Firewise Consultants LLC
Design No. FWC/JF 120-01
Joint System
Offset Beam Joint Assembly
ASTM E1966
Rating: 2 hours
Cycling: Type II, Vertical ± 100% of Nominal Joint Width
Nominal Joint Width: 5/8 in.

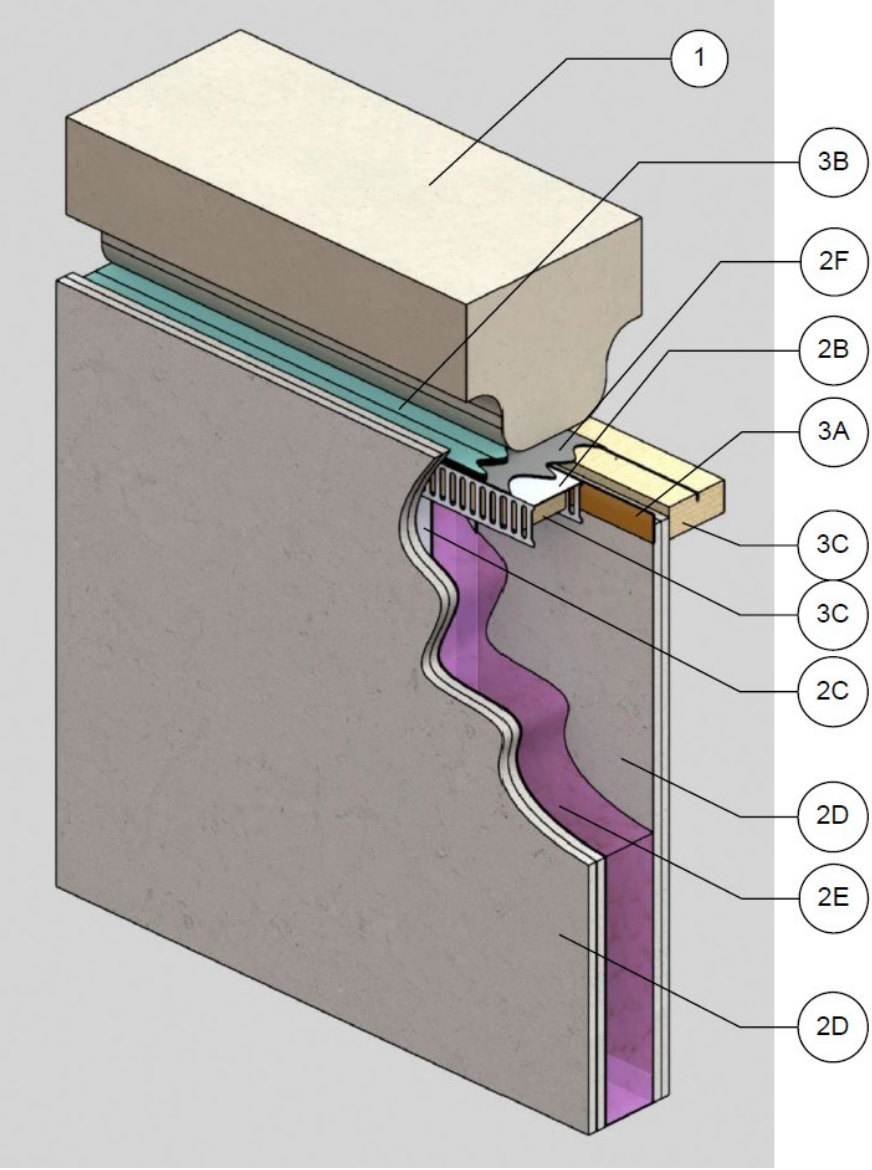

Figure 1. Isometric View (Side A)

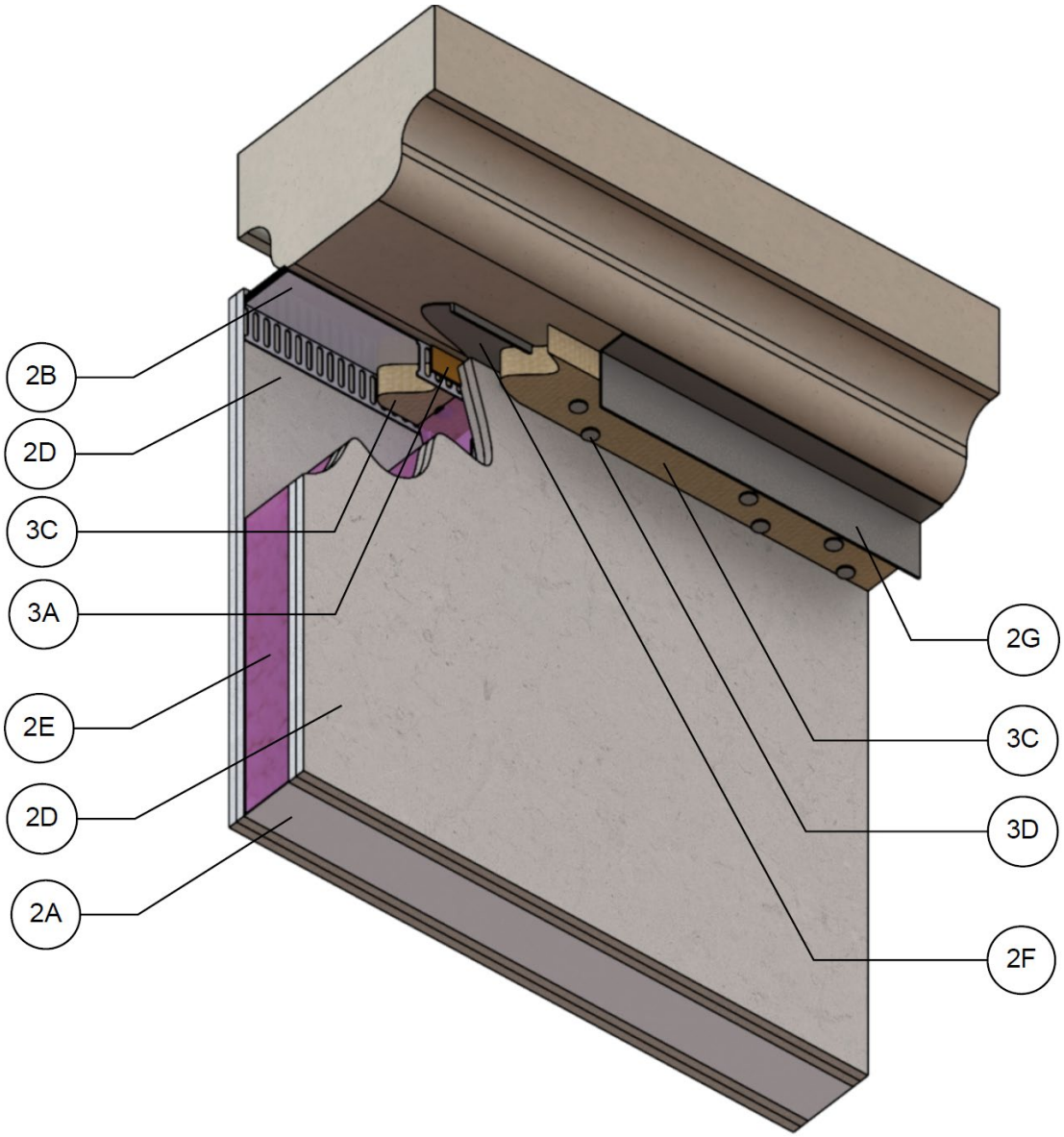

Figure 2. Isometric View (Side B)

1. **CONCRETE ASSEMBLY:** Minimum 2-hour fire-resistance rated concrete assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf, with a min. thickness of 8 in. The concrete assembly may consist of a beam or floor assembly. The edges of the concrete assembly may have up to a maximum 2-in. radius or chamfer. The minimum width of the bearing face of the concrete assembly shall be 4-in.

2. **WALL ASSEMBLY:** Use a minimum 2-hour fire-resistance rated wall assembly. The wall assembly may be offset from the concrete assembly (item 1) a max. of 2-1/4 in., measured from the vertical face of the concrete assembly to the nearest vertical face of the slotted ceiling runner (Item 2B). The wall assembly shall include the following construction features:

   A. Steel Floor Runner – Floor runner of wall assembly shall consist of min. 25 GA, min. 3-5/8 in. x 1-1/4 in. galvanized steel channels. Floor runner secured with typical steel fasteners a max. of 24 in. on center (oc).

   B. Slotted Ceiling Runner – Slotted ceiling runner to consist of min. 20 GA galvanized steel channel with slotted flanges sized to accommodate steel studs (Item 2C). Slots are spaced a minimum of 1 in. oc.

   C. Steel Studs – Steel studs to be a min. 25 GA, min. 3-5/8 in. x 1-1/4 in. Stud length cut to minimum of 1/2 in. less than wall assembly height. Steel studs secured to slotted ceiling runner with min. No. 8 by 1/2 in. long wafer head steel screws at mid-height of exposed slot on each side of the wall. Stud spacing not to exceed 16 in. oc.

   D. Gypsum Board – Use min. two layers of min. 5/8 in. Type X gypsum board complying with ASTM C1396 on each side of the wall assembly. On the side of the wall closest to the concrete assembly (Item 1), a max 5/8 in. gap shall be maintained between the top edge of the gypsum board and the bottom of the concrete assembly. On the side of the wall that is furthest away from the concrete assembly, the top edge of the gypsum board shall extend above the slotted ceiling runner (Item 2B) by a min. 1 in. The gypsum board on the side of the wall assembly that is furthest away from the concrete assembly may be notched to lower the top edge to be flush with the top of the slotted ceiling runner. Notches shall be max. 10 in. wide and spaced a minimum of 48 in. apart.

      The gypsum board shall be fastened to the steel studs (Item 2C) at a max. of 8 in. oc around the perimeter and 12 in. oc in the field using min. #6 x 1 in. steel bugle head drywall screws. The screws attaching the face layers of gypsum board to the studs along top of wall shall be located max. 2-1/2 in. below the bottom of the ceiling runner legs. No gypsum board attachment screws shall be driven into the slotted ceiling runner (Item 2B).

   E. Wall Insulation – Fill the stud cavities of the wall assembly (Item 2) with min. R-11, min. 3-1/2 in. thick fiberglass batt insulation.

   F. Bent Steel Plate – Min. 16 GA steel plate with a 5/8 in. tall vertical leg on one end, fastened to the concrete assembly (Item 1) with either powder actuated fastener or concrete screws. The fasteners shall be

spaced max. 12 in. oc in two staggered rows spaced max. 2 in. apart. Same steel plate is fastened to top web of the slotted ceiling runner (Item 2B) using min. no. 8 by 1/2 in. wafer head steel screws spaced max. 10 in. oc. Steel plate shall overlap slotted ceiling runner (Item 2B) a min. of 2-in. The 5/8 in. leg of the bent steel plate shall be on the concrete assembly side pointing down.

G. Steel L-Angle – Min. 16 GA, min. 2 in. x 4 in. steel angle fastened to underside of concrete assembly (Item 1). The 2 in. leg of steel angle is fastened to the concrete assembly using either powder actuated fasteners or concrete screws. The fasteners shall be spaced max. 12 in. oc. The 4 in. leg of the steel angle shall be located max. 2 in. from the insulation (Item 3C) under the bent steel plate (Item 2F).

3. JOINT SYSTEM: Max separation between bottom of concrete assembly (Item 1) and top of gypsum board (Item 2D) (at time of installation) is 5/8 in. The joint system is designed to accommodate 100 percent compression or extension from its installed width of nom. 5/8 in.

A. Fill, Void or Cavity Material – SaftiSeal™ FRG-150, listed by an approved agency to UL 2079. Apply a min. 1-3/4 in. wide composite thermal gasket to the side of ceiling runner under the concrete assembly, with upper edge of gasket in continuous firm contact with overhead substrate. Gypsum board to overlap a min. of 7/8 in. over the gasket.

B. Fill, Void or Cavity Material – SaftiSeal™ CJG, listed by an approved agency to UL 2079. Apply composite control joint gasket to the top of the bent steel plate (Item 2F), with an appropriate width such that one edge of the gasket is butted against the gypsum board (Item 2D) and the other edge of the gasket is butted against the concrete assembly (Item 1).

C. Insulation – Use only Intertek Certified, 8 pcf mineral wool insulation. Install unfaced min. 2 in. thick, min. 8 pcf mineral wool on the underside of the bent steel plate (Item 2F) using impaling pins (Item 3D). Butt one edge of mineral wool up to the wall assembly (Item 2) and the other edge shall be cut to extend a min. 2 inches longer than the bent steel plate (Item 2F).

D. Impaling Pins – Attach 8 pcf mineral wool insulation (Item 3C) to the bottom face of the bent steel plate (Item 2F) with min. 12 GA x 3-1/2 in. weld pins and washers. Weld the impaling pins spaced max. 12 in. apart in two staggered rows (staggered by max. 2 in.). The row closest to the wall assembly (Item 2) shall be max. 1 in. from gypsum board (Item 2D) to washer edge. The row furthest from the wall assembly shall be max. 4 in. from the nearest edge of mineral wool.

Additionally, attach 8 pcf mineral wool insulation (Item 3C) to the underside (inside) of the slotted ceiling runner (Item 2B) with min. 12 GA x 3-1/2 in. weld pins and washers. Weld the pins on the centerline of the slotted ceiling runner spaced at max. 12 in. oc and maintain min. 2 in. from each adjacent steel stud (Item 2C). Use min. 2 pins between each steel stud.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.

Compliance of the assembly described in this Design Listing with the referenced standard relies on verification that the assembly constructed in the field is consistent with that described herein. Intertek certified products may be verified by the approved Intertek label; other products must be verified by the Authority Having Jurisdiction as meeting the specifications stated herein.