Design No. CEJ 421 P (HI/BP 120-03)

PERIMETER FIRE BARRIER SYSTEM

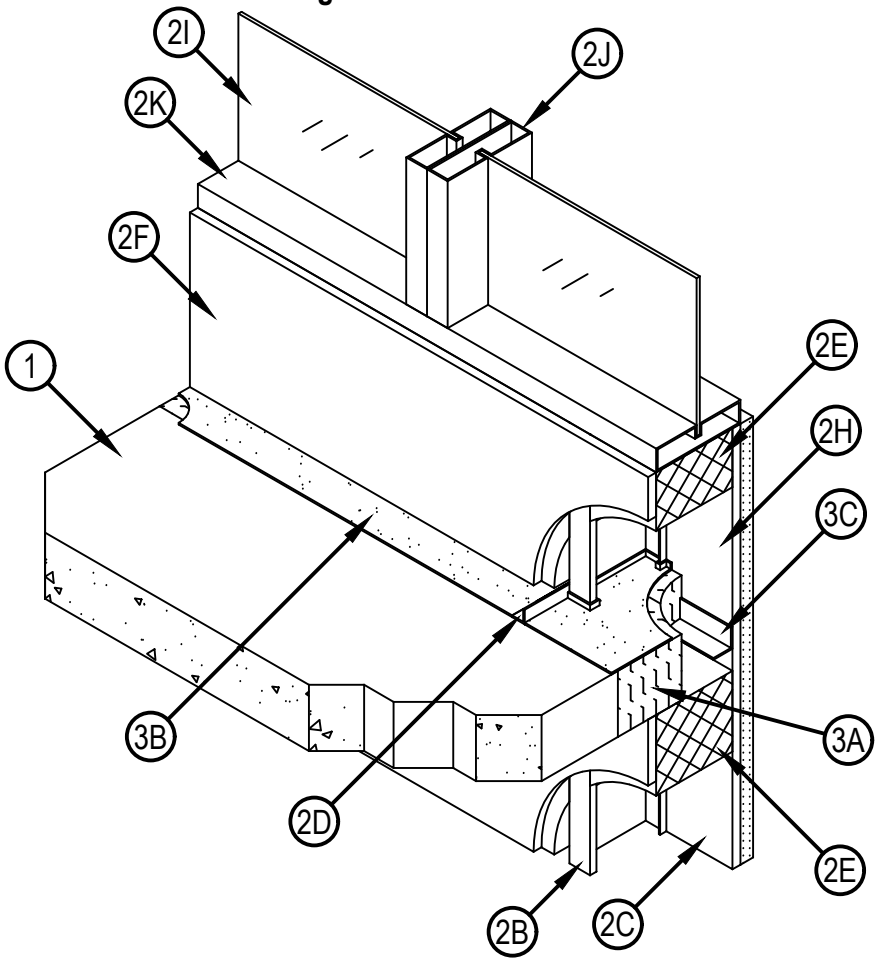
Hilti, Inc.

ASTM E 2307

Table 1

	FIRESTOP JOINT SPRAY CFS-SP WB	SILICONE JOINT SPRAY CFS-SP SIL
F-RATING	2-HR.	2-HR.
T-RATING	1-HR.	1-HR.
APPLICATION THICKNESS	1/8" WET FILM (1/16" DRY)	2mm (0.079") WET FILM
CYCLING (%) HORIZONTAL VERTICAL SEE NOTE 1	 NONE NONE	 NONE NONE

L-Rating <1.0 SCFM/LF



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1. CONCRETE FLOOR ASSEMBLY: Min. two-hour rated concrete floor assembly (Item 1) 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 slab edge (joint face). Optional – Provided the two-hour concrete floor assembly (Item 1) rating is not compromised, the overall slab thickness may vary to accommodate various blockout depths (longitudinal recesses) formed in the concrete, to house an optional architectural joint system. 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) Attach the steel-stud framing to the structural framing according to the curtain wall manufacturer's instructions. When required, connect the mounting attachments to the concrete floor assembly (Item 1) at the slab edge (joint face), according to the curtain wall manufacturer's instructions. Use a max. 10 ft. distance between mounting attachments.
   B. Steel-Stud Framing: Use min. 6 in. by 1-5/8 in., 18 GA steel "C" studs as vertical framing members with a max. spacing of 24 in. on center (oc) secured in 18 GA steel tracks, top and bottom, using min. #6 x 1/2 in. pan or hex head SD PT screws. Secure the steel-stud framing to the concrete floor assembly (Item 1) with curtain wall clips (Item 2D). Alternate Method: Use multiple 16 GA steel studs positioned horizontally and secured together either by mechanical fasteners or welds to form a solid box.
   C. Sandwiched Wall Surface: Use a minimum 5/8 in. thick, 48 in. wide by 96 in. long, exterior grade fiberglass sheathed gypsum board placed over and secured to steel stud framing (Item 2B) with min. 1-1/4 in. long Type S drywall screws 12 in. on center in field and 8 in. oc at perimeter.
   D. Curtain Wall Clips: Affix min. 20 GA 1 x 1 in. steel angle using 5/8 in. long sheet metal screws to the vertical framing (Item 2B) and to the surface of the concrete floor assembly (Item 1) using min. 1/4 in. diameter by 1 in. long concrete screws, or an equivalent fastening method in accordance with the curtain wall manufacturer's installation instructions.
   E. Optional Curtain Wall Insulation: Curtain wall insulation is not required. However, it can be installed above or below the perimeter joint protection. When used, secure the insulation in accordance with the manufacturer's installation instructions. Mineral wool or glass fiber batt insulations are acceptable. Only Intertek Certified Mineral Wool Manufacturer's product meeting the above min. requirements.
   F. Optional Interior Curtain Wall Surface: An interior curtain wall surface is not required. However, it can be installed above or below the perimeter joint protection. When used, secure the interior curtain wall surface in accordance with the manufacturer's installation instructions. Gypsum board is acceptable.
   G. Optional Knee-Wall: (Not Shown) A "knee-wall" is not required. Install above the perimeter joint protection. When using a knee-wall with 6 in. steel stud construction, the 6 in. wide steel track at the bottom of the knee-wall can replace the curtain wall clips. The 6 in. steel track shall be attached to each vertical framing member (Item 2B) using 5/8 in. long sheet metal screws and to the concrete floor assembly using min. 1/4 in. diameter by 1 in. long concrete screws.
   H. Exterior Curtain Wall Finish: The exterior finish shall not create voids or openings in the sandwiched wall surface and shall extend at least 6 in. above and at least 24 in. below the surface of the concrete floor assembly. The following finishes are acceptable: (1) Exterior Insulation Finish System: Any Listed and Labeled EIFS composed of an expanded polystyrene foam (EPS) insulation, and an Exterior Curtain Wall Finish consisting of the following: A plaster, base coat and reinforcing mesh applied over the sandwiched wall surface. Precut the mesh as needed. The mesh is a woven fiberglass reinforcement fabric that is compatible with the plaster base coat and finish coat materials. Apply 1/16 to 1/8 in. thick plaster base coat to the exposed surface of the EPS foam. The EPS foam boards nominally measure 24 in. wide by 48 in. long by a max. of 4 in. thick with a nominal density of 1 pcf. The EPS foam is attached to the sandwiched wall surface using mechanical fasteners or an adhesive in accordance with manufacturer's recommendations. Install the EPS boards in a running bond (brick-like) pattern and staggered over sandwiched wall surface joints. Apply pressure to the EPS boards to assist in the bonding process. All EPS boards must be butted together with no gaps or voids between them. Allow a min. of 12 hours before continuing the application process when using adhesive. The EPS boards must be rasped to remove all irregular seams and establish a continuous flat surface. Apply the mesh over the EPS; embed the mesh into the plaster base coat using a trowel. Start at the middle and work outwards towards edges. The final thickness of the plaster base coat with the mesh embedded should be approximately 1/16 in.. Let the base coat dry completely before applying the plaster finish coat. The plaster finish coat is a gypsum based wall coating which may contain silica sand or marble aggregates. Apply the plaster finish coat using a trowel in the same manner as the plaster base coat. Other installation techniques are acceptable when detailed by the manufacturer. The EIFS system is a monolithic assembly without expansion or control joints. (2) 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 framing oc spacing, which allows the glass to be secured between the notched shoulder of the framing and pressure bar. Panels are secured with a thermal break (rubber extrusion), pressure bar (extrusion), min. 1/4-20 x 5/8 in. long screws, and a snap face (extrusion) or other manner as detailed by the manufacturer. The system is a monolithic assembly without expansion or control joints. (3) Aluminum Panels: Min. 1/8 in. thick aluminum panels secured to the steel-stud framing (Item 2B) in accordance with the manufacturer's installation instructions. When framing for the aluminum panels is required, it is to be installed with the manufacturer's installation instructions. The system is a monolithic assembly without expansion or control joints. (4) Brick: Use any conventional brick and mortar type. Any brick pattern is acceptable. Mortar joints not to exceed 7/8 in. Secure bricks to wall assembly using conventional acceptable masonry construction techniques. The system is a monolithic assembly without expansion or control joints. (5) Stucco: Any Listed and Labeled stucco system is acceptable provided that the following is abided by: When EPS is used, the EPS foam boards nominally measure a maximum of 4 in. thick with a nominal density of 1 pcf. The stucco manufacturer confirms the stucco is compatible with the sandwiched wall surface. The system is a monolithic assembly without expansion or control joints. (6) Stone: Use any conventional stone panel and mortar type measuring at least 1 in. thick. Any stone pattern is acceptable. Mortar joints not to exceed 7/8 in.. Secure stones to wall assembly using conventional acceptable masonry construction techniques. The system is a monolithic assembly without expansion or control joints. (7) Siding: Any Listed and Labeled siding system is acceptable provided that the following is abided by: The siding shall be classified as non-combustible. The system is a monolithic assembly without expansion or control joints. (8) GFRC Panels: Glass fiber reinforced concrete panels shall be at least 1 in. thick and attached in accordance with the manufacturer's installation instructions. The system is a monolithic assembly without expansion or control joints.

I. Optional Vision 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 x 5/8 in. long screws, and a snap face (aluminum extrusion).

J. Optional Window Gaskets: When required by the manufacturer, secure glass vision panels with a thermal break (thermal-set rubber extrusion).

K. Optional Window Framing: Framing material shall be non-combustible. Locate window framing at least 6 in. above the top surface of the floor assembly.

3. PERIMETER JOINT PROTECTION: The perimeter joint (linear opening) shall not exceed a 9 in. nom. joint width (joint width at installation) between the interior face of the sandwiched wall surface and the vertical face of the concrete floor assembly. 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. Install the top surface of the packing material flush with the top surface of the concrete floor assembly (Item 1). Only Intertek Certified Mineral Wool Manufacturer's product meeting the above min. requirements. Compress the lengths of packing material together at least 1/2 in. at splices (butt joints). Install packing material (Item 3A) using one of the following methods:

Method 1 – Two-step installation process. (1) Install pieces of packing material (Item 3A) between the vertical framing members (Item 2B). Cut and install the packing material (Item 3A) with the fibers running horizontally (perpendicular) to the slab edge (joint face). Cut the pieces of packing material (Item 3A) at least 1/4 in. longer than the distance between the vertical framing members (Item 2B) and 1/8 in. greater than the width of the steel-stud framing. (Cut packing material (Item 3A) 24-1/4 in. long for a max. 24 in. spacing between vertical framing members (Item 2B). Cut packing material (Item 3A) 6-1/8 in. wide for 6 in., 18 GA steel "C" studs.) Allow no voids between vertical framing members (Item 2B) or between sandwiched wall surface and packing material (Item 3A). (2) Install pieces of packing material (Item 3A) in the max. 3 in. nominal joint width (joint width at installation) between the interior face of the steel stud framing (Item 2B) and the vertical face of the concrete floor assembly (Item 1). Cut and install the packing material (Item 3A) with the fibers running vertically (parallel) to the slab edge (joint face). Cut packing material (Item 3A) 3-3/4 in. wide for a max.3 in. nominal joint width. Compress the packing material (Item 3A) min. 20% and install in nominal joint width.

Method 2 – Two-step installation process. (1) Install pieces of packing material (Item 3A) between the vertical framing members (Item 2B). Cut and install the packing material (Item 3A) with the fibers running vertically (parallel) to the slab edge (joint face). Cut the pieces of packing material (Item 3A) at least 1/4 in. longer than the distance between the vertical framing members (Item 2B). (Cut packing material (Item 3A) 24-1/4 in. long for a max. 24 in. spacing between vertical framing members (Item 2B).) Cut packing material (Item 3A) 9 in. wide for 6 in., 18 GA steel "C" studs. Install the packing material (Item 3A) (min. compression 33%). Allow no voids between vertical framing members (Item 2B) or between sandwiched wall surface and packing material (Item 3A). (2) Install pieces of packing material (Item 3A) in the max. 3 in. nominal joint width (joint width at installation) between the interior face of the steel stud framing (Item 2B) and the vertical face of the concrete floor assembly (Item 1). Cut and install the packing material (Item 3A) with the fibers running vertically (parallel) to the slab edge (joint face). Cut packing material (Item 3A) 4-1/2 in. wide for a max. 3 in. nominal joint width. Compress the packing material (Item 3A) min. 33% and install in nominal joint width.

B.CERTIFIED MANUFACTURER: Hilti, Inc.

CERTIFIED PRODUCT: Joint Spray or Sealant

MODEL: Firestop Joint Spray CFS-SP WB or Silicone Joint Spray CFS-SP SIL

Fill, Void or Cavity Material: Spray apply over exposed surface of the packing material (Item 3A). Apply at the thickness specified in Table 1 and overlap the material a min. 1/2 in. onto the adjacent curtain wall assembly and concrete floor slab assembly. When the spraying process is stopped and the applied liquid cures to an elastomeric film before application process is restarted, then overlap the edge of the cured material at least 1/8 in. with the spray.

C. Reinforcing Angle: Required for packing material (Item 3A) installed using Method 1 when mineral wool batt insulation in Optional Curtain Wall Insulation (Item 2E) or gypsum board in Optional Interior Curtain Wall Surface (Item 2F) is not present. Mount a min. 20GA, 1-1/2 in. x 1-1/2 in. galvanized steel angle to the vertical framing members (Item 2B) using min.#6 x 1.25 in. Bugle head SD PT screws. Notch the ends of each piece so that the vertical leg contacts to the 1-5/8 in. face of the vertical framing members (Item 2B) in contact with the sandwiched wall surface (Item 2C). Position the reinforcing angle so that the horizontal leg extends into a continuous 1-1/2 in. deep slit located longitudinally in the mid height of the packing material (Item 3A).