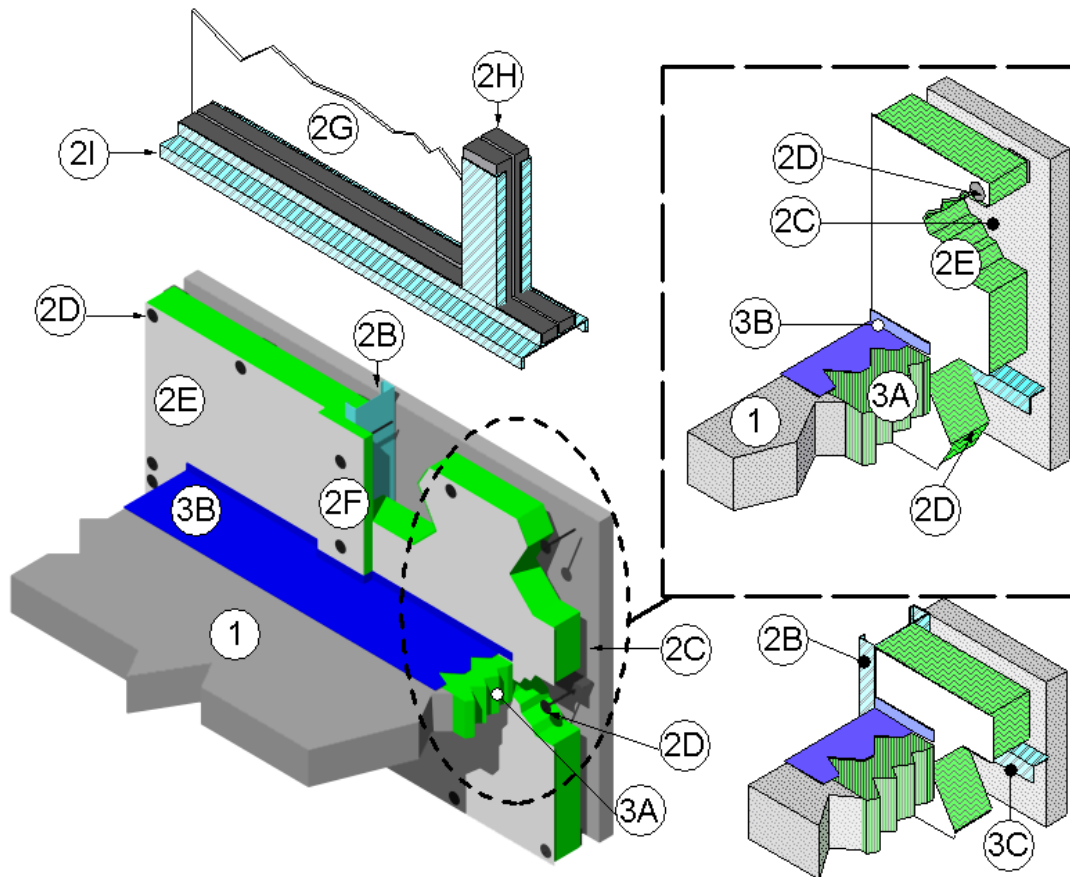


3M Company
Design No. 3MU/BPF 180-01
Perimeter Fire Barriers
ASTM E 2307/ASTM E 1399 Cycling

| FireDam™ Spray 200, Fire Barrier Watertight Spray, Fire and Water Barrier Tape FWBT, Fire Barrier 1000 NS Silicone Sealant, and Fire Barrier 1003 SL Silicone Sealant | | |
|---|-------------------------------|-------------------------------|
| | 50% Compression | 33% Compression |
| F-Rating | 3 Hr | 3 Hr |
| T-Rating | 2-1/2 Hr | 1-1/2 Hr |
| L-Rating (UL 2079) | <1.0 SCFM/LF | <1.0 SCFM/LF |
| Cycling (%) | Class IV: 500 cycles @ 30 cpm | Class IV: 500 cycles @ 30 cpm |
| Horizontal | ± 16.7 | ± 11 |
| Vertical | ± 6.25 | |

‡: Fire Barrier Watertight Spray cycling rating limited to ±10% horizontal movement





1. **CONCRETE FLOOR ASSEMBLY:** 3 hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100 to 150 pcf, having a min. thickness of 4-1/2 in. at the joint face. When a longitudinal recess (blockout) is required to contain an architectural joint system, increase concrete floor assembly thickness to maintain a min. thickness of 4-1/2 in. and accommodate depth of blockout formed in the concrete: blockout width unrestricted.
2. **CURTAIN WALL ASSEMBLY:** Incorporate the following construction features:
 - A. **MOUNTING ATTACHMENT –** (Not shown) Attach steel framing (Item 2B) to the structural framing according to the curtain wall manufacturer's instructions. When required, connect the mounting attachments to the joint face of the concrete floor assembly (Item 1) according to the curtain wall manufacturer's instructions. Limit distance between mounting attachments to max 120 in.
 - B. **STEEL STUD FRAMING –** Use min. 3-5/8 in. x 1-5/8 in., 18 GA, C-shaped steel studs as vertical framing. Attach according to the curtain wall system manufacturer's guidelines. Limit distance between vertical steel stud framing to max. 60 in. Limit distance between horizontal steel stud framing to min. 10 in. oc. When required, install horizontal structural framing members according to the curtain wall system manufacturer's guidelines and, in the spandrel area, located flush with the top surface of the concrete floor assembly (Item 1).
 - C. **CONCRETE PANELS –** Use any non-combustible exterior concrete-based panels. Use min. 1-1/2 in. thick, 12 in. high, 12 in. long panels. Attach concrete panels to steel stud framing (Item 2B) according to the curtain wall system manufacturer's requirements.
 - D. **IMPALING PINS –** Use with curtain wall insulation (Item 2E) and framing covers (Item 2F), locate, size, and install impaling pins according to the curtain wall system manufacturer's guidelines, or be a min. 4-1/2 in. long, 12 GA pin attached to one of the following: a nominal 2 in. x 2 in. plate; a nominal 2 in. x 2 in. x 2 in. long angle; or can be directly attached to the steel framing (Item 2B) using a stud gun. Space impaling pins a max. of 12 in. on center (oc) vertically and 20 in. oc horizontally. Install impaling pins around the periphery of the curtain wall insulation (Item 2E) so that its interior face is flush with the interior face of the steel framing (Item 2B).
 - E. **CURTAIN WALL INSULATION –** Use nominal 24 in. wide, 4 in. thick 4 pcf density, 3 in. thick 6 pcf density, or 2 in. thick 8 pcf density, mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder), which is exposed to the room interior and installed in the stud cavity. Install curtain wall insulation between steel framing (Item 2B). Secure curtain wall insulation with clips, impaling pins, or friction fit using curtain wall insulation length at least 1/4 in. longer than the distance between steel framing (Item 2B). Seal all meeting edges of curtain wall insulation with nominal 4 in. wide pressure sensitive aluminum foil-faced tape (not shown) centered over the junction so that approximately 2 in. of tape covers each edge of the adjacent curtain wall insulation. Apply pressure sensitive aluminum foil-



faced tape over all meeting edges of curtain wall insulation and framing covers (Item 2F) so that approximately 2 in. covers each edge of the adjacent material. Install curtain wall insulation flush with the interior face of the steel framing (Item 2B). Install 24 in. wide curtain wall insulation without vertical seams, spanning the full length between steel framing (Item 2B). Locate horizontal seams in the curtain wall insulation at least 6 in. from the top surface of the perimeter joint protection (Item 3). Maintain 1-1/4 in. air cavity between curtain wall insulation and glass panels (Item 2C). Option: In lieu of filling the full depth of the stud cavity with 4 in. thick, 4 pcf density curtain wall insulation, use min. 2 in. thick, 8 pcf density curtain wall insulation mechanically secured (do not secure by friction fit) and use additional horizontal support angle (not shown). Use only Intertek certified products meeting the above min requirements.

- F. **FRAMING COVERS** – Make from strips of min. 1 in. thick × min. 4 in. wide, 8 pcf density, mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder), which is exposed to the room interior. Center framing covers over all steel framing (Item 2B) and secure using impaling pins (Item 2D). Do not pass framing covers through the perimeter joint protection (Item 3). Allow framing covers to abut top and bottom surfaces of the perimeter joint protection (Item 3) provided that no deformation occurs. Use only Intertek certified products meeting the above min requirements.
- G. **REINFORCING ANGLE** – Mount a min. 1-1/2 in. × 1-1/2 in., 20 GA, galvanized steel angle to the steel stud framing (Item 2B) so that the vertical leg serves as a

backer to the exterior face of the curtain wall insulation (Item 2E), and the horizontal leg extends away from the curtain wall insulation, and is located at the centerline of the packing material (Item 3A). Size the angle 12 in. longer than the span between the interior edges of the steel stud framing (Item 2B) and form the angle so that it has a 4 in. vertical leg on each end. Secure the 4 in. vertical leg on each end to the steel stud framing (Item 2B) on each side with three No. 10 steel self-tapping sheet metal screws placed in a triangular fashion with a max. spacing of 2 in. oc.

- 3. **PERIMETER JOINT PROTECTION:** Do not exceed an 8 in. nominal joint width (joint width at installation). Incorporate the following construction features for the perimeter joint protection (also known as perimeter fire barrier system):
 - A. **PACKING MATERIAL** – Use a min. 4 in. thick, 4 pcf density, mineral wool batt insulation installed with the fibers running parallel to the edge of concrete floor assembly (Item 1) and curtain wall assembly (Item 2). Cut packing material width to achieve required compression, refer below, when installed in the nominal joint width. Compress the packing material into the perimeter joint. Tightly compress together splices (butt joints) in the lengths of packing material by using min. 1/4 in. compression per piece of packing material. When a spray coating or tape is used, locate the top surface of the packing material flush with the top surface of the concrete floor assembly (Item 1). When the non-sag or self-leveling silicone sealant is used, recess the top surface of the packing material 1/4 in. from the top surface of the concrete floor assembly (Item



1). Use only Intertek certified products meeting the above min requirements.

- i. When 50% compression is required cut the width of the packing material 2 times wider than the nominal joint width.
- ii. When 33% compression is required cut the width of the packing material 1-1/2 times wider than the nominal joint width.

B. CERTIFIED MANUFACTURER – 3M Company

CERTIFIED PRODUCT – FireDam™ or Fire Barrier™

MODEL – FD Spray 200 (Elastomeric, Sprayable), Fire Barrier Watertight Spray (Elastomeric, Sprayable), or Fire and Water Barrier Tape FWBT (Tape) or FB 1000 N/S Silicone Sealant (Non-sag) or FB 1003 S/L (Self-leveling)

FILL, VOID, OR CAVITY MATERIAL – Apply either spray coating or sealant over the packing material (Item 3A) as follows:

Spray Coating – Spray apply the liquid to cover the exposed top surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply a min. wet film thickness of 1/8 in. FireDam Spray 200 or 1/10-in. Fire Barrier Watertight Spray and overlap the spray coating a min. 1/2 in.

onto the adjacent curtain wall assembly (Item 2) and concrete floor assembly (Item 1). When the spraying process is stopped and the applied spray coating cures to an elastomeric film before installation process is restarted, then overlap the edge of the cured spray coating at least 1/8 in. with the liquid spray coating.

Tape – Apply the tape such that there is a min. 1 in. overlap onto the adjacent curtain wall assembly (Item 2) and the concrete floor assembly (Item 1). Overlap joints in the tape system by 1/2 in.

Sealant – Apply non-sag or self-leveling sealant to cover the exposed surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply min. 1/4 in. thickness non-sag or self-leveling sealant over the packing material (Item 3A) and finish flush with the top surface of the concrete floor assembly (Item 1).

- C. SUPPORT CLIPS** – (Optional) Recommended for installations subject to vertical shear movement. Use standard 20 GA galvanized steel Z-shaped clips having the following nominal dimensions: 1 in. wide × 3 in. high with a 2 in. upper leg and a 3 in. lower leg.