1. Metal pipe through concrete floor (3-HR)

2. Multiple metal pipes through concrete floor (3-HR)

3. Plastic pipe through concrete floor (3-HR)

4. Cable bundle through concrete floor (3-HR)

5. Plastic pipe through concrete floor (3-HR)

Notes:

1. Refer to the following specifications for firestopping:
   a. DT BM 91-1 Penetration (Firestop)
   b. DT BM 92-8 Penetration Firestop
   c. 2210.30 Penetration
   d. 2210.30(I) Penetration
   e. 2718.15 Communication
   f. 2719.37 Communication

   For Quality Control purposes, refer to the Quality Control portion of the specification.

2. Details shown are typical details, containing general information only. Always refer to the UL/UL system data for complete system requirements. If field conditions do not match requirements of details, approved alternate details shall be utilized. Design requirements, field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Fire Rating (F-Rating)
   - Temperature Rating (T-Rating)
   - Leakage Rating (L-Rating)
   - Production Year
   - bunker
   - Movement

   a. Type and Finish of the firestop construction
   b. Refer to alternate details matching the field conditions if not available;

   c. Manufacturer's engineering judgment drawings are acceptable
   d. Design requirements, field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   e. Fire Rating (F-Rating)
   f. Temperature Rating (T-Rating)
   g. Leakage Rating (L-Rating)
   h. Production Year
   i. bunker
   j. Movement

3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Consult UL Inc. for alternative systems or Engineering Judgment (UL 9759/9755). Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.

4. References:
   - UL LaboratoriesFire Resistance Directory
   - NFPA 70 National Electric Code
   - NFPA 21 National Electric Code
   - All governing local and regional building codes
   - Firestop System installation must meet requirements of ASTM
   - E494 UL TFR tested assemblies that provide a fire rating equal to the construction being penetrated
   - Firestopping assemblies are permanently labeled with a Hilti Firestop Label equipped with a QR code with equal to that of construction being penetrated.

   a. Warning - Do Not Disturb
   b. Protective Label(s) - Product(s) used
   c. Hourly Rating (H-Rating)
   d. Production Date

5. For useful bases requiring protection, use only Wall Opening Protective Materials, category (CIC) as classified by Underwriters Laboratories, Fire Resistance Directory (volume 1).

6. For additional information, refer to the Underwriters Laboratories Fire Resistance Directory (volumes 1 & 2).