

Hilti Corporation  
 Design No. HI/BPF 180-03  
 Perimeter Fire Barrier System  
 Edge of Slab QuickSeal CFS-EOS QS  
 ASTM E 2307, CAN/ULC-S115, UL 2079 (Air Leakage Only)

Table 1.

	Edge of Slab QuickSeal, CFS-EOS QS
F-Rating	3 Hour
T-Rating	41 minute or 3 Hour (see Item 2F)
Cycling	None
Air Leakage	<2.0 SCFM/LF

VERTICAL JOINT

HORIZONTAL JOINT

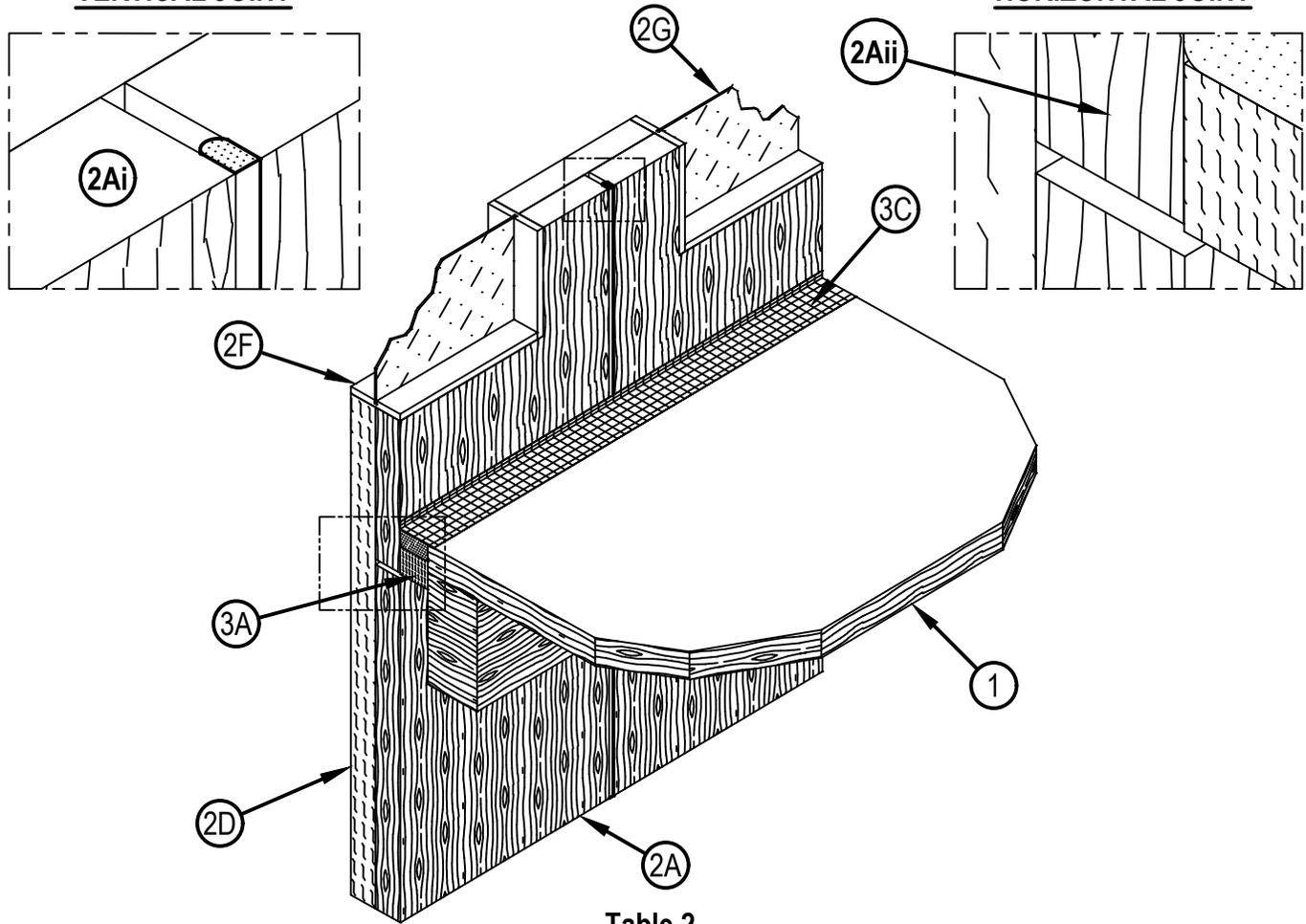


Table 2.

Product	Nominal Joint Width	
	Minimum	Maximum
CFS-EOS QS Small	1-1/2 in.	3 in.
CFS-EOS QS Medium	2 in.	4 in.
CFS-EOS QS Large	3 in.	5 in.



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1. MASS TIMBER FLOOR ASSEMBLY: Mass timber floor assembly shall have a min. fire resistance rating of 3 hour to ASTM E119, UL 263, or CAN/ULC-S101, as applicable. Mass timber floor assembly consists of a mass timber floor and a spandrel beam and shall be constructed as follows:

Floor assembly to consist of min. 4 in. (102 mm) thick mass plywood panel (MPP). At the face of the mass plywood panel there is to be a mass plywood spandrel beam having a min. 16 in. (406 mm) depth and a min. 8-1/2 in. (216 mm) thickness.

The total depth of the mass timber floor assembly and spandrel beam at the joint face shall be min. 20 in. (508 mm). Mass timber floor and spandrel beam shall be certified in accordance with ANSI/APA PRG-320 (2018 or later).

A. GYPSUM BOARD (Not Shown) – On the exposed bottom face of the mass timber floor and on the interior vertical face of the spandrel beam, install a min. of three layers of min. 5/8 in. (16 mm) thick, Type X gypsum board. Each layer of gypsum board is to be attached to the mass timber floor assembly (Item 1) in accordance with local Code requirements.

2. CURTAIN WALL ASSEMBLY: Curtain wall assembly to consist of unitized panels that incorporate the following features:

A. MASS TIMBER PANEL – Min. 4 in. (102 mm) thick mass plywood panel (MPP), or a min. 4 in. (102 mm) thick cross-laminated timber (CLT) panel, with min. 24 in. (610 mm) horizontal separation between window openings. The mass timber panel may have horizontal and vertical joints as detailed below. Mass timber panel to be certified in accordance with ANSI/APA PRG-320 (2018 or later).

i. VERTICAL JOINTS – Vertical joints between mass timber panels (Item 2A) are to be max. 3/4 in. (19 mm) wide. The panels are connected at vertical joints using a rubber split gasket inserted into a steel or aluminum metal extrusion channel as required by the curtain wall assembly (Item 2) designer's instructions. A bead of exterior grade silicone sealant may be applied to the metal hardware and/or gasket as required by the curtain wall assembly designer. On the exterior side of the vertical joint, install mineral wool safing (use only mineral wool safing bearing an Intertek Certified Label) having a min. 4 pcf (64 kg/m<sup>3</sup>) density to completely fill the joint between the exterior insulation (Item 2D). Use staples spaced max. 10 in. (254 mm) on center (oc) to secure the mineral wool safing into the exterior insulation (Item 2D). On the interior side of the vertical joint, install Hilti CFS-TTS MD Firestop Top Track Seal as a backer rod to be flush with interior face of mass timber panel (Item 2A). The CFS-TTS MD shall be split in half from the nominal width and inserted into the vertical joint of the mass timber panel.

ii. HORIZONTAL JOINTS – Horizontal joints between mass timber panels (Item 2A) are to be max. 3/4 in. (19 mm) wide. The panels are connected at horizontal joints using a metal extrusion system consisting of steel or aluminum hardware as required by the curtain wall assembly (Item 2) designer's instructions. A rubber L-gasket, sized to align with the slots in the metal hardware and extend out to the exterior face of the exterior insulation (Item 2D) may be installed. A bead of exterior grade sealant may be applied to the metal hardware and/or gasket as required by the curtain wall assembly designer. On the exterior side of the horizontal joint install mineral wool safing (use only mineral wool safing bearing an Intertek Certified Label) having a min. 4 pcf (64 kg/m<sup>3</sup>) density to completely fill the joint between the exterior insulation (Item 2D). Use staples spaced max. 10 in. (254 mm) oc to secure the mineral wool safing into the exterior insulation (Item 2D). No fill material is required on the interior side of the horizontal joint.

B. MOUNTING ATTACHMENT (Not Shown) – Mounting attachment to consist of steel or aluminum mounting plate and hardware integrated into the mass timber panel (Item 2A) and the mass timber floor assembly (Item 1). Dimensions of the mounting attachment hardware to be such that the top of the hardware is located min. 2-1/2 in. (64 mm) below top of floor assembly and min. 4 in. (102 mm) from bottom of spandrel beam.

C. WEATHER-RESISTIVE BARRIER (Optional, Not Shown) – When a weather-resistive barrier (WRB) is installed over the mass timber panel (Item 2A), the WRB shall comply with the following requirements:

- ASTM E1354 Results: Peak HRR less than 150 kW/m<sup>2</sup>, Total HRR less than 20 MJ/m<sup>2</sup>, and Effective Heat of Combustion less than 18 MJ/kg (test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation, and at an incident radiant heat flux of 50 kW/m<sup>2</sup>) and,
- ASTM E84/UL 723 Results: Flame Spread Index of 25 or less and a Smoke Developed Index of 450 or less. The ASTM E84 or UL 723 test shall be conducted on specimens that have been prepared and mounted in accordance with ASTM E2404.



- D. EXTERIOR INSULATION – Use only exterior insulation bearing an Intertek Certified Label and meeting the following requirements: Min. 4 in. (102 mm) thick rigid mineral wool board insulation having a min. nominal density of 11 pcf (176 kg/m<sup>3</sup>). Mineral wool board insulation installed vertically or horizontally with tightly butted seams to cover the exterior surface of the mass timber panel (Item 2A). Mineral wool board insulation may be installed in a single layer or two layers to obtain the required thickness. Where multiple layers of mineral wool board insulation are used, the vertical and horizontal seams between layers are to be staggered min. 5 in. (127 mm). Mineral wool board insulation to be secured to the mass timber panel using steel screws sized to penetrate through the insulation into the mass timber panel a min. of 2 in. (51 mm) with an integrated or separate 3 in. (76 mm) diameter steel washer or plate at the screw head. Steel screws spaced max. 12 in. (305 mm) oc. As an alternative to the above attachment method, use steel furring channels that are min. 4 in. (102 mm) wide × 1 in. (25 mm) high and spaced max. 24 in. (610 mm) oc. Secure channels to the mass timber panel through the mineral wool insulation board using steel screws that penetrate a min. of 1 in. (25 mm) into the mass timber panel.
- E. EXTERIOR CURTAIN WALL ASSEMBLY FINISH(Not Shown) – The exterior finish shall not create voids or openings in the mass timber wall panel (Item 2A) surface. The following finishes are acceptable:
- i. NONCOMBUSTIBLE EXTERIOR FINISH – Any noncombustible exterior finish in accordance with local Building Code requirements.
- F. WINDOW FRAMING – At window openings use hollow rectangular aluminum extruded tubing with min. overall dimensions of 0.100 in. (3 mm) thick, 5-1/4 in. (133 mm) deep and 2-1/2 in. (64 mm) wide. Window openings to be spaced a min. 24 in. (610 mm) from vertical joints and a min. 6 in. (152 mm) from horizontal joints in the mass timber panel (Item 2A). For the 41 minute T-rating, the opening sill should be a min. 0 in. above the top of the floor assembly. For the 3 hour T-rating the opening sill shall be a min. of 6 in. above the top of the floor assembly.
- G. GLASS PANELS – Size and install into window framing (Item 2F) in accordance with the curtain wall designer's instructions. Use min. 1/4 in. (6 mm) thick, clear, heat strengthened (HS) or tempered glass with a max. width and height less than the window framing oc spacing. On center spacing shall allow glass to be secured to the window framing between the notched shoulders. Secure glass panels with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 (M6 x 0.75) × 5/8 in. (16 mm) long screws, and a snap face (aluminum extrusion). As an alternate method, the glass panels may be secured with a thermal break (rubber extrusion) and structural sealant.
- H. (Optional, Not Shown) One or more layers of min. 1/2 in. (13 mm) thick gypsum board may be directly applied to the interior surface of the mass timber panel (Item 2A) assembly. Each layer of gypsum board is to be attached to the mass timber assembly in accordance with local Code requirements.
3. PERIMETER JOINT PROTECTION: The perimeter joint (linear opening) is not to exceed 5 in. (127 mm) width (joint width at installation). Incorporate the following construction features:
- A. PACKING MATERIAL – Use only mineral wool safing bearing an Intertek Certified Label and meeting the following requirements: Within the perimeter fire barrier joint, install min. 4 in. (102 mm) thick, 4 pcf (64 kg/m<sup>3</sup>) density, mineral wool batt insulation with the fibers running parallel to the slab edge and curtain wall. Compress the packing material 25% in the nominal joint width. Compress the packing material into the perimeter joint such that the top surface of the packing material is recessed 2-1/2 in. (64 mm) below the top surface of the mass timber floor assembly (Item 1) to accommodate the depth of QuickSeal (Item 3C) .
  - B. PACKING MATERIAL AT MOUNTING LOCATIONS (Not Shown) – At the location of mounting attachments (Item 2B) install additional depth of mineral wool to completely encapsulate the mounting hardware. Packing material to be installed around the mounting attachments with min. 25% compression and tightly packed to fill the interstices of the mounting attachments. Packing material to be installed full depth of spandrel beam of the mass timber floor assembly (Item 1) at the mounting attachment locations.



- C. HILTI CFS-EOS EDGE-OF-SLAB QUICKSEAL – CERTIFIED PRODUCT: Hilti Corporation, perimeter fire barrier; CFS-EOS Edge-of-Slab QuickSeal. Compress the appropriately sized Edge of Slab QuickSeal product (per Table 2 above) into the perimeter joint. Remove paper from adhesive flaps and adhere to top side of mass timber floor assembly (Item 1) and interior face of mass timber panels (Item 2A). Splices (butt joints) in the length of Edge of Slab QuickSeal are to be tightly compressed together (1/4 in. or 6 mm compression). Splices (butt joints) to be located a min. 4 in. (102 mm) from vertical joints in the mass timber panels and min. 4 in. (102 mm) from splices in the packing material (item 3A).
- D. JOINT COVER (Not Shown) – Joint cover required only at locations of windows and shall extend min. 6 in. (152 mm) beyond window opening on each side. Joint cover is L-shaped or Z-shaped and may be either min. 0.050 in. (1.3 mm) thick aluminum with a 1 in. (25 mm) high leg or min. 18 GA steel sheet metal with a 1 in. (25 mm) high leg. Joint cover to be butted to interior surface of curtain wall and shall overlap a min. 2 in. (51 mm) onto the mass timber floor assembly (item 1) beyond the joint. The 1 in. vertical leg shall be positioned on the floor assembly to create a 1 in. space between the top of the joint cover and the CFS-EOS Edge-of-Slab QuickSeal (Item 3C). Joint cover to be fastened to the curtain wall assembly (Item 2) or the mass timber floor assembly per manufacturer's instructions.



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