ALLOWABLE PENETRATION DETAILS

Canadian Building Codes allow the Composite TotalJoist Floor System to have penetrations in the gypsum board ceiling for common fixtures and outlets without sacrificing the 2-hour fire rating. Details should always be approved by local code officials to ensure acceptance in your region. Details and descriptions of typical penetrations in the gypsum board are provided in Penetration Details 1 through 5.

PENETRATION DETAIL 1
DUCT PENETRATION, UNPROTECTED

- Opening area shall not exceed 20 sq. in. (130 cm²)
- No dimension of an opening shall exceed 15.75" (400 mm), and support (not shown) shall be provided for openings 6" (150 mm) or greater
- Aggregate area of openings shall not exceed 2% of ceiling area
- 78" (2 m) min. spacing between adjacent duct openings

PENETRATION DETAIL 2
DUCT PENETRATION, PROTECTION OPTION 1

- All conditions from unprotected duct apply except the following:
  - Opening area shall not exceed 144 sq. in. (930 cm²)
  - Firestop flap shall be tested in accordance with CAN4-S112.2
**ADDITIONAL INSTALLATION NOTES:**
- All conditions from unprotected duct apply except the following:
  - Opening shall not exceed 144 sq. in. (930 cm²)
  - 5/8" (15.9 mm) CGC / USG FireCode C Gypsum Board shall be mechanically fastened to top of duct and extended min. 8" (203 mm) past all edges of opening

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**ADDITIONAL INSTALLATION NOTES:**
- All conditions from unprotected duct apply except the following:
  - Opening shall not exceed 144 sq. in. (930 cm²)
  - Firestop flap shall be tested in accordance with CAN4-S112.2
ADDITIONAL INSTALLATION NOTES:

- Individual outlet box openings shall not exceed 16 sq. in. (103 cm²)
- Aggregate area of openings shall not exceed 100 sq.in. (645 cm²) per 100 sq.ft (9.30 m²)
- Clearance between box and gypsum board shall not exceed 1/8" (3 mm)
- Electric box shall be UL Listed with metallic or non-metallic cover plate
- Please refer to your local building code and/or designer of record for detailed requirements
RATED FIRESTOPS FOR PIPES, CONDUIT, AND CABLES

Firestop details 1 through 4 illustrate how pipe, conduit, or cable penetrations can be accomplished using firestop systems that are UL Listed for Canada, a summary of which is presented in Table 1. For detailed installation information, see the associated ULC listing.

TABLE 1. COMPOSITE FIRESTOP LISTING

<table>
<thead>
<tr>
<th>Penetrant</th>
<th>Max. Size</th>
<th>Ratings (Hours)</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>FT</td>
</tr>
<tr>
<td>Cable Bundle*</td>
<td>2-1/2” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Copper Tubing (Min. Type M)</td>
<td>4” ø</td>
<td>2</td>
<td>1/4</td>
</tr>
<tr>
<td>Copper Pipe (Regular or Heavier)</td>
<td>4” ø</td>
<td>2</td>
<td>1/4</td>
</tr>
<tr>
<td>CPVC Pipe (See Detail for Allowable SDR)*</td>
<td>4” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Iron Pipe (Cast or Ductile)</td>
<td>4” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pex Tubing (SDR 9)</td>
<td>2” ø</td>
<td>2</td>
<td>1/2</td>
</tr>
<tr>
<td>PVC Pipe (Schedule 40)**</td>
<td>4” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Rigid Non-Metallic Conduit (Schedule 40)</td>
<td>4” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Steel Pipe (Schedule 40)</td>
<td>4” ø</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Steel Tubing (Conduit)</td>
<td>4” ø</td>
<td>2</td>
<td>1/4</td>
</tr>
<tr>
<td>XFR Pipe (Schedule 40)</td>
<td>4” ø</td>
<td>2</td>
<td>1/2</td>
</tr>
</tbody>
</table>

F - Fire Rating
FT - Fire and Temperature Rating
FH - Fire and Hose Rating
FTH - Fire, Temperature, and Hose Rating

NOTES
* See detail for allowable cables.
** Other listings are available in the ULC Directory
FIREFIGHT DETAIL DETAILS

FIREFIGHT DETAIL 1
4" COPPER, CAST IRON, EMT, OR STEEL PIPE
F-E-1027

1/4" (6 mm) diameter bead of sealant at point contact locations

0" to 1/4" gap

ADDITIONAL INSTALLATION NOTES:
- Pipes of lesser diameter acceptable
- See UL Listing for detailed information
- Optional Chase Wall, see UL Listing
- Mineral wool to be min. 4 pcf
- See Table 1 for ratings

FIREFIGHT DETAIL 2
4" PVC, CPVC, PVC CONDUIT OR XFR PIPE
F-E-2008

28 ga. steel sleeve, with depth 1/2" to 1" greater than floor slab, fastened with min. (2) 1/8" x 1-1/2" masonry anchors

1/2" (13 mm) Self Seal GG-266 (Nuco Inc.)

Pack to 1/2" from top of floor with mineral wool

1/4" to 7/8" gap for 3", 4" ø pipes

5/16" to 7/8" gap for 2" ø or smaller pipes

ADDITIONAL INSTALLATION NOTES:
- Pipes of lesser diameter acceptable
- See UL Listing for detailed information
- Optional Chase Wall, see UL Listing
- Mineral wool to be min. 4 pcf
- SDR 13.5 for CPVC pipe
- See Table 1 for ratings
FIRESTOP DETAIL 3
2" PVC, CPVC, PVC CONDUIT OR PEX PIPE
F-E-2010

ADDITIONAL INSTALLATION NOTES:
• Pipes of lesser diameter acceptable
• See UL Listing for detailed information
• Optional Chase Wall, see UL Listing
• SDR 13.5/SDR 17 for CPVC pipe
• See Table 1 for ratings

FIRESTOP DETAIL 4
MAX. 2-1/2" CABLE BUNDLE
F-E-3018

ADDITIONAL INSTALLATION NOTES:
• Cable/wire of lesser diameter acceptable
• See UL Listing for detailed information
• Optional Chase Wall, see UL Listing
• Mineral wool to be min. 4 pcf
• See Table 1 for ratings
• The following types and sizes of cables may be used:
  • Max 2/C No. 12 AWG copper conductor, aluminum clad or steel clad (BX) cable.
  • B. Max 2/C No. 14 AWG copper conductor, aluminum clad or steel clad (BX) cable.
  • C. Through Penetrating Product+ - Any cables, Armored Cable+ or Metal Clad Cable+ currently Classified under the Through Penetrating Product category.
  • Max 25 pair No. 22 AWG copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.
  • Max 7/C No. 12 AWG copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.
  • Max 4/C No. 10 AWG copper conductor, aluminum clad or steel clad (BX) cable.
  • Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.
  • Type RG/U coaxial cable with fluorinated ethylene insulation and jacket.
FIRESTOP DETAIL 5
CHASE WALL SCHEMATIC
LSF WALL FRAMING

Seal top Penetration as per UL Listed Firestop System Design (See Table 1)

Firestop Detail as per UL Listed Firestop System Design (See Table 1)

Rated steel or wood wall as per UL Design Series U300, U400, or V400