3M
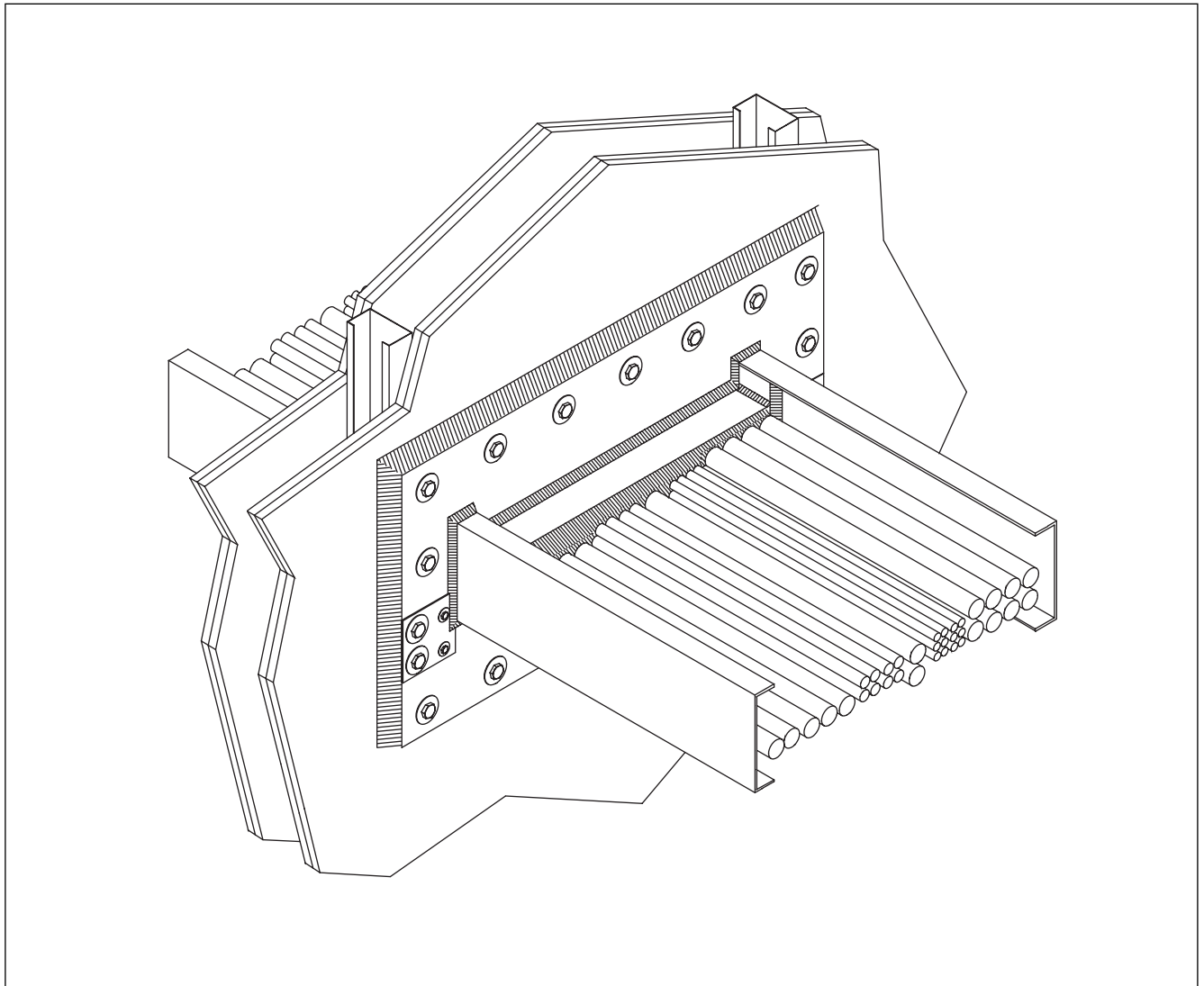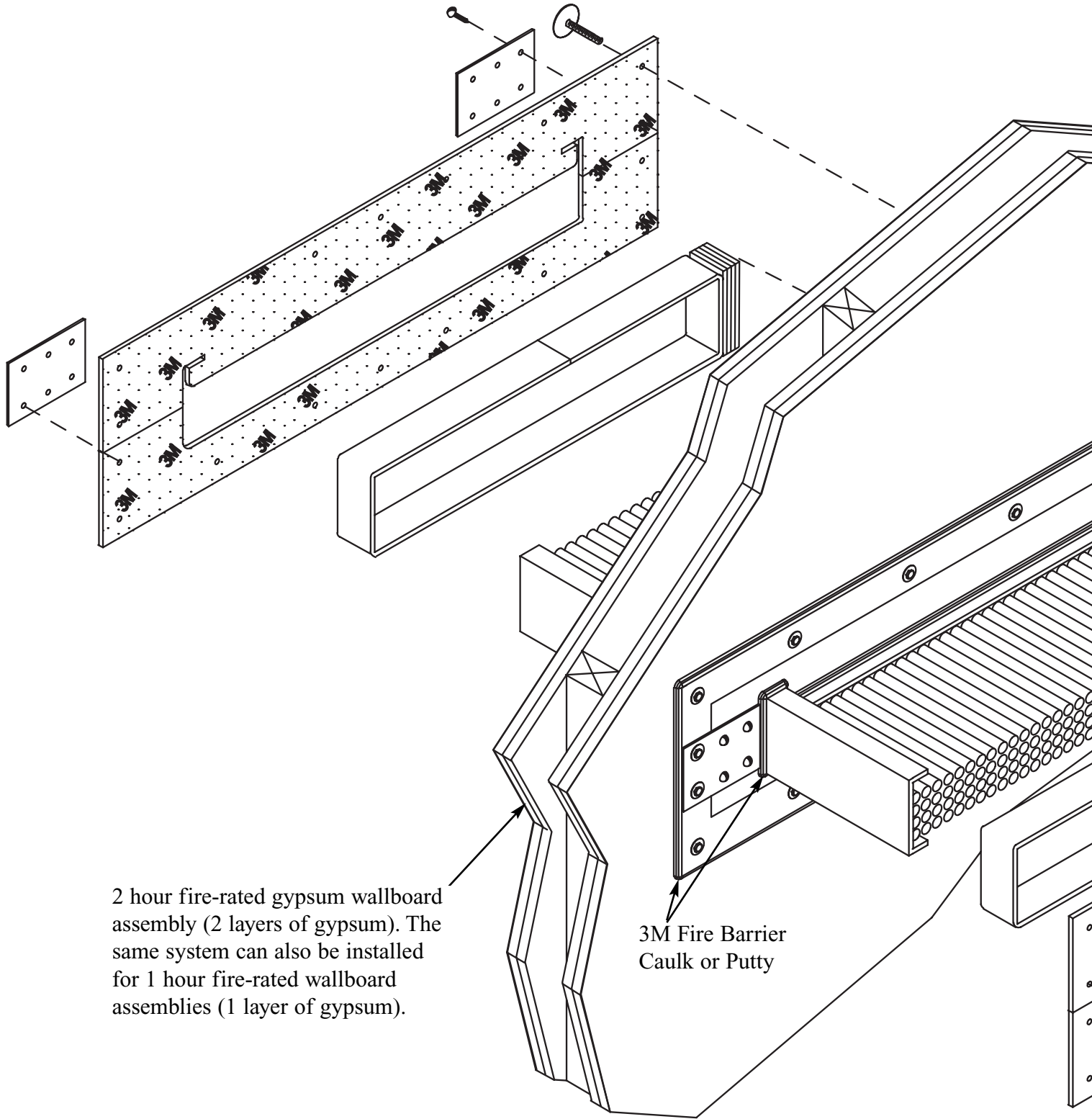
Fire Barrier

Composite Sheet CS-195+

**Installation Guide For
Telecommunications and Electrical Applications**

Typical System Overview

2 hour fire-rated gypsum wallboard assembly (2 layers of gypsum). The same system can also be installed for 1 hour fire-rated wallboard assemblies (1 layer of gypsum).

3M Fire Barrier Caulk or Putty

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Introduction

3M Fire Barrier Caulk or Putty

Cable Tray

3M Composite Sheet CS-195+

Wrap Strip

Anchors

Washers

Sheet Metal

Sheet Metal Screws

This installation guide highlights requirements for 3M Fire Barrier Composite Sheet CS-195+ for firestopping cable assemblies typical in the telecommunications industry.

The information contained herein is based on Underwriters Laboratories Inc.® published system requirements found in the current UL Fire Resistance Directory and engineering studies performed by UL referenced herein.

Written requirements for system construction are intended only to highlight important features of different systems or methods and are not intended to describe all the requirements.

Refer to current Underwriters Laboratories Inc.®, Fire Resistance Directory and referenced engineering studies for additional information and system details.
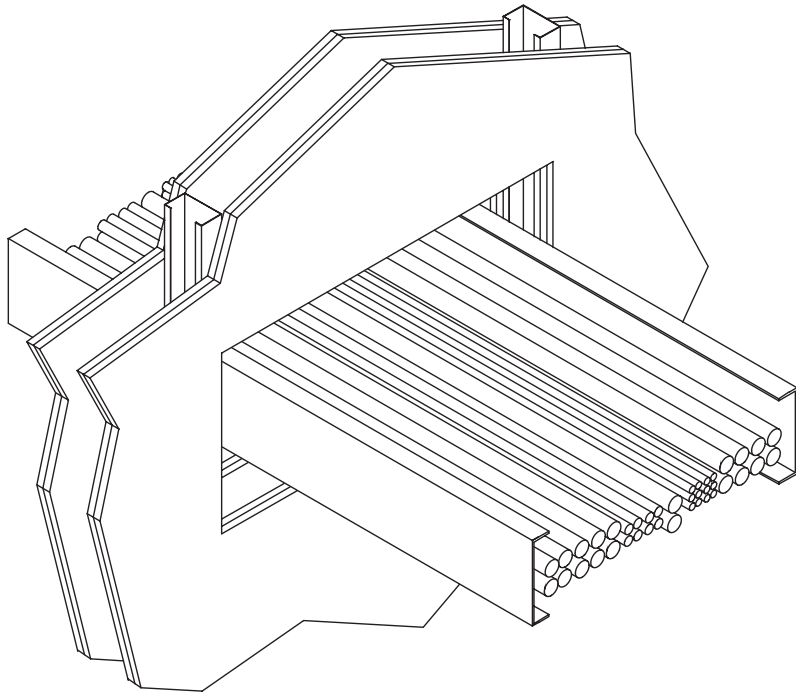
See page 16 on the back cover of this document for a Typical Bill of Materials

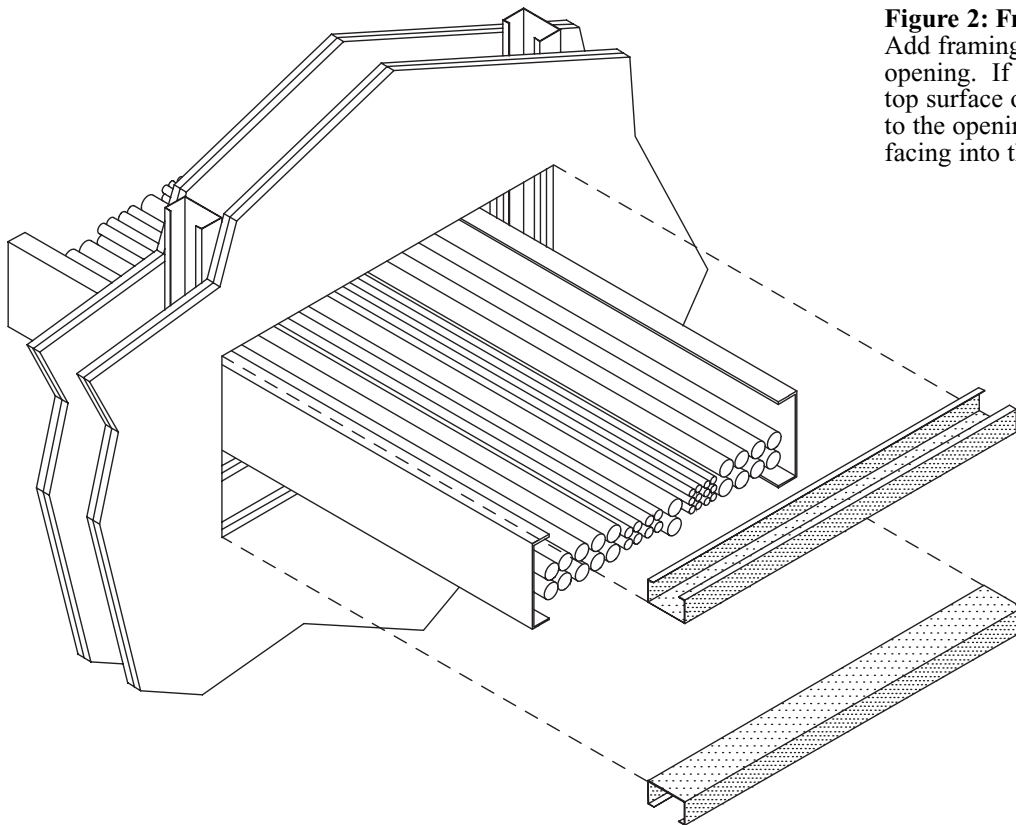based on the system shown to the left.
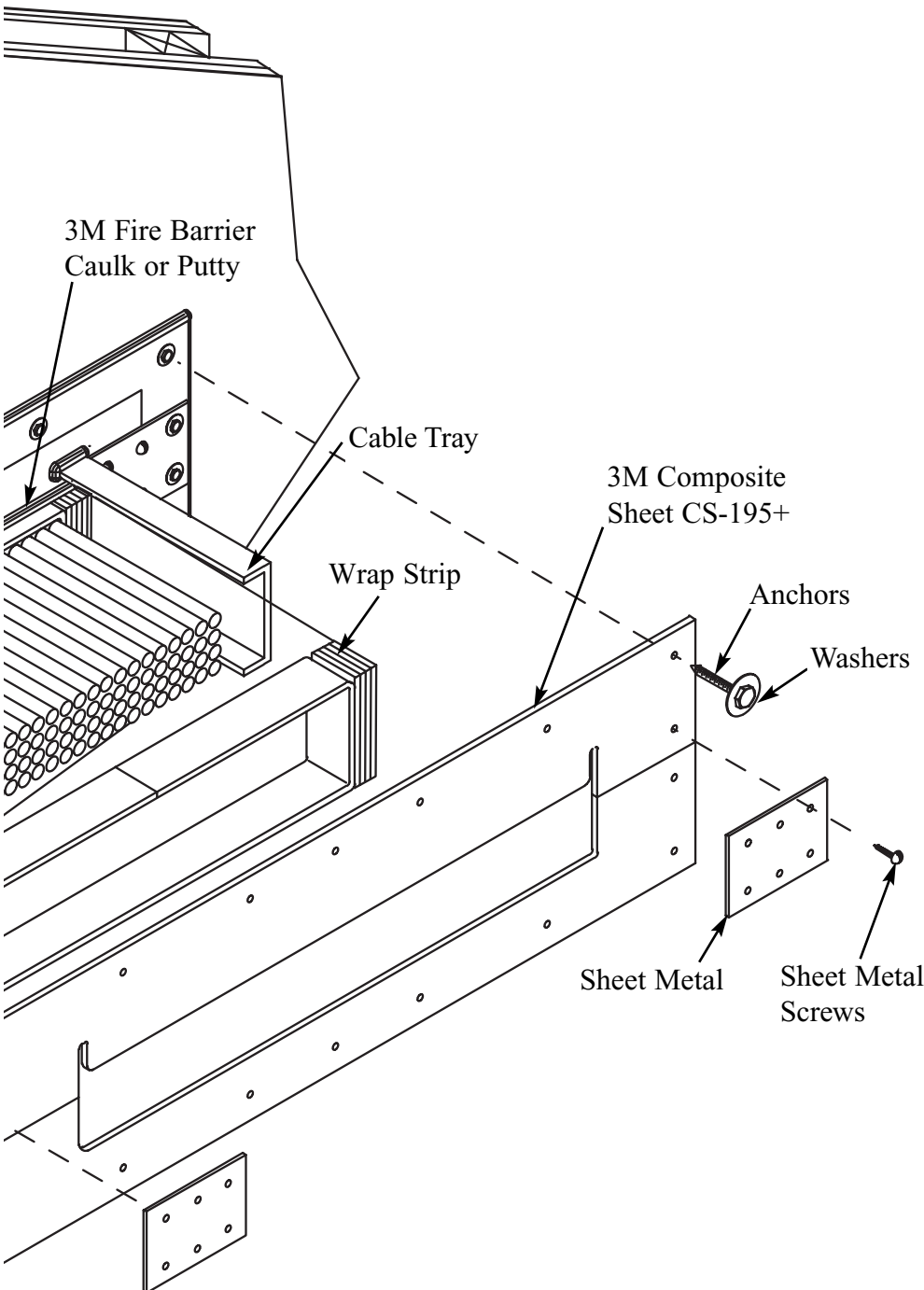
Detailed Step-by-Step Instructions

Based on W-L-4004

Figure 1: Single Cable Tray
2 hour fire-rated gypsum wallboard assembly with a single cable tray. Tray must be centered in opening and supported on each side of the wall. Studs must be located on each side of the opening.

Figure 2: Frame Opening
Add framing to top and bottom of opening. If metal studs are used, the top surface of the stud should be facing to the opening with the channel opening facing into the wall cavity.
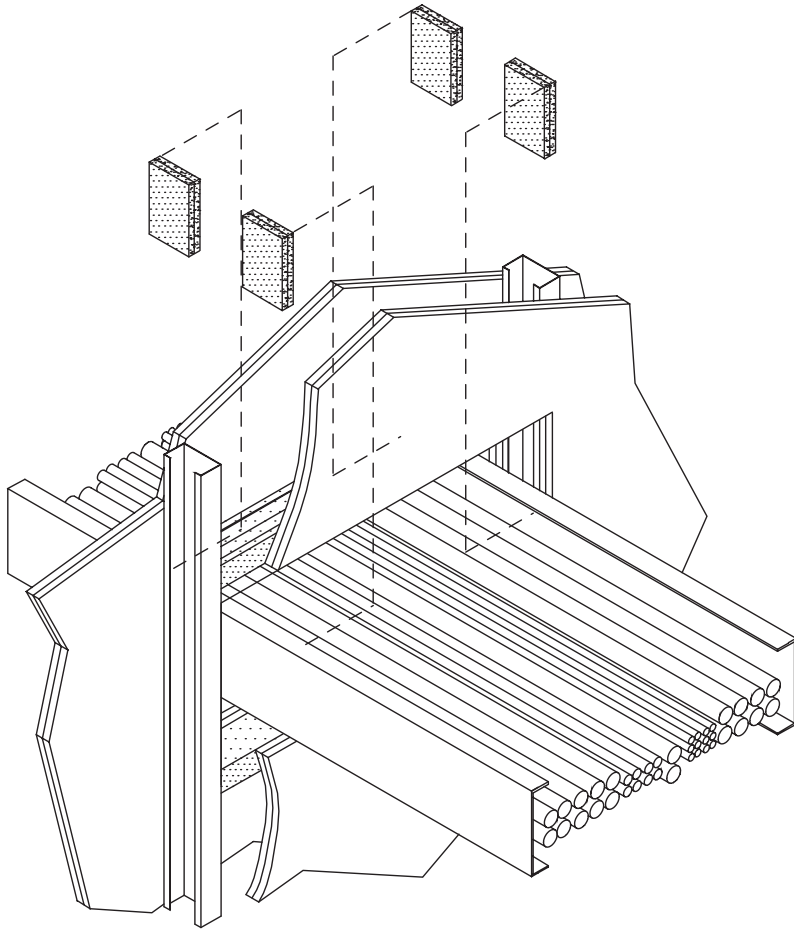
Figure 3: Install Wrap Strip In Rails
Install pieces of 3M™ Fire Barrier
FS-195+ Wrap/Strip to inside of cable
tray rails. Position wrap/strip pieces so
they are centered on the edge of the wall
face on each side of the wall. Fill rails
with wrap strip until flush will rail edge.
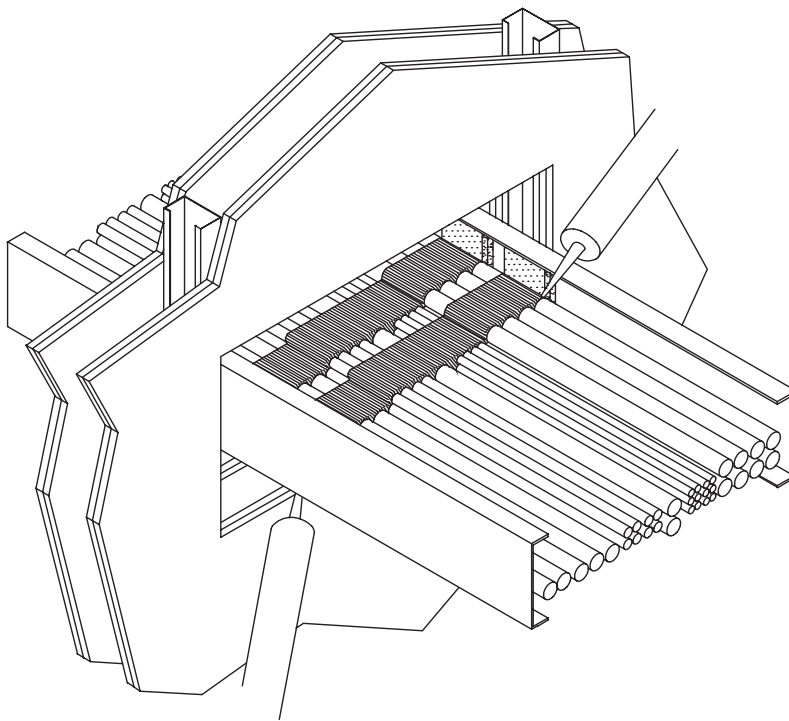
**Figure 4: Apply Caulk or Putty**
Apply 3M™ Fire Barrier CP 25WB+
caulk between cables and 2 inches
(5 cm) wide across top of cables as a
bedding for wrap/strip. 3M™ Fire
Barrier Moldable Putty+ can be used as
an alternate in some systems. When
Moldable Putty+ is used, putty does not
need to be installed between cables.
Caulk or putty should be applied to top
and bottom of cable tray on both sides
of the wall.
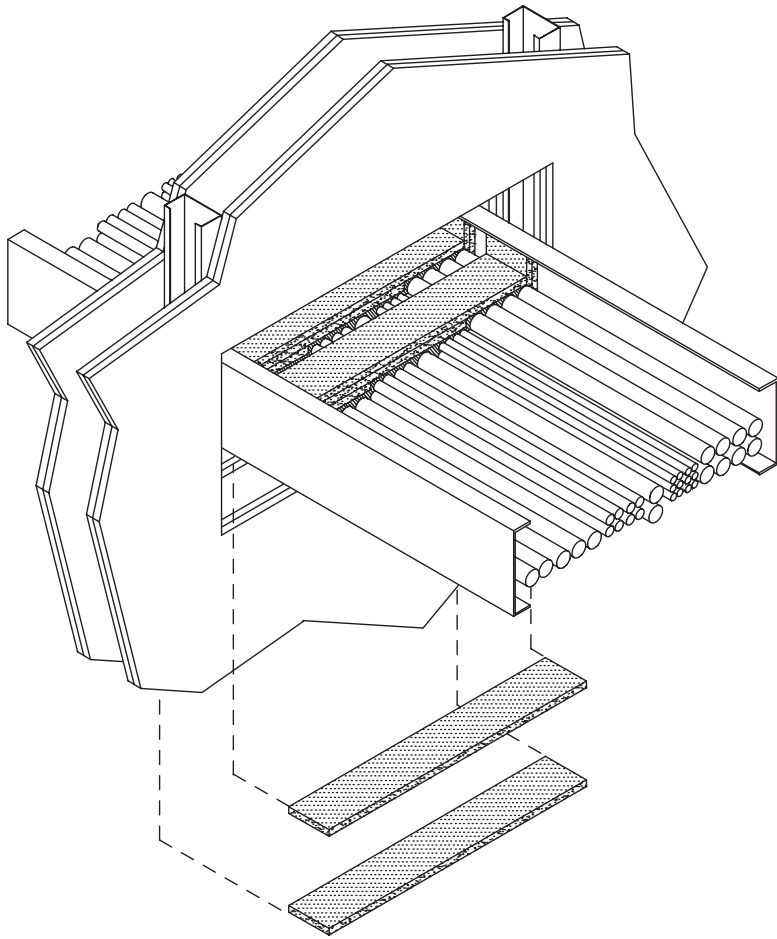
Figure 5: Install Wrap/Strip Around Cables

Install pieces of 3M™ Fire Barrier FS-195+ Wrap/Strip over the top of caulk or putty. Fill low areas with short pieces or shape wrap/strip to follow contours of cable. Wrap/strip can be wrapped around cables in a continuous piece or it can be cut and tightly abutted to wrap/strip pieces in cable tray rails. Wrap/strip should be installed to both top and bottom of cable tray. Use filament tape similar to 3M™ Scotch Tape 898 to secure wrap/strip in place on bottom of cable tray.
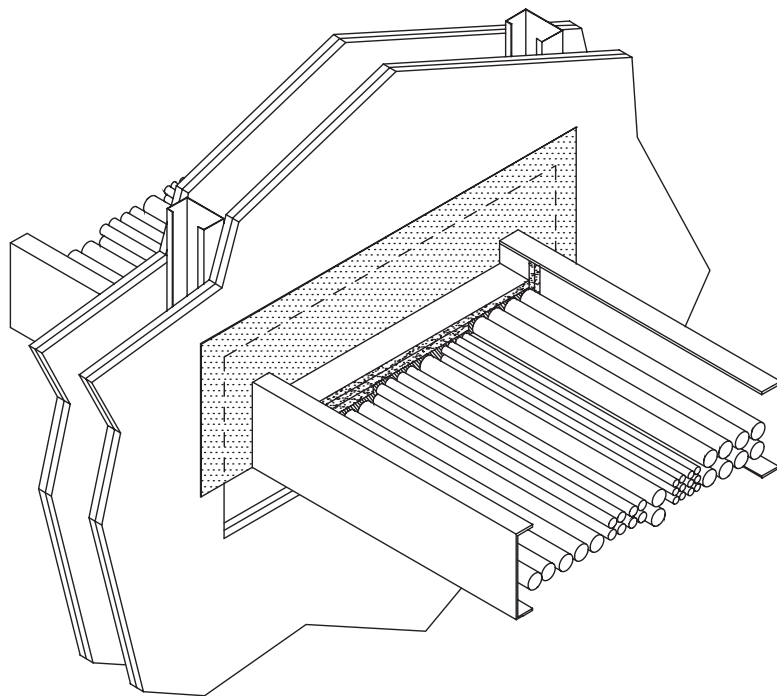
Figure 6: Make a Template

Use cardboard, marking pencils and scissors to make a template for the size and shape needed for the composite sheet. A 2 inch (5 cm) minimum overlap onto the adjacent wall should be maintained. Plan the size of the first piece so only one piece requires contour cuts. The fewer pieces that need contours cuts the quicker the installation will be. Refer to figure 7 and 8 for more information.
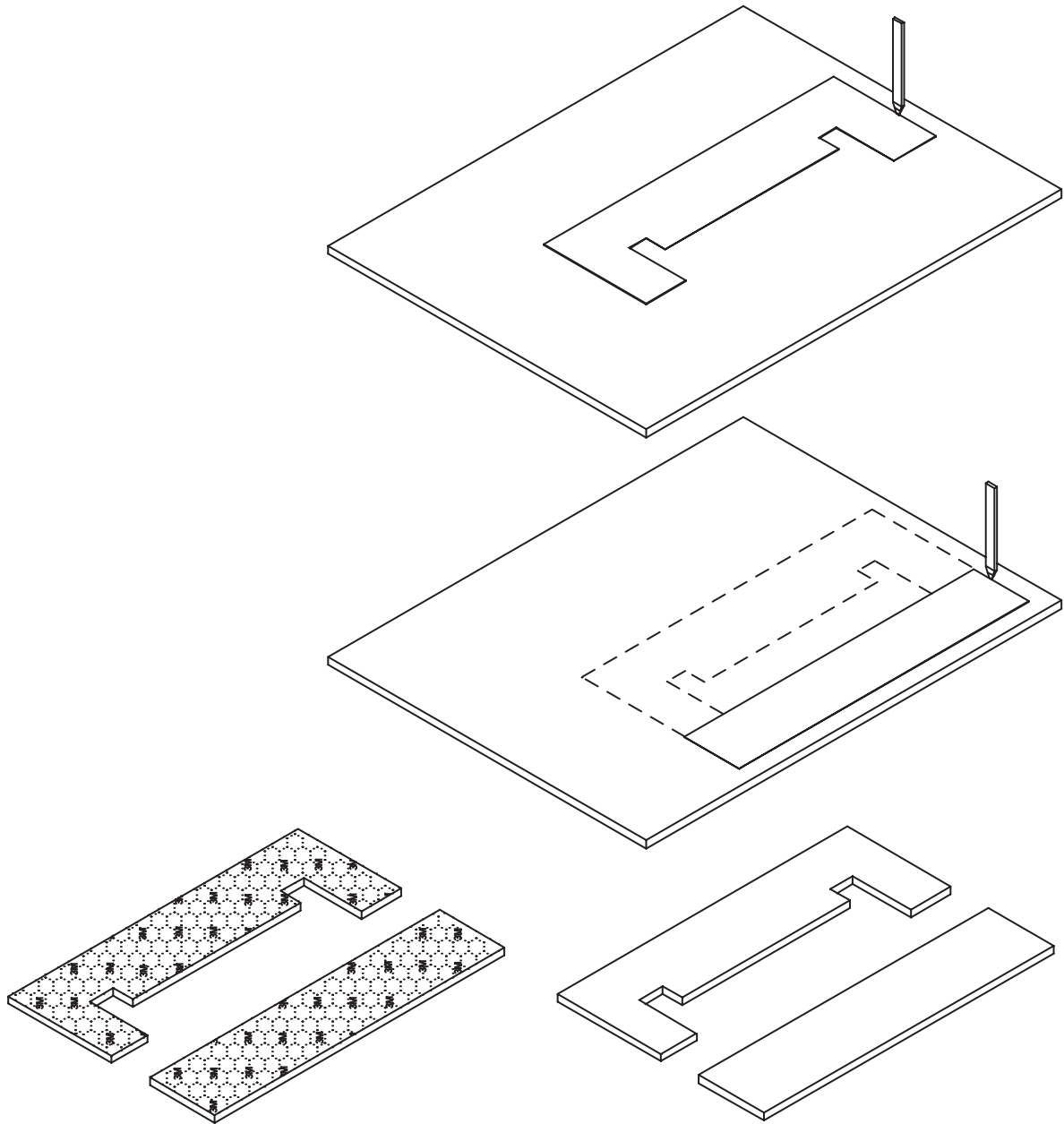
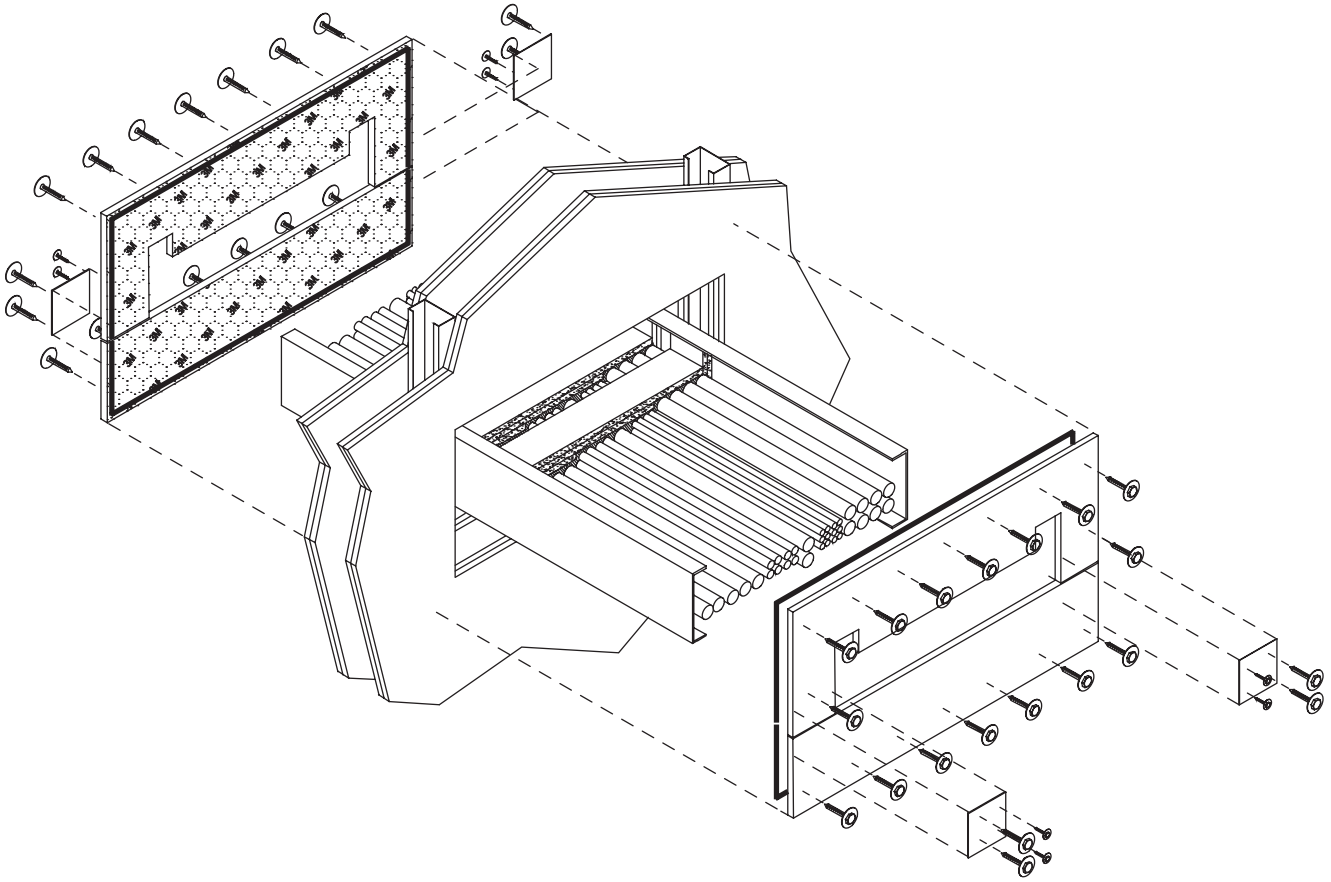**Figure 7: Cut Composite Sheet**
Use the cardboard template to mark the 3M™ Fire Barrier CS-195+ Composite Sheet. Mark the sheet metal side not the foil side that is printed with 3M logos and has chicken wire embedded under the foil. Cut two pieces from the template. Then cut two more pieces for the bottom of the opening. With proper planning many applications will only require one contour cut piece for each side the other can be measured and cut rectangular as shown above. Four pieces total will be needed, two for each side of the wall. Cut the composite sheet using an electric jig saw. Use a metal file to remove burs from the cut edges.

Figure 8: Fasten Composite Sheet to Wall.
Apply 3M™ Graphite Intumscent Seal (GIS) to the back side of the composite sheet (the side with the 3M logos). Position the GIS slightly away from the edge of the composite sheet. Fasten the composite sheet in place. Use sheet metal and sheet metal screws to cover the composite sheet seams.

Alternate anchoring methods for gypsum wall systems include threaded rod through the walls with wing nuts. Occasionally the composite sheet needs to be removed. An anchoring system that allows easy removal and re-installation decreases labor and prevents workers from having to install new composite sheet if a penetration has to be modified.
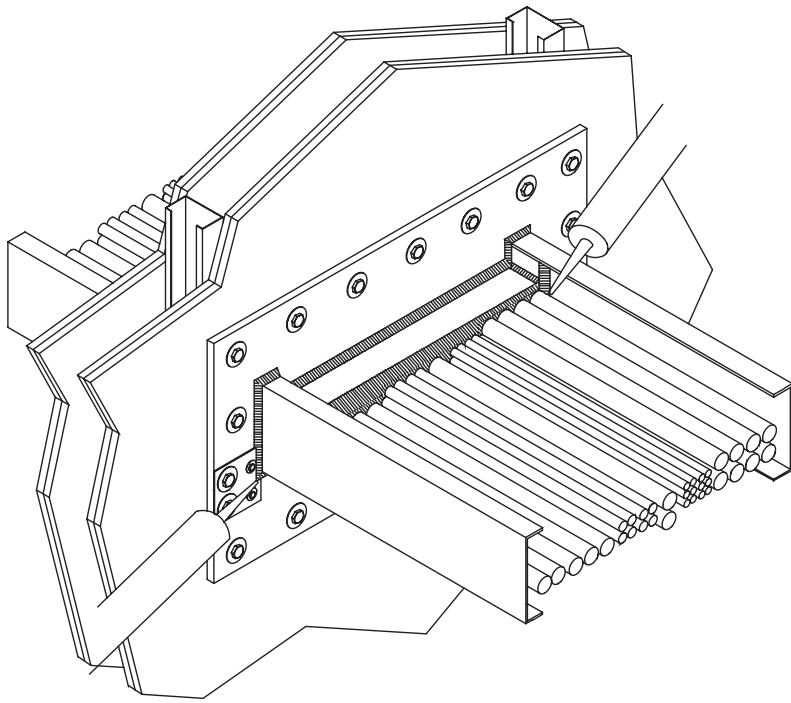
Figure 9: Apply Caulk or Putty
Apply 3M™ Fire Barrier CP 25WB+ Caulk or 3M™ Fire Barrier Moldable Putty+ around cable tray to fill the annular space between the edge of the composite sheet and the wrap strip. Also, cover the edges of the wrap strip and fill any spaces between layer, rails and other crack where smoke could penetrate during a fire. If 3M™ GIS is used as the smoke seal, no caulk or putty is needed at the outer perimeter of the composite sheet.
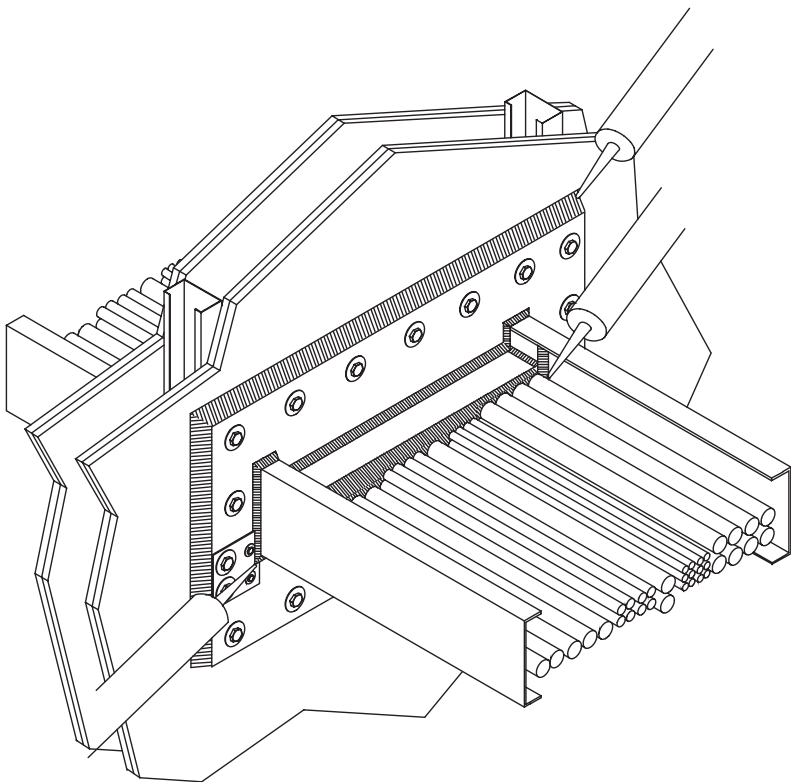
Figure 10: Alternate Perimeter Smoke Seal
If 3M™ GIS was not used on the back side of the composite sheet before fastening it to the wall, apply caulk or putty at the composite sheet perimeter as a smoke seal.

Concrete Floor Systems

C-AJ-4003 with Single Cable Tray and Multiple Cable Tray
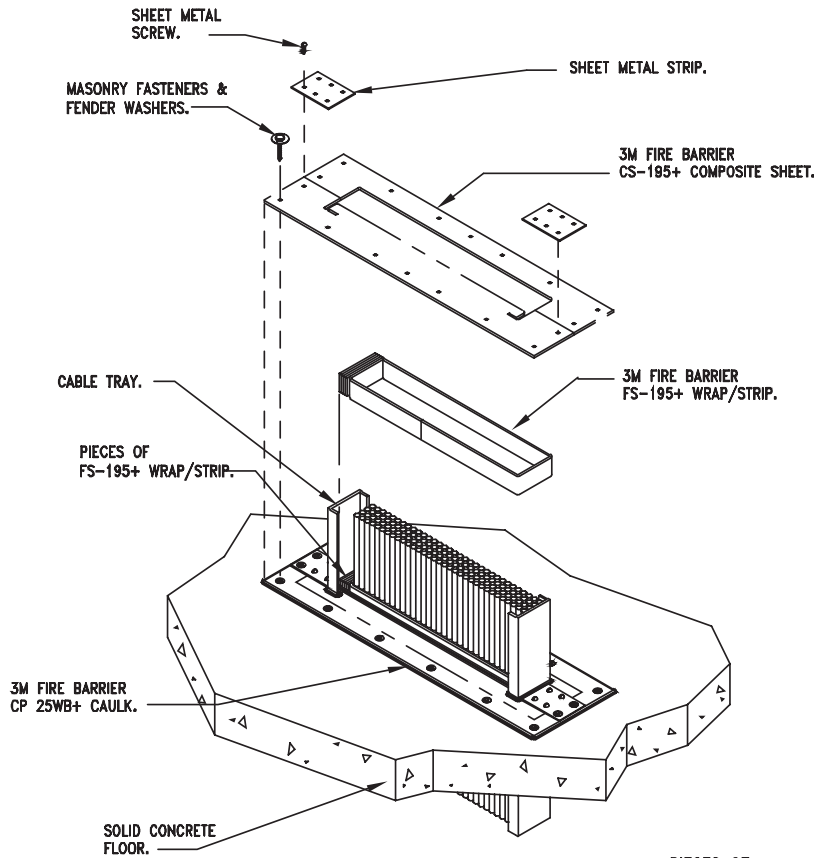
Figure 11: Single Cable Tray Option C-AJ-4003

SHEET METAL SCREW.

MASONRY FASTENERS & FENDER WASHERS.

SHEET METAL STRIP.

3M FIRE BARRIER CS-195+ COMPOSITE SHEET.

CABLE TRAY.

3M FIRE BARRIER FS-195+ WRAP/STRIP.

PIECES OF FS-195+ WRAP/STRIP.

3M FIRE BARRIER CP 25WB+ CAULK.

SOLID CONCRETE FLOOR.

PIECES OF FS-195+ WRAP/STRIP.

UNISTRUT FRAMING

3M FIRE BARRIER CS-195+ COMPOSITE SHEET.
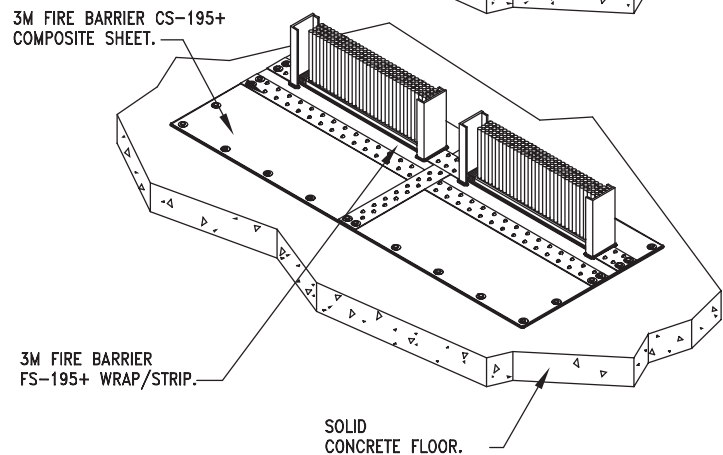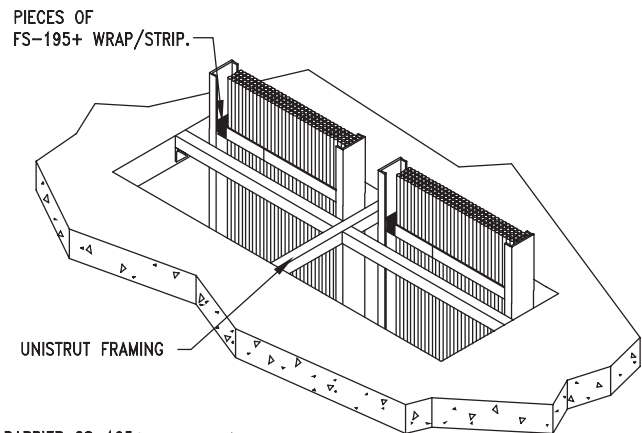
Figure 12: Double Cable Tray Option C-AJ-4003

3M FIRE BARRIER FS-195+ WRAP/STRIP.

SOLID CONCRETE FLOOR.

Concrete Floor Systems

F-B-3004 Cable Penetration With Curb Retrofit
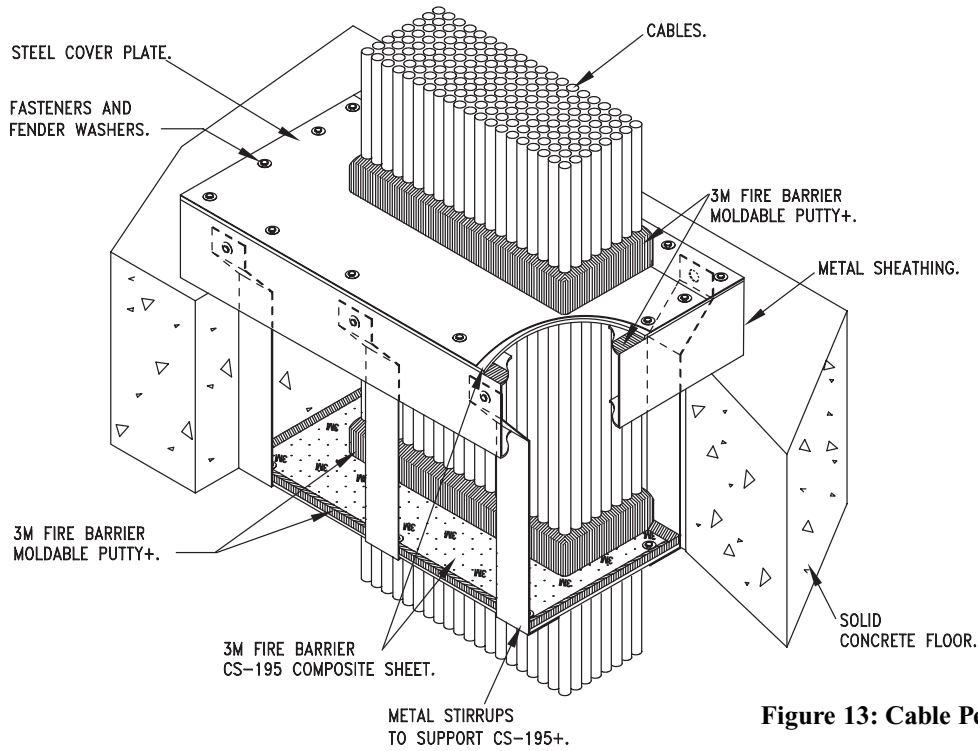
Figure 13: Cable Penetration with Curb Retrofit

Concrete Wall Systems
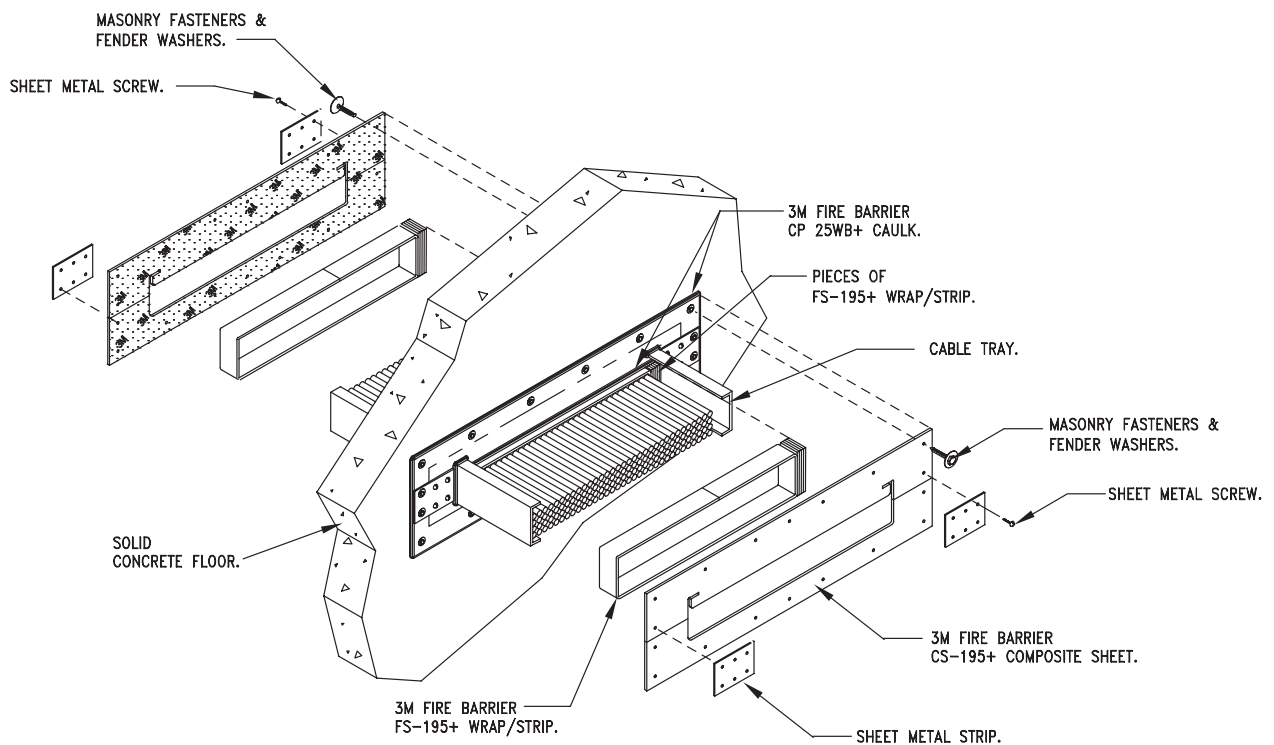
Figure 14: Concrete Wall Application

Cable Bundle Systems

3M FIRE BARRIER CS-195+ COMPOSITE SHEET.

CONCRETE WALL ASSEMBLY.

Figure 15: Multiple Cable Bundles Through Concrete

SHEET METAL SCREWS.

3M FIRE BARRIER CP 25WB+ CAULK or MOLDABLE PUTTY.

3M FIRE BARRIER FS-195+ WRAP/STRIP.

MASONRY FASTENERS WITH FENDER WASHERS.

PENETRANTS.

MIN. 16 GAUGE STEEL TIE WIRE.

3M FIRE BARRIER FS-195+ WRAP/STRIP.

COVER STRIP OVER CS-195+ SEAMS.
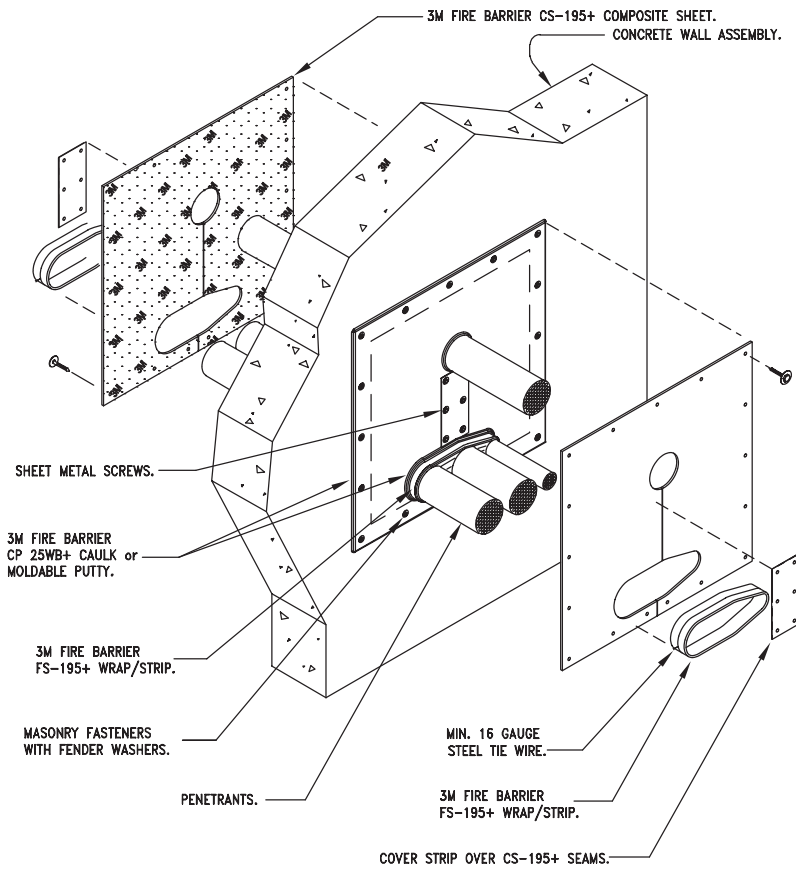
Figure 16: Cut away detail view of above drawing

CS-195+ COMPOSITE SHEET.

FS-195+ WRAP/STRIP.

MINIMUM 1" (25 mm) DEPTH OF CP 25WB+ CAULK OR MOLDABLE PUTTY.

MINIMUM 1" (25 mm) THICKNESS OF MINERAL WOOL PACKING MATERIAL.

MASONRY FASTENERS WITH FENDER WASHERS.

Corner Applications

SHEET METAL COVERS OVER
CS-195+ COMPOSITE SHEET SEAMS

3M FIRE BARRIER
CS-195+ COMPOSITE SHEET

MASONRY FASTENERS
WITH FENDER WASHERS

STEEL PIPE
or CONDUIT

3M FIRE BARRIER
CP 25WB+ CAULK or
MOLDABLE PUTTY

Figure 17: Bending composite sheet around a corner

Figure 18: Detail view of above

Composite Sheet Seaming Details

2" (50 mm) x 28 GAUGE GALVANIZED STEEL CENTERED OVER THE SEAM.

BUTT THE 3M CS-195+ COMPOSITE SHEET SEAMS AND APPLY A 1/4" (6 mm) MIN. BEAD OF CP 25WB+ CAULK OR 3M MOLDABLE PUTTY+ PRIOR TO INSTALLATION.

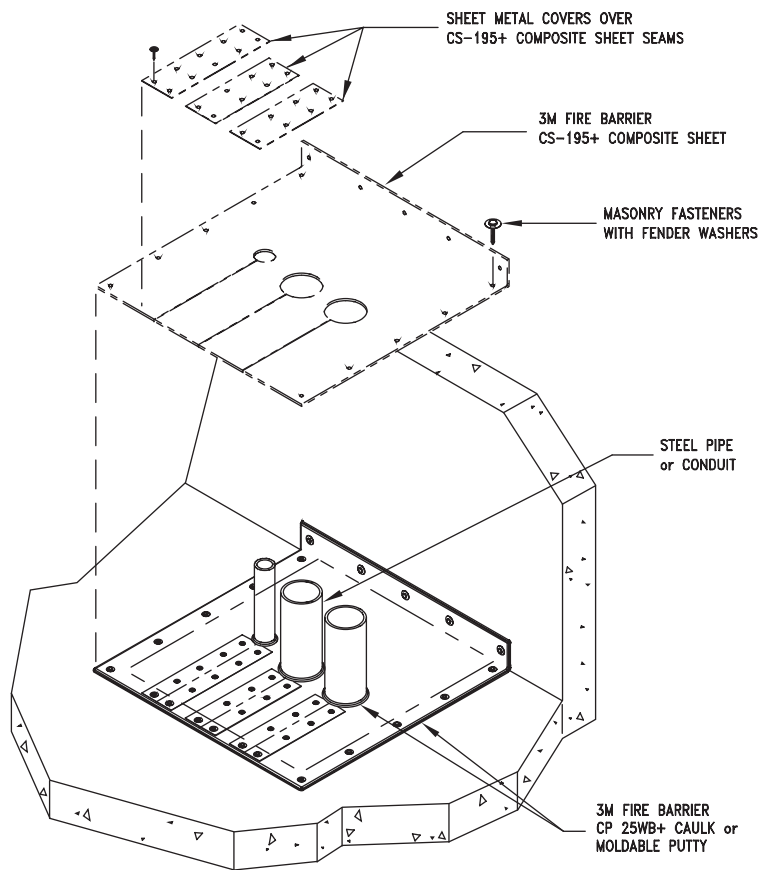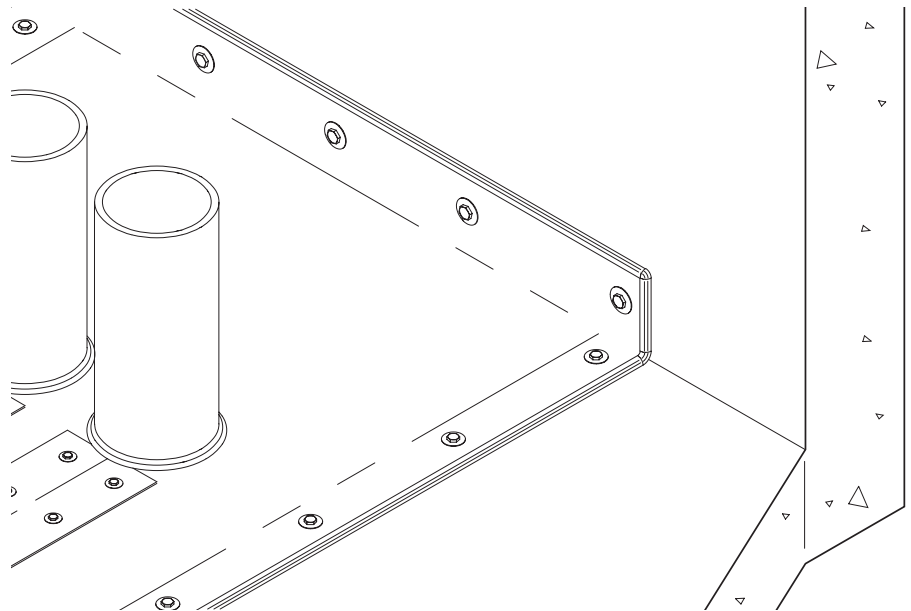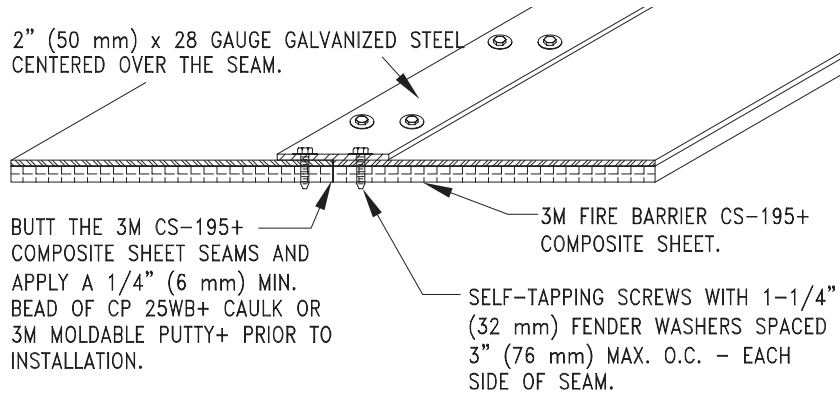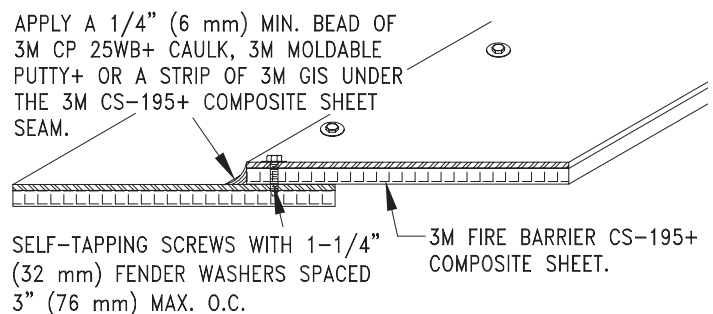3M FIRE BARRIER CS-195+ COMPOSITE SHEET.

SELF-TAPPING SCREWS WITH 1-1/4" (32 mm) FENDER WASHERS SPACED 3" (76 mm) MAX. O.C. – EACH SIDE OF SEAM.

Figure 20: Supported seam

APPLY A 1/4" (6 mm) MIN. BEAD OF 3M CP 25WB+ CAULK OR 3M MOLDABLE PUTTY+ UNDER THE 3M CS-195+ COMPOSITE SHEET SEAM.

12 GAUGE MIN. UNISTRUT OR EQUIVALENT FOR SUPPORTED SEAM. 3M CS-195+ COMPOSITE SHEET IS NOT DESIGNED TO BE LOAD BEARING.

3M FIRE BARRIER CS-195+ COMPOSITE SHEET.

SELF-TAPPING SCREWS WITH 1-1/4" (32 mm) FENDER WASHERS SPACED 3" (76 mm) MAX. O.C. – EACH SIDE OF SEAM.

1/4" (6 mm) DIA. BOLT, WASHER (BOTH SIDES) AND NUT, SPACED AT 6" (15 cm) MAX. O.C.

APPLY A 1/4" (6 mm) MIN. BEAD OF 3M CP 25WB+ CAULK OR 3M MOLDABLE PUTTY+ OVER THE 3M CS-195+ COMPOSITE SHEET SEAM.

Figure 21: Flange seam

BEND A 2" (50 mm) LIP OF EACH 3M CS-195+ COMPOSITE SHEET. BUTT TOGETHER AND BOLT COMPLETELY THROUGH BOTH SHEETS.

3M FIRE BARRIER CS-195+ COMPOSITE SHEET.

Figure 22: Overlap seam onto composite sheet

APPLY A 1/4" (6 mm) MIN. BEAD OF 3M CP 25WB+ CAULK, 3M MOLDABLE PUTTY+ OR A STRIP OF 3M GIS UNDER THE 3M CS-195+ COMPOSITE SHEET SEAM.

SELF-TAPPING SCREWS WITH 1-1/4" (32 mm) FENDER WASHERS SPACED 3" (76 mm) MAX. O.C.

3M FIRE BARRIER CS-195+ COMPOSITE SHEET.

Composite Sheet Anchoring Details

APPLY A 1/4" (6 mm) MIN. BEAD OF 3M CP 25WB+
CAULK, 3M MOLDABLE PUTTY+ OR A STRIP OF 3M GIS
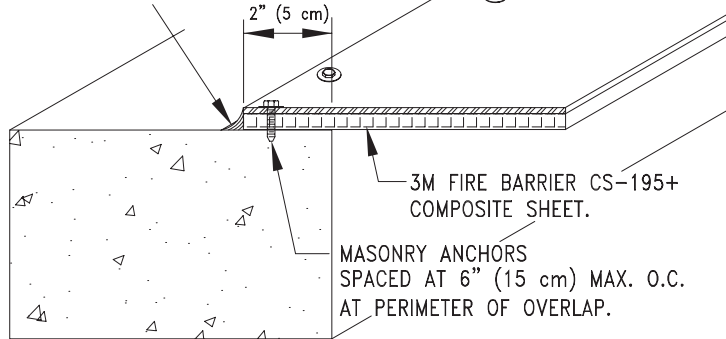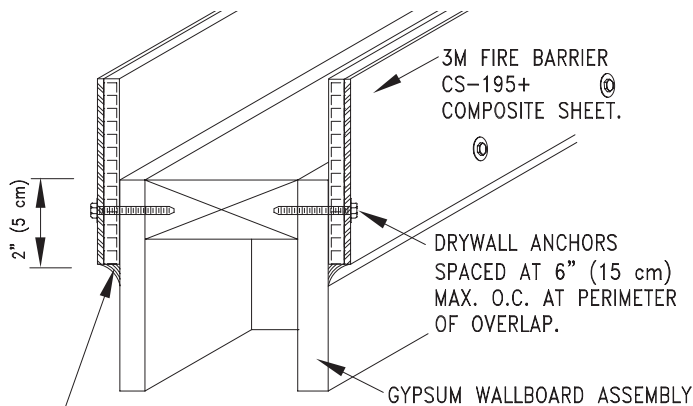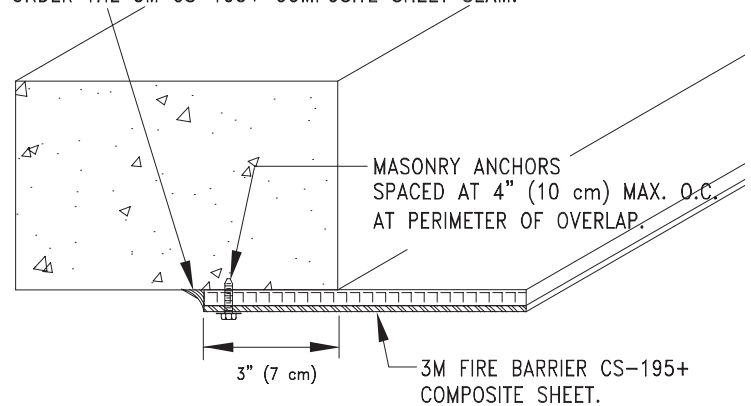UNDER THE 3M CS-195+ COMPOSITE SHEET SEAM.

2" (5 cm)

Figure 23: Overlap seam onto concrete top

3M FIRE BARRIER CS-195+
COMPOSITE SHEET.

MASONRY ANCHORS
SPACED AT 6" (15 cm) MAX. O.C.
AT PERIMETER OF OVERLAP.

Figure 24: Overlap seam onto concrete bottom

APPLY A 1/4" (6 mm) MIN. BEAD OF 3M CP 25WB+
CAULK, 3M MOLDABLE PUTTY+ OR A STRIP OF 3M GIS
UNDER THE 3M CS-195+ COMPOSITE SHEET SEAM.

MASONRY ANCHORS
SPACED AT 4" (10 cm) MAX. O.C.
AT PERIMETER OF OVERLAP.

3" (7 cm)

3M FIRE BARRIER CS-195+
COMPOSITE SHEET.

3M FIRE BARRIER
CS-195+
COMPOSITE SHEET.

Figure 25: Overlap seam onto gypsum wall

2" (5 cm)

DRYWALL ANCHORS
SPACED AT 6" (15 cm)
MAX. O.C. AT PERIMETER
OF OVERLAP.

GYPSUM WALLBOARD ASSEMBLY

APPLY A 1/4" (6 mm) MIN. BEAD OF 3M CP 25WB+
CAULK, 3M MOLDABLE PUTTY+ OR A STRIP OF 3M GIS
UNDER THE 3M CS-195+ COMPOSITE SHEET SEAM.

Product Ordering Information

Typical Bill of Materials
Below is a list of 3M Firestopping Products, other materials and tools needed to install 3M™ Fire Barrier CS-195+ Composite Sheet systems.

All products are not used in every system. For example either 3M™ Fire Barrier CP 25WB+ Caulk or 3M™ Fire Barrier Moldable Putty+ will be used in particular system but not both. 3M™ Fire Barrier FS-195+ Wrap/Strip is used in all systems. 3M™ Scotch™ Filament Tape 898 is only used to temporarily secure wrap strip to the bottom of cable trays before composite sheet is installed.

Material Sold by 3M
1. 3M™ Fire Barrier CS-195+ Composite Sheet
2. 3M™ Fire Barrier FS-195+ Wrap/Strip
3. 3M™ Fire Barrier CP 25WB+ Caulk
4. 3M™ Fire Barrier Moldable Putty+ Stix (MPS-2+)
5. 3M™ Graphite Intumescent Seal (GIS)
6. Scotch™ Filament Tape 898

Materials Not Sold by 3M
1. Sheet metal
2. #10 sheet metal screws
3. 1/4-20 by 1 inch H.H. cap screws
4. 1-1/4 inch fender washers
5. Masonry or drywall anchors
6. Threaded rod and wings nuts (alternate to item 5)
7. Cardboard

Product	Size	Packaging	
		1 Each/box	Bulk (Greater than 10 each)
CS-195+	16 in. x 28 in. (406.4 mm x 711.2 mm)	X	X
	24 in. x 36 in. (609.6 mm x 914.4 mm)	X	X
	36 in. x 36 in. (914.4 mm x 914.4 mm)	X	X
	36 in. x 41 in. (914.4 mm x 1041.4 mm)	X	X
	28 in. x 52 in. (711.2 mm x 1320.8 mm)	X	X

Product	Size	Units per Carton
FS-195+ Wrap/ Strip	2 in. x 24 in. (50.8 mm x 609.6 mm)	10 rolls
	1 in. x 24 in. (25.4 mm x 609.6 mm)	20 rolls

Product	Size	Cubic Inches	Units per Carton
MPS-2+	1.6 in. x 11 in. (40.6 mm x 279 mm)	21.2	10 rolls

Product	Fl. oz.	Cubic Inches	Units per Carton
CP 25WB+ Caulk:			
Cartridge	10.5 (310 mL)	19.0	12
Sausage	20.0 (591 mL)	36.0	10
Cartridge	27.0 (798 mL)	48.7	6
2 Gallon	256.0 (7.57 L)	462.0	1
5 Gallon	640.0 (19 L)	1155.0	1

Tools Needed
1. C-Clamp, 6 inch (15 cm)
2. Contour Gage
3. Scissors
4. Electric Drill with 3/8 inch (9 mm) bit
5. Electric nibbler
6. Metal file
7. Perforating punch, 7/16 inch (11 mm)
8. Rachet box wrench, 9/16 inch (14 mm)
9. Electric jig saw
10. Safety Glasses
11. Work Gloves

Product	Size	Units per Carton
GIS	1/16 in. x 1/2 in. x 51 ft. (1.6 mm x 12.7 mm x 15.24 m)	10 rolls

3M

Specified Construction Products Department

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