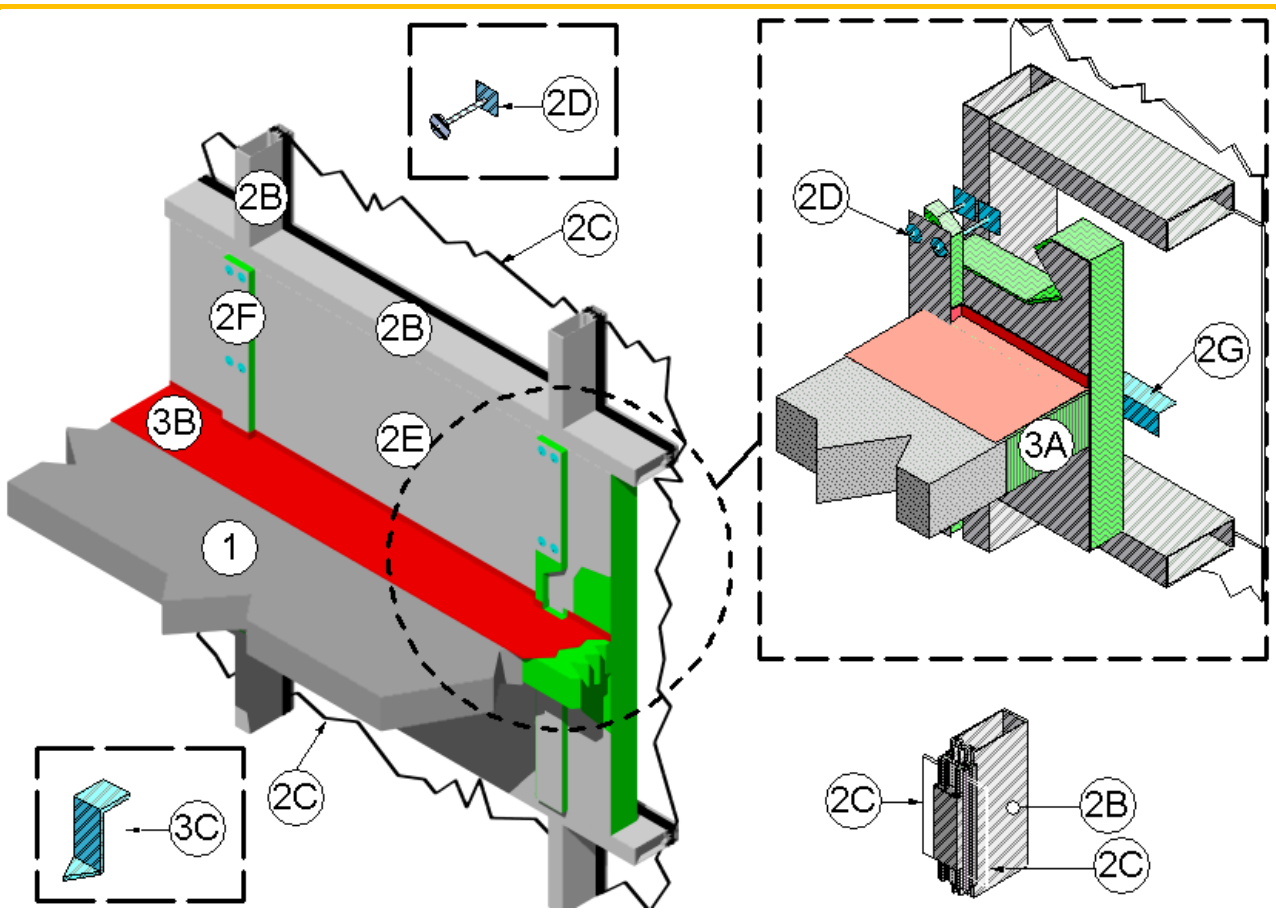
**3M Company**
**Design No. 3MU/BPF 180-02**
**Perimeter Fire Barriers**
**ASTM E 2307/ASTM E 1399 Cycling**

| | **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 (%)**<br>**Horizontal**<br>**Vertical** | Class IV: 500 cycles @ 30 cpm<br>± 16.7<br>± 6.25 | Class IV: 500 cycles @ 30 cpm<br>± 11 |

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



1. **CONCRETE FLOOR ASSEMBLY:** Max. 3 hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf, with a min. thickness of 4-1/2 in. at the joint face. Overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house the architectural cover plate. The blockout width may also vary without restriction.

2. **CURTAIN WALL ASSEMBLY:** The curtain wall assembly shall incorporate the following construction features:
   A. MOUNTING ATTACHMENT – (Not Shown) Attachment of the curtain wall framing to the structural framing shall be according to the curtain wall manufacturer's instructions. When required, the mounting attachments to the floor slab shall be connected to the joint face of the floor slab, according to the curtain wall manufacturer's instructions. Max. distance between mounting attachments shall be 10 ft.

   B. ALUMINUM FRAMING – Rectangular aluminum tubing mullions and transoms, sized according to the curtain wall system manufacturer's guidelines. Min. overall dimensions of framing required is 0.100 in. thick aluminum with a min. 5-1/2 in. height and a min. of 2-1/2 in. width of the extrusion. Mullion and transom covers are added to the external side of the framing, giving the framing system a total depth of nominal. 8 in. Mullions are to be spaced a min. 60 in. on center (oc) and transoms are to be spaced a min. 10 in. oc. Upper transom is to be located flush with the top surface of the concrete floor assembly (as measured from the bottom of the transom).

   C. GLASS PANELS – Glass panels shall be sized and installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4 in. thick clear, heat-strengthened (HS) glass or tempered glass with a max. width and height less than the aluminum framing oc spacing, which allows the glass to be secured between the notched shoulder of the aluminum framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 × 5/8 in. long screws, and a snap face (aluminum extrusion).

   D. IMPALING PINS – Min. 12 GA steel pins shall be located, sized, and installed according to the curtain wall system manufacturer's guidelines, or be a min. 1/2 in. longer than the thickness of the curtain wall insulation. Attach pins to a nominal 2 in. × 2 in. clip angle constructed with 20 GA galvanized sheet steel and secure the clips to the aluminum framing with No. 10 self-tapping sheet metal screws. Pins shall be spaced a max. of 12 in. oc on the vertical framing members and a max. of 20 in. oc on the horizontal framing members that make up the perimeter of the spandrel area. The interior face of the curtain wall insulation is to be installed so that it is flush with the interior face of the framing.

   E. CURTAIN WALL INSULATION – Install nominal 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. Secure with angle clips and impaling pins (Item 2D). All meeting edges of insulation are sealed with nominal 4 in. wide pressure

sensitive aluminum foil-faced tape, centered over the junction so that approximately 2 in. of tape covers each edge of the adjacent insulation. In lieu of the nominal 2 in. 8 pcf mineral wool curtain wall insulation, nominal 3 in. 6 pcf or nominal 4 in. 4 pcf mineral wool may be installed using the same securing method described in Item 2D. The interior face of the batt insulation is, if required compressed, flush with the interior face of the curtain wall framing. When using nominal 2 in. thick 8 pcf density mineral wool batt insulation, a min. 1-1/4 in. air space is created between the insulation and panel. The batt insulation shall be installed without vertical seams, with a continuous span across the full length between the vertical curtain wall framing members. Horizontal seams in the nominal 24 in. wide batt insulation are to be at least 6 in. from the top surface of the perimeter joint treatment.

F. FRAMING COVERS – Framing covers, comprised of nominal 4 in. wide strips of 8 pcf density mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder) which is exposed to the room interior, are centered over each vertical framing member and secured to the member with impaling pins and clips spaced a max. 12 in. oc and attached in accordance with Item 2D. Framing covers below the perimeter joint treatment are nominal 2 in. thick, and those above the perimeter joint treatment are nominal 1 in. thick. Framing covers do not pass through the perimeter joint treatment. They are butted to the top and bottom surfaces of the perimeter joint treatment.

When upper transom is located flush with floor (Item 1), framing covers are not required above top surface of perimeter joint protection (Item 3).

G. REINFORCING ANGLE – Mount a min. 1-1/2 in. × 1-1/2 in. × 20 GA galvanized steel angle to the vertical framing members so that the vertical leg serves as a backer to the exterior face of the curtain wall insulation and the horizontal leg extends away from the curtain wall insulation, and the elevation is located at the centerline of the perimeter joint treatment. Size the angle 8 in. longer than the span between the interior edges of the vertical framing members and form the angle so that it has a 4 in. vertical leg on each end. Secure the 4 in. leg to the framing member 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:** The perimeter joint (linear opening) shall not exceed an 8 in. nominal joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

A. PACKING MATERIAL – Use a min. 4 in. thick, 4 pcf density, mineral wool batt insulation installed with the fibers running parallel to the slab edge and curtain wall. The packing material shall be compressed 50% for 16.7% horizontal movement and 6.25% vertical shear, or 33% for 11% horizontal movement in the nominal joint width. Compress the batt insulation into the perimeter joint such that the top surface of the batt insulation is flush with the top surface of the concrete floor slab and its mid-depth is compressed against the

interior surface of the curtain wall insulation (Item 2F) which is supported by the 20 GA steel reinforcing angle (Item 2E). Splices (butt joints) in the lengths of mineral wool batt insulation are to be tightly compressed together. When using the Fire Barrier™ 1000 or 1003 Sealants, recess the mineral wool packing material a min. 1/4 in. from the top surface of the floor slab to accommodate the required installation depth of the sealant.

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.