

Design No. HI/BP 120-04
PERIMETER FIRE BARRIER SYSTEM

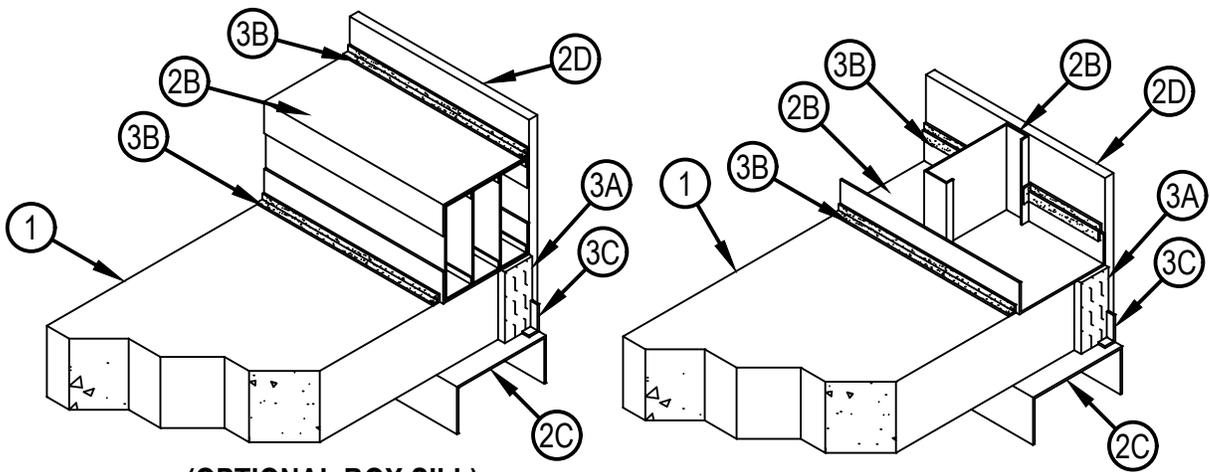
Hilti, Inc.
 ASTM E 2307

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

HEAD OF WALL JOINT SYSTEM

Rated for ± 0 % horizontal movement
 Rated for - 100% downward vertical shear movement (3/4 in.) Class II 500 Cycles
 Rated for + 0% upward vertical shear movement
 L-Rating <1.0 SCFM/LF



(OPTIONAL BOX SILL)

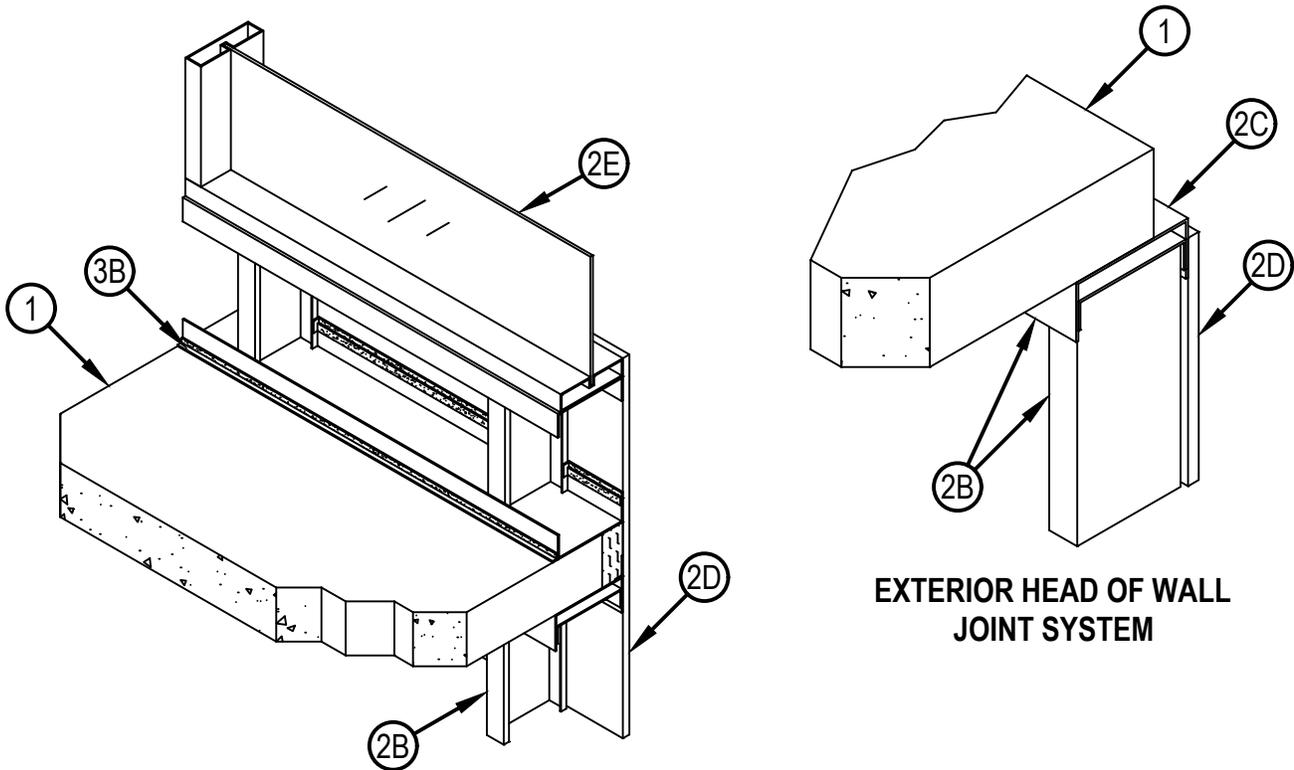
PERIMETER JOINT SYSTEM



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EXTERIOR HEAD OF WALL
JOINT SYSTEM

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 to 4-1/2 in., respectively, 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., 16 GA steel "C" studs cut to length as vertical framing members spaced a max. of 16 in. on center (oc), secure the ends of the steel studs in compatible sized 20 GA steel tracks, using min. #6 x 1/2 in. pan or hex head screws. Cantilever the floor track nominally 2 in. past the vertical face of the concrete floor assembly (Item 1). Secure the floor track to the top of the concrete floor assembly (Item 1) with 1/4 in. diameter x 2 in. long concrete screws (or either powder actuated fasteners or steel expansion bolts having equivalent strength and performance) spaced a max. of 24 in. oc. Insert the ceiling track inside the "slip-track (deflection channel)" to create a 3/4 in. gap between channels to allow for downward movement. Alternate Lighter Gauge Slotted Ceiling Track: Alternate to ceiling track above, use min. 24 GA galvanized steel channel with slotted flanges sized to accommodate min. 6 in. by 1-5/8 in., 16 GA steel "C" studs. Alternate Framing Box Sill: Alternate to steel-stud framing (Item 2B) created between window assembly and top of the concrete floor assembly (Item 1), use multiple min. 16 GA galvanized structural steel tracks or steel studs placed horizontally and secured together using min. #6 x 1/2 in. pan or hex head screws or welds and capped top and bottom with floor and ceiling tracks or use multiple min. 16 GA galvanized punched steel tracks or steel studs with all openings sealed with mineral wool placed horizontally and secured together using min. #6 x 1/2 in. pan or hex head screws or welds and capped top and bottom with floor and ceiling tracks.

- C. Slip-Track (Deflection Channel): As part of the exterior wall assembly (Item 2) and head of wall joint system, attach a min. 16 GA channel, sized to accommodate steel-stud framing (Item 2B), to the bottom of the concrete floor assembly (Item 1) using 1/4 in. diameter x 2 in. long concrete screws spaced nominally 12 in. on center. Cantilever the slip-track (deflection channel) nominally 2 in. past the vertical face of the concrete floor assembly (Item 1). The cantilevered tracks (Items 2B & 2C) create a min. 4 in. deep by 2 in. wide reveal. Attach reinforcing angle (item 3C) to top of slip-track (deflection channel). Create an exterior max. 3/4 in. horizontal joint (exterior head of wall joint system) at the slip-track (deflection channel) after the sandwiched wall surface (Item 2D) is installed. Form the joint using two juxtaposed edges of the sandwiched wall surface (Item 2D) as the sides and create the back of the joint using the exposed steel face of slip-track (deflection channel) (Item 2C). Locate the 3/4 in. horizontal joint directly below and parallel to the perimeter joint protection (Item 3). Optional Joint System: Install a nominal 1/2 in. polyethylene backer rod into the 3/4 in. horizontal joint in contact with the steel face of slip-track (deflection channel). Cover the nominal 1/2 in. polyethylene backer rod using a silicone, endothermic, or Intumescent sealant. Only Intertek Certified Sealant Manufacturer's product meeting the above min. requirements.
- D. Sandwiched Wall Surface: Install packing material (Item 3A) and reinforcing angle (Item 3C), then apply and secure a min. 5/8 in. thick, 48 in. wide by 96 in. long, exterior grade fiberglass sheathed gypsum board 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. on center at perimeter created by the cantilevered tracks (Items 2B & 2C). Do not attach exterior grade fiberglass sheathed gypsum board to slip-track (deflection channel) (Item 2C). Alternate Cementitious Backer Units: Use min. 5/8 in. thick cement based boards attached to steel stud framing (Item 2B) with min. 1-1/4 in. long Type S drywall screws 12 in. oc in field and 8 in. on center at perimeter created by the cantilevered tracks (Items 2B & 2C). Do not attach 5/8 in. thick cement based boards to slip-track (deflection channel) (Item 2C). Butt all edges of all 5/8 in. thick cement based boards tightly together and cover joints with glass fiber mesh tape covered with compatible cementitious coating.
- E. Optional Vision Glass Panels: Size and install glass panels into 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 sized for the window framing, which allows the vision glass panels to be secured between the notched shoulder of the framing and pressure bar. When required by the manufacturer, secure vision glass panels 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). Optional Window Framing: Framing material shall be non-combustible. Locate window framing at least 4-1/2 in. above the top surface of the floor assembly.
- F. Optional Curtain Wall Clips: (Not shown) When desired, 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.
- G. Optional Curtain Wall Insulation: (Not shown) When desired, install curtain wall insulation above or below the perimeter joint protection (Item 3). 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.
- H. Optional Interior Curtain Wall Surface: (Not shown) When desired, install an interior curtain wall surface above or below the perimeter joint protection (Item 3). When used, secure the interior curtain wall surface in accordance with the manufacturer's installation instructions. Gypsum board is acceptable.
- I. Exterior Curtain Wall Finish: (Not shown) The exterior finish shall not create voids or openings in the sandwiched wall surface and shall extend at least 4 in. above and at least 24 in. below the surface of the concrete floor assembly (Item 1). The following finishes are acceptable:
- (1) Exterior Insulation Finish System: When desired, use any Listed and Labeled EIFS composed of an expanded polystyrene (EPS) foam 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 (Item 2D) 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 (Item 2D) 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



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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. Only Intertek Certified EIFS Manufacturer's product meeting the above min. requirements.

- (2) Glass Panels: Size and install glass panels into 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 o.c. 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 max. 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) GFRP 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.
- (9) Roofing Materials: Any Listed and Labeled Class A bituminous roofing material applied in accordance with manufacturer's installation instructions. Only Intertek Certified Roofing Manufacturer's product meeting the above min. requirements.

3. PERIMETER JOINT PROTECTION: The perimeter joint (linear opening) shall not exceed a 2 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 and bottom 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 the following method: Install the packing material in the reveal created by the cantilevered tracks (Items 2B above the floor & 2C below the floor) and reinforcing angle (Item 3C). Install pieces of packing material (Item 3A) with fibers running vertically with the slip-track (deflection channel) (Item 2C). Cut lengths of the packing material a min. of 4-1/4 in. high by min. 2-1/4 in. wide for min. 4 in. by 2 in. reveal. Use proportionate packing material for larger reveals. Overlap and compress the ends of the lengths of the packing material a min. of 1/4 in. to be butted together.

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 or brush apply in two locations: (1) over the interface of the inside vertical leg of the of the floor track (Item 2B) and the concrete floor assembly (Item 1) and (2) over the interface of the outside vertical leg of the floor track (Item 2B) and the inside face



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of the sandwiched wall surface (Item 2D). Fill, Void or Cavity material is not required behind the vertical studs. Application of the material is to start and stop on each side of each vertical stud. When alternate box sill is used, spray or brush apply liquid in two locations: (1) over the interface of the inside vertical face of the of the box sill (Item 2B) and the concrete floor assembly (Item 1) and (2) over the interface of the top of the box sill (Item 2B) and the inside face of the sandwiched wall surface (Item 2D). 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 brushing or 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 fresh material.

- C. Reinforcing Angle: Mount a min. 20 GA, 1-1/2 in. x 3/4 in. galvanized steel angle continuously to the top of the slip-track (deflection channel) (Item 2C) using min. # 6 x 1/2" framing screws with pan or hex head nominally 24 in. oc. Screws heads located on bottom of slip-track. Position the reinforcing angle so that the 3/4 in. horizontal leg attaches the exposed top of the cantilevered slip-track (deflection channel) (Item 2C) and the 1-1/2 in. vertical leg is plumb with outside cantilevered edge of the floor track (Item 2B) above. Alternate: Mirror location from above mounting. Mount a min. 20 GA, 1-1/2 in. x 3/4 in. galvanized steel angle continuously to the bottom track (Item 2B) using min. #6 x 1.25 in. pan or hex head head SD PT screws nominally 24 in. oc. Position the reinforcing angle so that the 3/4 in. horizontal leg attaches the exposed bottom of the cantilevered bottom track (Item 2B) and the 1-1/2 in. vertical leg is plumb with outside cantilevered slip-track (deflection channel) (Item 2C) below.
- D. Steel Cover and Base: (Not shown) Use nominal 6 in. by 2 in., 16 GA steel "C" channel, bottom track (Item 2B), to cover the packing material (Item 3A) and use nominal 6 in. by 2 in., 16 GA steel "C" channel, slip-track (deflection channel) (Item 2C), to support the packing material (Item 3A).
- E. Optional Impaling Pins: (Not shown) When desired, use 12 GA steel pins swaged to nominal 2 x 2 in. galvanized steel base plate affixed max. 16 in. oc to edge of concrete floor assembly (Item 1).