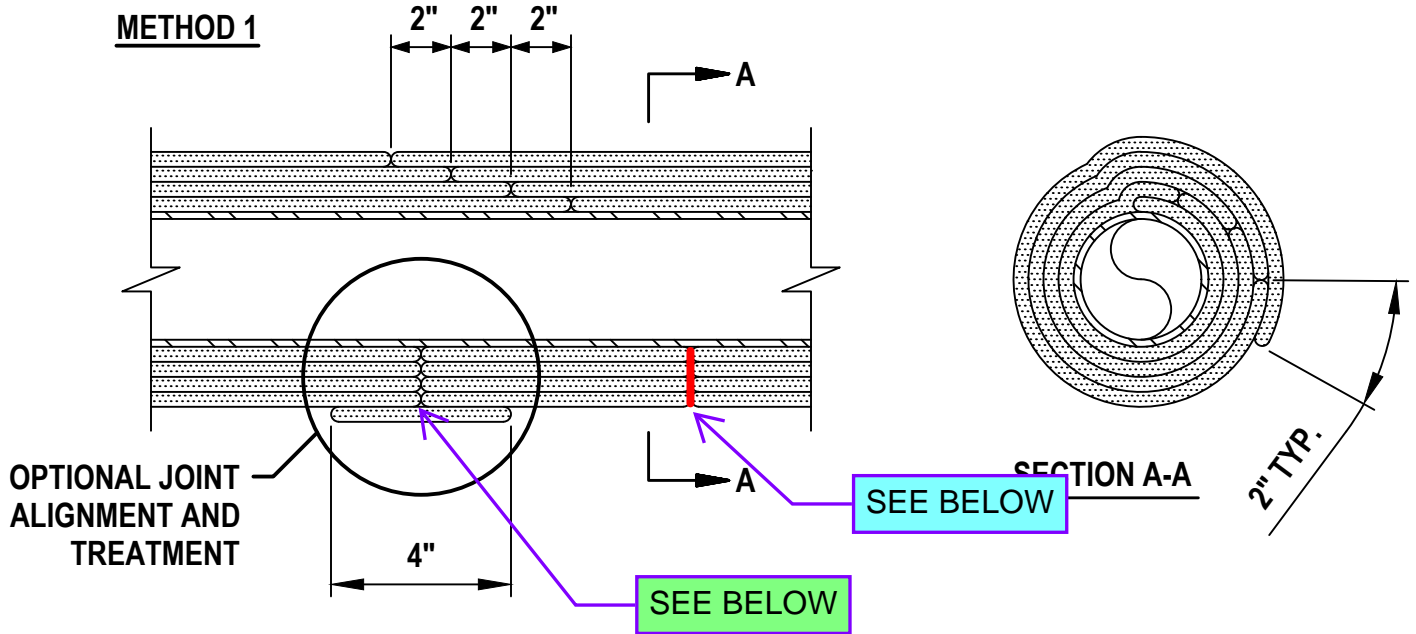


Hilti Corporation  
Design Number HI/AF 120-01  
Applied Fireproofing  
Hilti CPF-ES Endo-Shield  
ASTM E1725

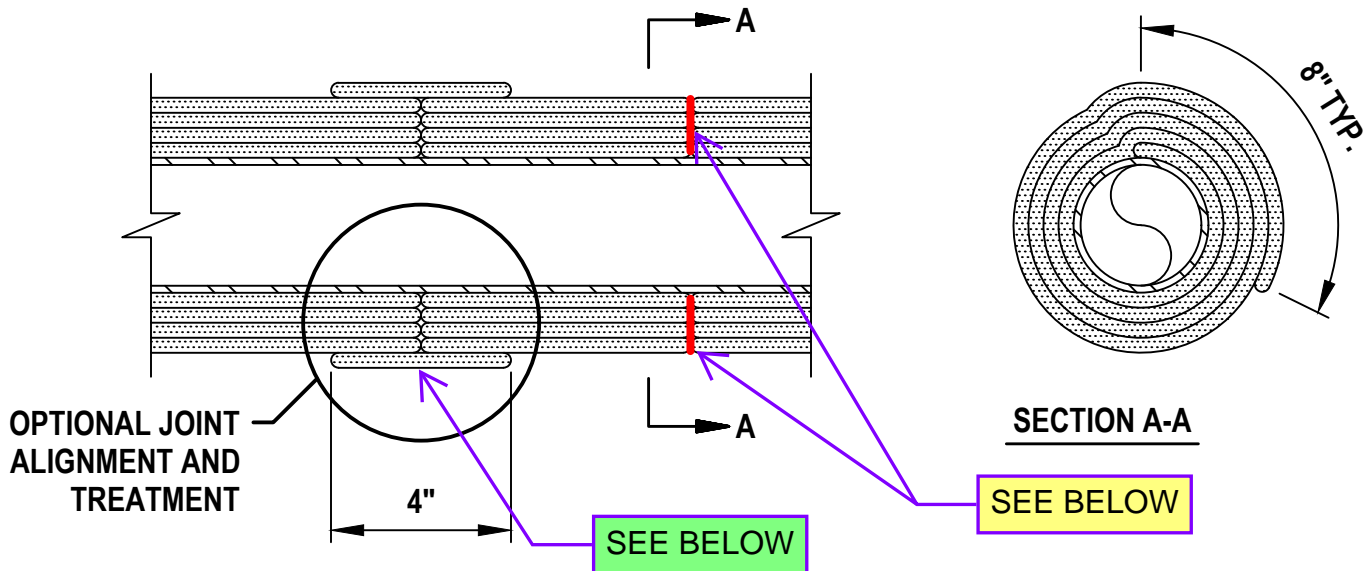
HI/AF 120-01

Ratings:  
Min. 1 in. Tubing, 3 Layers of Hilti Endo-Shield: 1 Hour  
Min. 1 in. Tubing, 5 Layers of Hilti Endo-Shield: 2-1/2 Hour  
Min. 4 in. Tubing, 4 Layers of Hilti Endo-Shield: 2 Hour

**METHOD 1**



**METHOD 2**



**Hilti Corporation**  
**Design Number HI/AF 120-01**  
**Applied Fireproofing**  
**Hilti CPF-ES Endo-Shield**  
**ASTM E1725**

**Ratings:**

**Min. 1 in. Tubing, 3 Layers of Hilti Endo-Shield: 1 Hour**  
**Min. 1 in. Tubing, 5 Layers of Hilti Endo-Shield: 2-1/2 Hour**  
**Min. 4 in. Tubing, 4 Layers of Hilti Endo-Shield: 2 Hour**

**1. CERTIFIED MANUFACTURER:** Hilti Corporation

**CERTIFIED PRODUCT:** Applied Fireproofing

**CERTIFIED MODEL:** Hilti CPF-ES Endo-Shield

Install Hilti Endo-Shield layers to achieve the desired fire resistance rating.

**METHOD 1 - INDIVIDUALLY WRAPPED**

LAYER 1 - Using ½ in. wide filament tape, aluminum foil tape, or FSK tape, attach leading edge of Hilti Endo-Shield onto the tubing (Item 3). Wrap Hilti Endo-Shield tightly around the tubing and overlapping 2 in. at the longitudinal seam. For the longitudinal seam, apply 3 in. wide aluminum foil tape or FSK tape centered for the full length of the seam. Additional wrap sections are added to insulate all straight runs of tubing. The radial seams are butted end-to-end without an overlap. For the radial seams, apply 3 in. wide aluminum foil tape or FSK tape over the seam and overlap 2 in. back onto itself.

The elbows are each fitted with a gore segment cut to accommodate the elbow radius that occurs as the Hilti Endo-Shield is wrapped radially around the elbow. Using min. ½ in. wide filament tape, aluminum foil tape, or FSK tape, attach edge of gore segment to tubing and wrap segment tightly around tubing overlapping 2 in. at the longitudinal seam which shall be located at the long radius of the elbow. Apply 3-in. wide aluminum foil tape or FSK tape centered for the full length of the longitudinal seam. The radial seam butted between the gore end segment and adjoining straight section is filled with Hilti CP 606 or FS-ONE MAX Firestop Sealant (Item 2). Apply 3 in. wide aluminum foil tape or FSK tape over the radial seam and overlap 2 in. back onto itself.

LAYER 2 - Wrap a second layer of Hilti Endo-Shield in the same manner as Layer 1. The start of Layer 2 begins at the longitudinal seam of Layer 1, secured with 3 in. wide aluminum foil tape or FSK tape covering the full length of the seam. Offset the Layer 2 radial seam 2 in. from the radial seam of Layer 1. Tightly wrap Layer 2 over Layer 1 and overlap the longitudinal seam by 2 in. Cover the full length of the longitudinal and radial seam with 3 in. wide aluminum foil tape or FSK tape.

The elbows are each fitted with a gore segment cut to accommodate the elbow radius that occurs as the Hilti Endo-Shield is wrapped radially around the elbow in the same manner as Layer 1. The gore segment is attached to Layer 1 with 3 in. wide aluminum foil tape or FSK tape and wrapped tightly around Layer 1, overlapping 2 in. at the longitudinal seam. The longitudinal seam of Layer 2 is located at the short radius of the elbow. Apply 3 in. wide aluminum foil tape or FSK tape centered for the full length of the longitudinal seam. The radial seam butted between the gore end segment and adjoining straight Layer 2 section is filled with Hilti CP 606 or FS-ONE MAX Firestop Sealant (Item 2). The elbow and straight section butt joints of Layer 1 and Layer 2 are in alignment and not offset. Apply 3 in. wide aluminum foil tape or FSK tape over the seams and overlap 2 in. back onto itself.

LAYER 3, 4, AND 5 - As required, wrap a third, fourth, or fifth layer layer of Hilti Endo-Shield in the same manner as Layer 2 to obtain desired rating.



**Hilti Firestop Systems**

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December 28, 2021

**Intertek**

Hilti Corporation  
Design Number HI/AF 120-01  
Applied Fireproofing  
Hilti CPF-ES Endo-Shield  
ASTM E1725

Ratings:

- Min. 1 in. Tubing, 3 Layers of Hilti Endo-Shield: 1 Hour
- Min. 1 in. Tubing, 5 Layers of Hilti Endo-Shield: 2-1/2 Hour
- Min. 4 in. Tubing, 4 Layers of Hilti Endo-Shield: 2 Hour

The elbow longitudinal seam for Layer 3 is located at the middle radius of the elbow, rotated 90 degrees from the longitudinal seam of Layer 2. The elbow longitudinal seam for Layer 4 is located at the middle radius of the elbow, rotated 180 degrees from the longitudinal seam of Layer 3. The elbow longitudinal seam for Layer 5 is located at the long radius of the elbow.

**OPTIONAL JOINT ALIGNMENT AND TREATMENT (METHOD 1)** - Alternatively, the radial seams of Layer 1 and subsequent layers can be aligned. When the radial seams are aligned, apply Hilti CP 606 or FS-ONE MAX Firestop Sealant (Item 2) over the entire edge of the of Hilti Endo-Shield prior to installing the adjacent section.

**METHOD 2 - CONTINUOUSLY WRAPPED**

Hilti Endo-Shield may be continuously wrapped around the tubing. Using min. 1/2 in. wide filament tape, aluminum foil tape, or FSK tape, attach leading edge of Hilti Endo-Shield onto the tubing (Item 3) and wrap continuously. Prior to installing the adjacent continuously wrapped section, apply 1/8 in. thick of CP 606 or FS-ONE MAX Firestop Sealant (Item 2) over the entire edge of the Hilti Endo-Shield. A 2 in. overlap of longitudinal seam shall be included for each layer required. For example, a 4 layer system requires an 8 in. overlap on final layer. Apply 3 in. wide aluminum foil tape or FSK tape over the full length of the longitudinal seam.

For elbow sections, follow details for Method 1, Layer 1, and Layer 2, and subsequent layers.

The outer layer for Method 1 and 2 is secured with min. 18 GA steel tie wire or 1/2 in. wide stainless steel banding located 1 in. from each radial seam. Space the steel tie wire 6 in. on center (oc) between the seams or the 1/2 in. wide stainless steel banding 12 in. oc. At the elbows, space the steel wire 2 in. oc or the stainless steel banding 2 in. oc, both at the short interior radius.

**OPTIONAL JOINT ALIGNMENT AND TREATMENT (METHOD 1 AND 2)** - As an alternative to applying sealant at radial seams and seams between the gore end segment and adjoining straight section, an additional 6 in. wide section of Hilti Endo-Shield may be centered over the radial seam of the final layer overlapping 2 in. at the longitudinal seam. Apply 3 in. wide aluminum foil or FSK tape over the longitudinal seam of the 4 in. wide section of Hilti Endo-Shield. Further secure section with min. 18 GA steel wire or 1/2 in. wide stainless steel banding located 1 in. from each edge.

**2. CERTIFIED MANUFACTURER:** Hilti Corporation

**CERTIFIED PRODUCT:** Sealant

**CERTIFIED MODEL:** CP 606 or FS-ONE MAX Firestop Sealant

Install CP 606 or FS-ONE MAX Firestop Sealant at seams of elbow gore segments and for any gap greater than 1/8 in. at a butted seam. Use only Hilti CP 606 Sealant bearing an UL Certified Mark and only FS-ONE MAX Firestop Sealant bearing an Intertek Certified Label.

**3. TUBING:** Use min. 1 in. diameter electrical metal tubing (EMT), intermediate metal conduit (IMC), or rigid metal conduit (RMC).



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