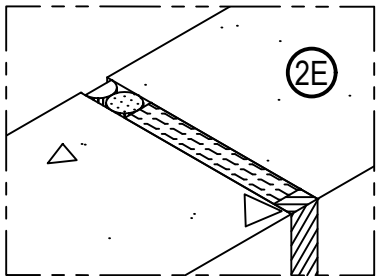


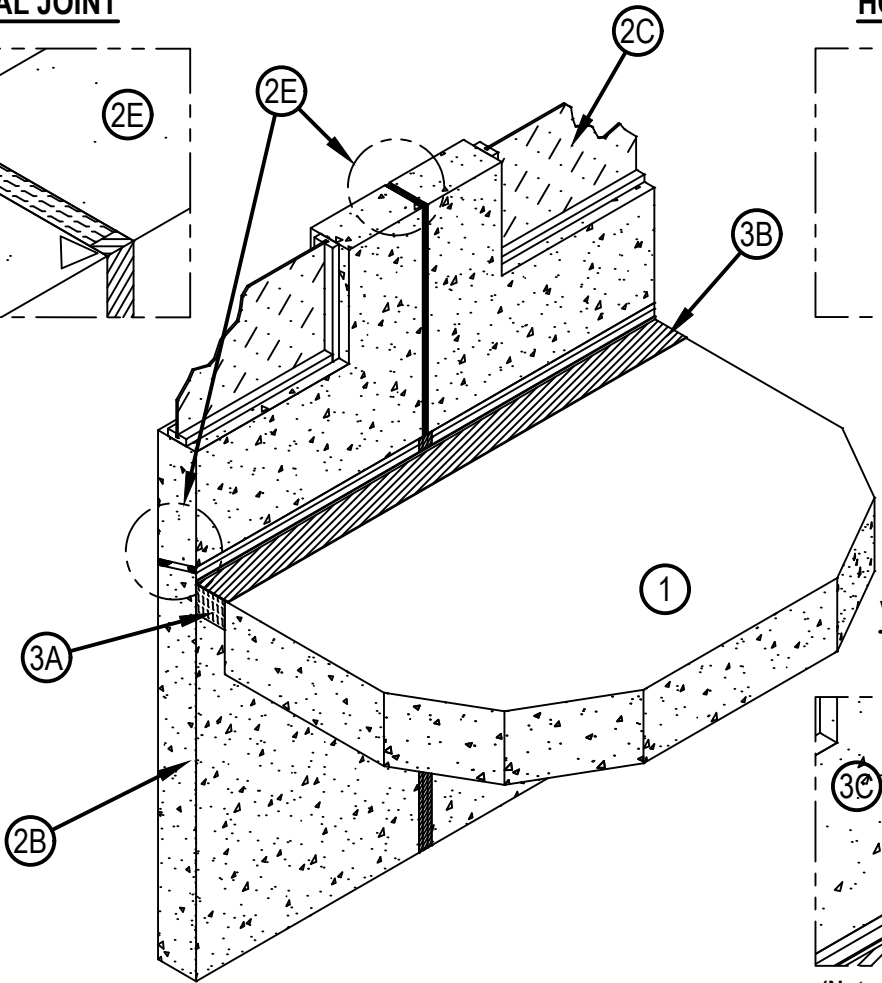
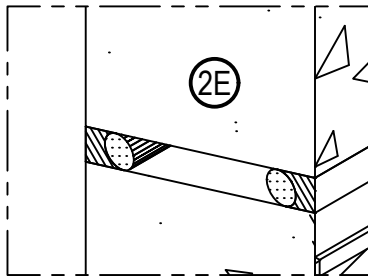
Hilti Corporation
 Design No. HI/BPF 240-01
 Perimeter Fire Barrier System
 CFS-SP WB Firestop Joint Spray
 ASTM E 2307, CAN/ULC-S115, UL 2079
 Table 1. Ratings

	CFS-SP WB Firestop Joint Spray
F-Rating	4 Hour
T-Rating	4 Hour or N/A (Refer to Item 1)
Cycling Horizontal	±11%
Vertical	-8% (35% Compression)
Air Leakage	<2.0 SCFM/LF

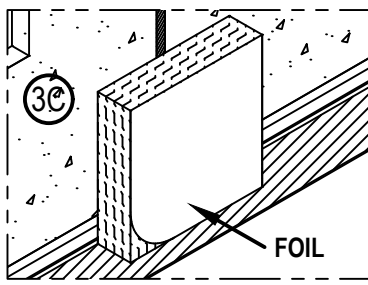
VERTICAL JOINT



HORIZONTAL JOINT



VERTICAL JOINT INSULATION



(Not shown on isometric drawing)



Hilti Firestop Systems

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1. CONCRETE FLOOR ASSEMBLY : Minimum 4 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 8 in. at the joint face. Alternatively, a min. 4-hr rated floor assembly consisting of a steel form unit and min. 8-in. thick lightweight or normal weight concrete with a density of 100 to 150 pcf above the top of the steel form unit and at the joint face. A maximum ½-in. thick steel pour angle may be used extending from the top of the joint face to the steel form unit. When steel pour angle is used, a T-rating is not assigned to the assembly. When a longitudinal recess (blockout) is required to contain an architectural joint system, increase concrete floor assembly thickness to maintain a min. thickness of 8 in. and accommodate depth of blockout formed in the concrete: blockout width unrestricted.
2. CURTAIN WALL ASSEMBLY : The curtain wall assembly shall incorporate the following construction features:
 - A. MOUNTING ATTACHMENT (Not Shown) – Mounting attachments to consist of steel angle or steel tube. Mounting attachments are to be secured to precast concrete panels (Item 2B) and to concrete floor assembly (Item 1) per the exterior wall manufacturer's instructions. Mounting attachments to be located at the top or bottom of the concrete floor assembly.
 - B. PRECAST CONCRETE PANELS – Precast concrete panels (minimum 6 in. thick) made from either lightweight or normal weight concrete with a density of 100 to 150 pcf. Openings in the precast concrete panels are allowed to accommodate glass panels (Item 2C) or louvers (Item 2D). Glass panel or louver openings to be spaced a minimum of 16 in. above the top of concrete floor assembly (Item 1) and a minimum of 6 in. below the bottom of the concrete floor assembly. There shall be a minimum horizontal separation of 24 in. between glass panel or louver openings in precast concrete panels.
 - C. GLASS PANELS – Size and install into the window openings in accordance with the exterior wall manufacturer's instructions. Use min. 1/4 in. thick, clear, heat strengthened glass (HS) or tempered glass and secure into precast concrete panel (Item 2B) openings using steel or aluminum framing.
 - D. LOUVER (Optional, Not Shown) – In lieu of glass panels (Item 2C), metallic louvers may be installed in the precast concrete panel (Item 2B) openings per the exterior wall manufacturer's instructions. Louvers to be mechanically secured within precast concrete panel openings.
 - E. PRECAST CONCRETE PANEL JOINTS – The precast concrete panels (Item 2B) may have horizontal and vertical joints between panels. Horizontal joints to be a max. 1 in. wide, with the bottom of horizontal joints located a min. of 1-1/2 in. above top of concrete floor assembly (Item 1) and a min. of 6 in. below the bottom of the concrete floor assembly. Vertical joints to be a maximum 1-3/4 in. wide and may be continuous through the perimeter fire barrier joint system. Locate center of vertical joint minimum 12 in. to adjacent openings (glass panel or louver) in precast concrete panels. Space the vertical joints minimum 6 in. on-center (oc). The exterior side of each precast concrete panel joint shall be treated with polyethylene or polyurethane foam backer rod sized to accommodate the joint width. The backer rod shall be recessed to accommodate a min. 1/2 in. thickness of exterior grade silicone sealant approved by the exterior wall manufacturer. Either one or multiple layers of backer rod and exterior sealant may be used with the requirement that at least one layer be flush with the exterior side of the precast concrete panels and any inner layers are recessed a min. of 3 in. from the interior face of the precast concrete panels. On the interior face of each vertical precast concrete panel joint, min. of 3 in. thick packing material (mineral wool safing, min. 4 pcf) shall be installed within the joint, flush with the interior side of the precast concrete panel. If vertical precast panel joint is less than 1 in. width, then mineral wool batt insulation of appropriate thickness shall be used to maintain a minimum compression of 40%. Mineral wool batt insulation is to be continuous through the face of the concrete floor assembly (Item 1), extending a min. 72 in. above top of concrete floor assembly and a min. of 6 in. below bottom of concrete floor assembly. Where firestop sealant is to be installed, mineral wool batt insulation is to be recessed 1/2 in. from interior face of precast concrete panel to accommodate sealant. On the interior face of each horizontal precast panel joint, the joint shall be treated with polyethylene or polyurethane foam backer rod sized to accommodate the joint width and should fit tightly within joints. The backer rod shall be recessed to accommodate a min. 1/2 in. thickness of firestop sealant. Using only Hilti Corporation CFS-S SIL GG Firestop Silicone Sealant bearing an Intertek Certified Label, apply a min 1/2 in. thick layer of CFS-S SIL GG to cover packing material or backer rod on the interior face of the precast concrete panels (Item 2). Firestop silicone sealant shall be started min. of 1 in. below the top of concrete floor assembly (Item 1), extending a min. of 16 in. above the top of the concrete floor assembly. Additionally, firestop silicone sealant shall be started a min. of 1 in. above the bottom of the concrete floor assembly, extending a min. of 6 in. below the concrete floor assembly. Firestop silicone sealant may be discontinuous at the concrete floor assembly face.



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3. PERIMETER JOINT PROTECTION : The perimeter joint (linear opening) shall not exceed 3-1/4 in. nominal joint width (joint width at installation) and the perimeter joint treatment shall incorporate the following construction features:

- A. PACKING MATERIAL – Use only mineral wool batt insulation that is bearing the Intertek Certified Label and meeting the following minimum requirements. Use a min. of 4 in. thick, 4 pcf density mineral wool batt insulation installed with the fibers running parallel to the concrete floor assembly (Item 1) edge and precast concrete panel (Item 2B). The mineral wool batt insulation shall be compressed 35% in the nominal joint width. Compress the mineral wool batt insulation into the perimeter joint such that the top surface is flush with the top surface of the concrete floor assembly, except at mounting attachment (Item 2A) locations. At mounting attachment locations where hardware interferes with installation of the perimeter joint protection, the mineral wool batt insulation is recessed a max. of 1 in. below the mounting attachment. At locations of vertical precast concrete panel joints (Item 2E), mineral wool batt insulation to be installed at the full depth of the concrete floor assembly face for a span of 20 in. wide, centered about the vertical precast concrete panel joint. At all other locations of the perimeter joint protection span, install at min. 4 in. depth of the concrete floor assembly face. Splices (butt joints) in the lengths of the mineral wool batt insulation are to be tightly compressed together and installed a min. of 4 in. from vertical precast concrete panel joints (Item 2E).
- B. CERTIFIED MANUFACTURER : Hilti Corporation CERTIFIED PRODUCT: Joint Spray or Sealant CERTIFIED MODEL: CFS-SP WB Firestop Joint Spray FILL, VOID, OR CAVITY MATERIAL – To be applied (sprayed, brushed, or troweled) to cover the top exposed surface of the packing material (Item 3A) installed in the perimeter joint. Apply at 1/8 in. wet thickness, except at mounting attachment (Item 2A) locations where packing material is recessed, and overlap the material a min. 1/2 in. onto the adjacent precast concrete panel (Item 2B) and concrete floor assembly (Item 1). At mounting attachment locations where packing material is recessed, apply at 1/4 in. wet thickness. 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 with at least 1/8 in. of the newly applied material.
- C. PRECAST CONCRETE PANEL INSULATION(Not Shown in Isometric Drawing) – Use only foil-faced mineral wool insulation that is bearing the Intertek Certified Label and meeting the following minimum requirements. Use a min. of 3 in. thick, 8 pcf density, foil-faced mineral wool insulation installed with the fibers running parallel to the precast concrete panel (Item 2B) and with the foil-face side of the insulation facing towards the interior of the room. Install the foil-faced mineral wool insulation flush with the top of the CFS-SP WB Firestop Joint Spray (Item 3B) and extending 15 in. high along the entire horizontal length of the perimeter joint. At mounting attachment (Item 2B) locations, foil-faced mineral wool insulation is cut-to-shape to fit tightly against and around the mounting attachment. The recessed sections of packing material (Item 3A) below the mounting attachments shall also be filled with foil-faced mineral wool insulation. Foil-faced mineral wool insulation shall be secured to the interior face of the precast concrete panel with Hilti X-IE 6 series fasteners with integrated washer. Fasteners shall be installed at a min. of one row, located 4 in. below the top of the foil-faced mineral wool insulation. Fasteners shall be centered at each butted seam location of the foil-faced mineral wool insulation and at 16 in. oc thereafter.