

Design No. CEJ 169 P

PERIMETER FIRE BARRIER SYSTEM

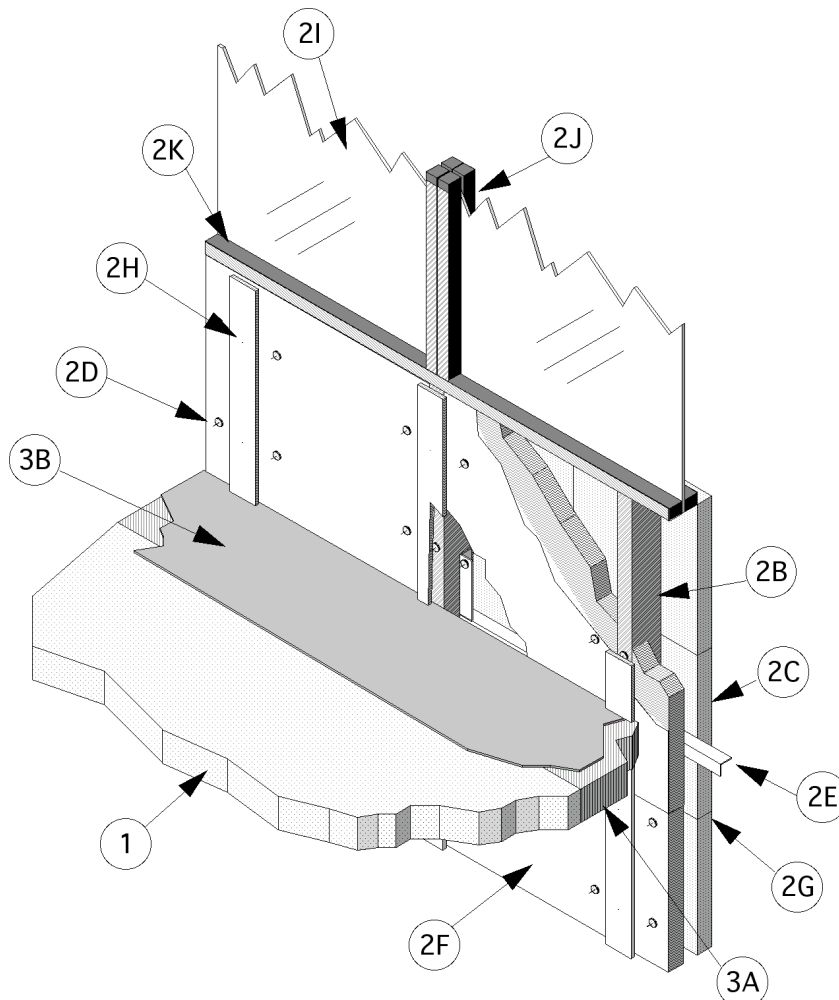
T Rating – 2-1/2 hr.

F-Rating - 3 hr

L-Rating <1 SCFM/LF

Rated for ± 16.7% horizontal movement

Rated for ± 6.25% vertical shear movement



1. **CONCRETE FLOOR ASSEMBLY:** Three-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 concrete curtain wall assembly shall incorporate the following construction features:
 - A. **Mounting Attachments:** (Not shown) Attachment of the curtain wall framing to the structural framing shall be according

Fire-Resistant Joint Systems

- 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. Maximum distance horizontally between mounting attachments shall be 10 feet.
- 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 nom. 8 in. Mullions are to be spaced a min. 60 in. o.c. and transoms are to be spaced a min. 48 in. o.c. Transoms are to be located at a height of 20 in. above the top surface of the concrete floor assembly (as measured from the bottom of the transom).
- C. Concrete Panels: Any non-combustible exterior concrete based panel. Panels shall not be less than 2-1/2 in. thick, 12 in. high or 12 in. long. Attachment to the framing shall be according to the curtain wall system manufacturer's guidelines.
- 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 nom. 2 in. by 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. o.c. on the vertical framing members and a max. of 20 in. o.c. 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. Reinforcing Angle: Mount a min. 1-1/2 in. x 1-1/2 in. x 20GA 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 12 in. longer than the span between the interior edges of the vertical framing members and form the angle so that it has a 6 in. vertical leg on each end. Secure the 6 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. o.c.
- F. Curtain Wall Insulation: Install nom. 2 in. thick 8pcf 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 (2D). All meeting edges of insulation are sealed with nom. 4-in. wide pressure sensitive aluminum foil faced tape centered over the junction so that approx. 2 in. of tape covers each edge of the adjacent insulation. In lieu of the 2 in. 8pcf mineral wool curtain wall insulation, 4 in. 4pcf mineral wool may be installed using the same securing method described in Item 2D. The interior face of the batts is, if required compressed, flush with the interior face of the curtain wall framing. A min. 1-1/4-in. air space is created between the insulation and panel. The batts 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 insulation are to be at least 6 in. from the top surface of the perimeter joint treatment. (** Listed with Omega Point Laboratories)
- G. Concrete Panel Joint: Vertical and horizontal concrete panel joints created between panels can be either flush type (butt joint) or key way type (tongue and groove). Concrete panel edges must be in contact with each other. If required, the surface of the panel joints can be sealed with gaskets or sealants.
- H. Framing Covers: Framing covers, comprised of 4 in. wide strips of 8pcf density mineral wool batt insulation** faced on one side with aluminum foil scrim (vapor retarder) which is exposed to

Fire-Resistant Joint Systems

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. o.c. and attached in accord with 2D. Framing covers below the perimeter joint treatment are min. 2 in. thick, and those above the perimeter joint treatment are min. 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. (** Listed with Omega Point Laboratories)

The following vision glass panel detail is included as an optional installation detail outside the spandrel area:

- I. Glass Vision Panels: Glass vision panels shall be a min. 20 in. above the top surface of the floor assembly. Glass vision panels shall be installed to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a min. 1/4 in. thick, clear tempered glass with a nom. width and height as determined by the framing.
 - J. Window Gaskets: Secure glass vision panels with a thermal break (thermal-set rubber extrusion).
 - K. Window Framing: Aluminum framing members shall be a min. 0.100 in. thick walls with min. 5-1/2" depth and min. 2-1/2" width of the extrusion and must be compatible with aluminum framing (2b). Locate window framing at least 20 in. above the top surface of the floor assembly.
3. PERIMETER JOINT PROTECTION: The perimeter joint (linear opening) shall not exceed 8" (joint width measured between deck edge and interior face of curtain wall framing) 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 20% 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 (2F) which is supported by the 20 GA steel reinforcing angle (2E). Splices (butt joints) in the lengths of mineral wool batt insulation are to be tightly compressed together. Reference the Introduction to Fire Resistive Joint Systems Section of this Directory for more details on how to determine the cut width of the insulation to be installed in the nominal joint width, and how to determine the compressed percentage of a known insulation width installed in a known nominal joint width. (** Listed with Omega Point Laboratories)

- B. Fill, Void or Cavity Material: Liquid is to be applied (sprayed, brushed, or troweled) to cover the exposed surface of the mineral wool installed in the perimeter joint. Apply a min. wet film thickness of 1/8 in. and overlap the material a min. 1/2 in. onto the adjacent wall curtain wall assembly and the concrete floor assembly. If spraying process is stopped and the applied material cures to an elastomeric film before the process is restarted, then overlap the edge of the cured material at least 1/8 in. with the spray. Reference Product section of this Directory for more details about the Listed product.

Listed Manufacturer:

3M --

Joint Sealant

Spray

FireDam™ Spray 100

**Before testing, the spliced, test specimen was cycled 500 times at 30 cpm according to ASTM E 1399 and ICBO ES AC 30 (Jan. 1997).