.50	0.625	4.87	18.43
1.5	4.3	1.7	0.75	0.625	7.31	27.65
1.5	4.3	1.7	1.00	0.625	9.74	36.87
1.5	4.3	1.7	0.50	1.250	9.74	36.87
1.5	4.3	1.7	0.75	1.250	14.61	55.31
1.5	4.3	1.7	1.00	1.250	19.48	73.74
3.0	3.9	2.2	0.50	0.625	6.44	24.38
3.0	3.9	2.2	0.75	0.625	9.66	36.57
3.0	3.9	2.2	1.00	0.625	12.88	48.76
3.0	3.9	2.2	0.50	1.250	12.88	48.76
3.0	3.9	2.2	0.75	1.250	19.32	73.14
3.0	3.9	2.2	1.00	1.250	25.76	97.52
3.0	5.9	2.2	0.50	0.625	5.65	21.39
3.0	5.9	2.2	0.75	0.625	8.48	32.09
3.0	5.9	2.2	1.00	0.625	11.30	42.79
3.0	5.9	2.2	0.50	1.250	11.30	42.79
3.0	5.9	2.2	0.75	1.250	16.96	64.18
3.0	5.9	2.2	1.00	1.250	22.61	85.58

### Available sizes:

Container Size:	Volume:
10.1fl.oz tube (300ml)	18 cu. in.
20 fl.oz foil pack (600ml)	36 cu. in.
29 fl.oz tube (850ml)	51 cu. in.
5 gallon pail (18.9L)	1155 cu. in.