

**Design Number TFI/BPF 180-01**  
**PERIMETER FIRE BARRIERS**

Thermafiber, Inc.

**FireSpan® 90 and FireSpan® 40 and Safing™**

**ASTM E 2307**

T-Rating Refer to Compression Percentage

F-Rating 3 hr

**ASTM E 2307/ASTM E 1399 Cycling**

Class IV: 500 cycles @ 30 cpm

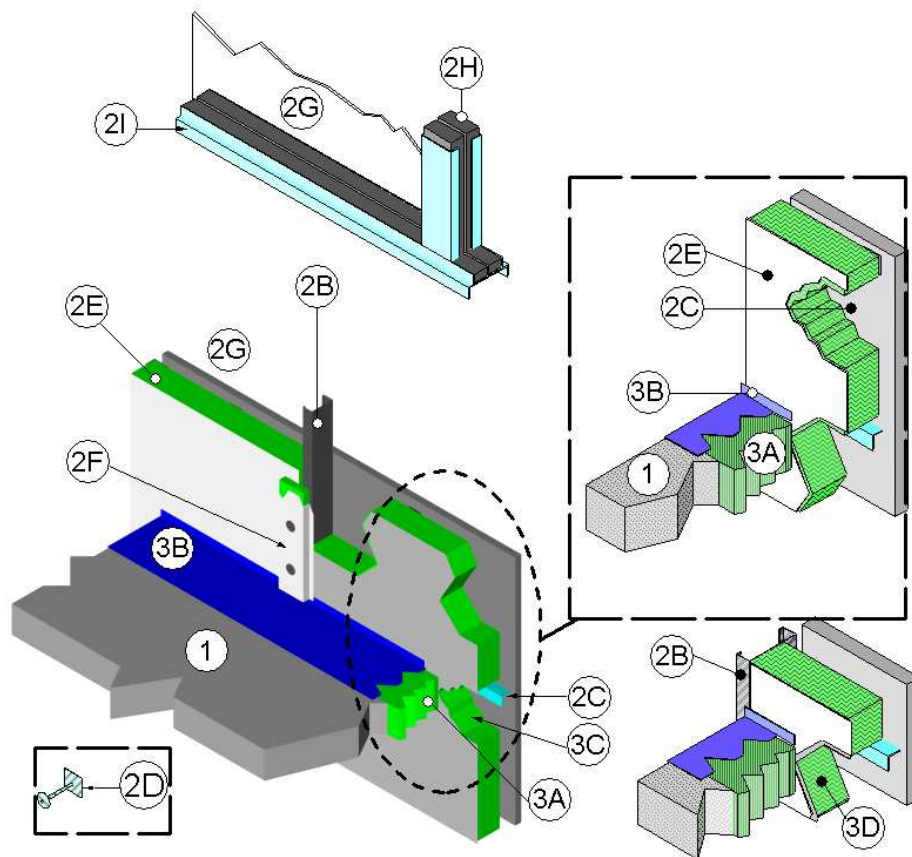
Rated for  $\pm 16.7\%$  horizontal movement @ 50% Compression (Reference Item 3A): T-Rating 2-1/2 hr

Rated for  $\pm 11\%$  horizontal movement @ 33% Compression (Reference Item 3A): T-Rating 1-1/2 hr

Rated for  $\pm 6.25\%$  vertical shear movement @ 50% Compression (Reference Item 3A): T-Rating 0 hr

**UL 2079**

L-Rating ambient and elevated (400°F): <1.0 SCFM/LF



1. CONCRETE FLOOR ASSEMBLY:  
Three hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100 to 150 pcf, having a minimum thickness of 4-1/2 in. at the joint face.

When a longitudinal recess (blockout) is required to contain an architectural joint system, increase concrete floor assembly thickness to maintain a minimum thickness of 4-1/2 in. and accommodate depth of blockout formed

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Project No: 100013710SAT-002O

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in the concrete: blockout width unrestricted.

**2. CURTAIN WALL ASSEMBLY:**  
Incorporate the following construction features:

- A. Mounting Attachment: (Not shown)  
Attach steel framing (Item 2B) to the structural framing according to the curtain wall manufacturer's instructions. When required, connect the mounting attachments to the joint face of the concrete floor assembly (Item 1) according to the curtain wall manufacturer's instructions. Limit distance between mounting attachments to maximum 120 in. on center (oc).
- B. Steel Stud Framing: Use minimum 3-5/8 in. by 1-5/8 in., 18 gauge (GA), C-shaped steel studs as vertical framing. Limit distance between vertical steel stud framing to maximum 48 in. oc. Limit distance between horizontal steel stud framing to minimum 48 in. oc. When required, install horizontal structural framing members according to the curtain wall system manufacturer's guidelines and, in the spandrel area, locate a minimum of 20 in. above the top surface of the concrete floor assembly (Item 1).
- C. Concrete Panels: Use any non-combustible exterior concrete based panels. Use minimum 1-1/2 in. thick, 12 in. high, 12 in. long panels. Attach concrete panels to steel stud framing (Item 2B) according to the curtain wall system manufacturer's requirements.
- D. Impaling Pins: Locate, size and install impaling pins to steel stud framing (Item 2B) to secure framing covers (Item 2F) according to curtain wall system manufacturer's guidelines.

**E. CERTIFIED COMPANY:**  
Thermafiber, Inc.

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**CERTIFIED PRODUCT:** Insulation  
Mineral Wool

**MODEL:** Thermafiber, Inc.  
FireSpan® 90 and FireSpan® 40

Curtain Wall Insulation: Use nominal 24 in. wide, 4 in. thick, 4 pcf density or 2 in. thick, 8 pcf density, mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder), which is exposed to the room interior and installed in the stud cavity. Install curtain wall insulation friction fit between steel framing (Item 2B). Friction fit using curtain wall insulation widths at least 1/4 in. longer than the distance between steel framing (Item 2B). Seal all meeting edges of curtain wall insulation with nominal 4 in. wide pressure sensitive aluminum foil faced tape (not shown) centered over the junction so that approximately 2 in. of tape covers each edge of the adjacent curtain wall insulation. Apply pressure sensitive aluminum foil faced tape over all meeting edges of curtain wall insulation and framing covers (Item 2F) so that approximately 2 in. covers each edge of the adjacent material. Install curtain wall insulation flush with the interior face of the steel framing (Item 2B). Install 24 in. wide curtain wall insulation without vertical seams, spanning the full length between steel framing (Item 2B). Locate horizontal seams in the curtain wall insulation at least 6 in. from the top surface of the perimeter joint protection (Item 3). Maintain 1-1/4 in. air cavity between curtain wall insulation and glass panels (Item 2C). Option – in lieu of filling the full depth of the stud cavity with 4 in. thick, 4 pcf density curtain wall insulation, use minimum 2 in. thick, 8 pcf density curtain wall insulation mechanically secured (do not secure by friction fit) and use additional horizontal support angle (not shown). Install by welding or

fastening impaling pins (Item 2D) perpendicular to steel studs and securing curtain wall insulation in place in stud cavity.

**F. CERTIFIED COMPANY:**  
Thermafiber, Inc.

**CERTIFIED PRODUCT:** Insulation Mineral Wool

**MODEL:** Thermafiber, Inc. FireSpan® 90

**Framing Covers:** Make from strips of minimum 1 in. thick by minimum 4 in. wide, 8 pcf density, mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder), which is exposed to the room interior. Center framing covers over all steel framing (Item 2B) and secure using impaling pins (Item 2D). Do not pass framing covers through the perimeter joint protection (Item 3). Allow framing covers to abut top and bottom surfaces of the perimeter joint protection (Item 3) provided that no deformation occurs.

- G. Reinforcing Angle:** Mount a minimum 1-1/2 in. x 1-1/2 in., 20 GA galvanized-steel angle to the steel stud framing (Item 2B) so that the vertical leg serves as a backer to the exterior face of the curtain wall insulation (Item 2E) and the horizontal leg extends away from the curtain wall insulation and is located at the centerline of the packing material (Item 3A). Size the angle 12 in. longer than the span between the interior edges of the steel stud framing (Item 2B) and form the angle so that it has a 6 in. vertical leg on each end. Secure the 6 in. vertical leg on each end to the steel stud framing (Item 2B) on each side with three No. 10 steel self-tapping sheet metal screws placed in a triangular fashion with a maximum spacing of 2 in. on center (oc).

- 3. PERIMETER JOINT PROTECTION:** Do not exceed an 8 in. nominal joint width (joint width at installation). Incorporate the following construction features for the perimeter joint protection (also known as perimeter fire barrier system):

**A. CERTIFIED COMPANY:**  
Thermafiber, Inc.

**CERTIFIED PRODUCT:** Insulation Mineral Wool

**MODEL:** Thermafiber, Inc. Safing™

**Packing Material:** Use a minimum 4 in. thick, 4 pcf density, mineral wool batt insulation installed with the fibers running parallel to the edge of concrete floor assembly (Item 1) and curtain wall assembly (Item 2). Cut packing material width to achieve required compression, refer below, when installed in the nominal joint width. Compress the packing material into the perimeter joint. Tightly compress together splices (butt joints) in the lengths of packing material by using minimum 1/4 in. compression per piece of packing material. When a spray coating is used, locate the top surface of the packing material flush with the top surface of the concrete floor assembly (Item 1). When the non-sag or self leveling silicone sealant is used, recess the top surface of the packing material 1/4 in. from the top surface of the concrete floor assembly (Item 1).

- i. When 50% compression is required cut the width of the packing material 2 times wider than the nominal joint width.
- ii. When 33% compression is required cut the width of the packing material 1.5 times wider than the nominal joint width.

- B. Fill, Void or Cavity Material:** Apply 3M FireDam™ Spray 200 (Elastomeric, Sprayable) or Fire Barrier™ 1000 N/S Silicone Sealant

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(Non-sag) or FB 1003 S/L (Self Leveling) Sealant (bearing the Intertek Certification Mark) over the packing material (Item 3A) as follows:

**Spray Coating** – Spray apply the liquid to cover the exposed top surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply a minimum wet film thickness of 1/8 in. and overlap the spray coating a minimum 1/2 in. onto the adjacent curtain wall assembly (Item 2) and concrete floor assembly (Item 1). When the spraying process is stopped and the applied spray coating cures to an elastomeric film before installation process is restarted, then overlap the edge of the cured spray coating at least 1/8 in. with the liquid spray coating.

**Sealant** – Apply non-sag or self leveling sealant to cover the exposed surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply minimum 1/4 in. thickness non-sag or self leveling sealant over the packing material (Item 3A) and finish flush with the top surface of the concrete floor assembly (Item 1).

- C. **Support Clips:** (Optional)  
Recommended for installations subject to vertical shear movement. Use standard 20 GA galvanized steel Z-shaped clips having the following nominal dimensions: 1 in. wide by 3 in. high with a 2 in. upper leg and a 3 in. lower leg. Install 3 in. horizontal leg impaled into packing material (Item 3A) mid-depth and the 2 in. horizontal leg on top of the concrete floor assembly (Item 1). Install clips adjacent to mounting bracket (Item 2A) and spaced maximum 12 in. oc.