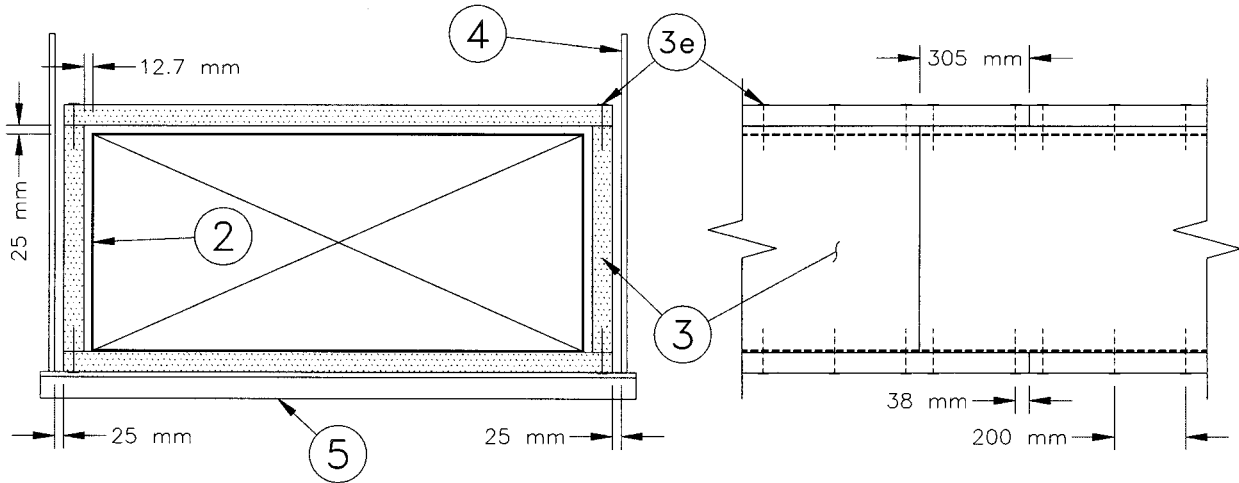


**DESIGN No. FRD-11**  
**(Fire Resistance Ratings)**

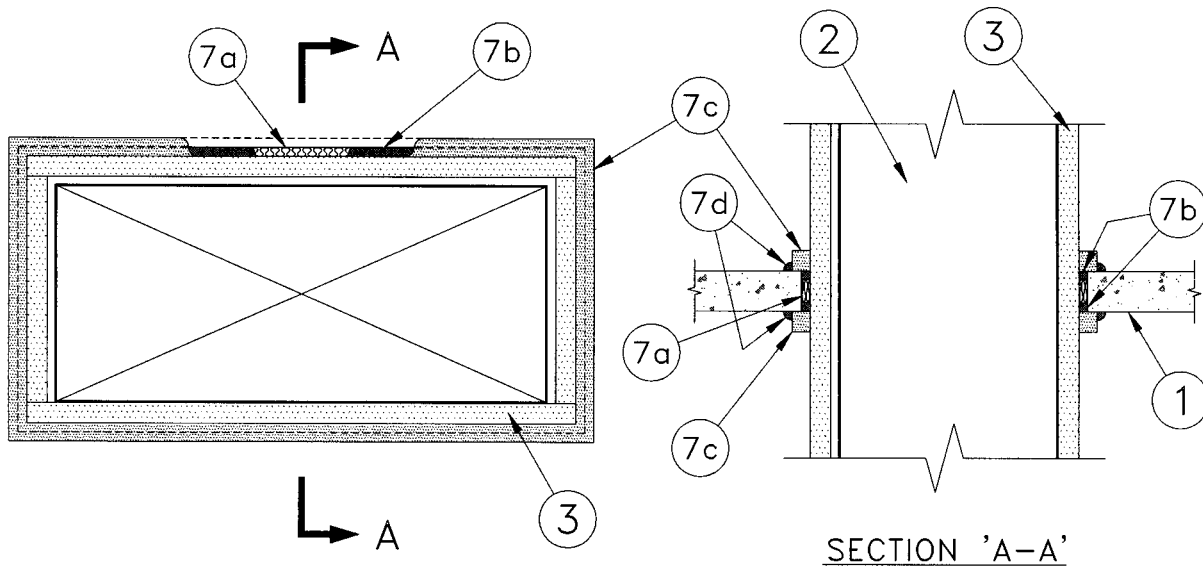
**Stability, Insulation, Integrity – 1-1/2 h (See Items 1 and 7)**

**Stability, Insulation, Integrity – 2 h (See Items 1 and 7)**



CROSS-SECTION  
CONSTRUCTION DETAILS

ELEVATION  
JOINT DETAILS FOR INSULATING BOARD



FIRESTOPPING DETAIL

**Maximum Size of Duct** - 0.834 m<sup>2</sup> maximum area with no dimension exceeding 1.372 m.

**Support Spacing** - 1200 mm maximum.

**Duct Use Limitation** - Duct is intended for use in pressurization situations or maximum negative pressure 300 Pa within duct.

**1. Masonry Wall or Floor** - Minimum depth or thickness as necessary for the grade of fire separation but not less than 190 mm normal-density or low-density concrete for Integrity of 2 hours and not less than 114 mm normal-density or low-density concrete for Integrity of 1-1/2 hours. Wall can also be constructed of nominal 190 mm thick concrete block laid up with mortar.

**2. Ventilation Air Duct** - Duct to be constructed in accordance with the requirements of the Standard for the Installation of Air Conditioning and Ventilation Systems, NFPA 90A, 1993 Edition. Minimum thickness of steel permitted, 0.6 mm thick galvanized steel; maximum size of duct 610 mm by 1372 mm nominal (0.834 m<sup>2</sup> maximum area with no dimension exceeding 1.372 m). For ducts with any dimension greater than 1000 mm, a 38 mm by 38 mm by 3 mm transverse stiffening angle, approximately 50 mm less than the dimension of the duct, shall be screw attached 204 mm OC to the duct, 76 mm beyond the top surface of floor and both surfaces of wall. Adequate clearance (approximately 50 mm for every 3050 mm of duct run) shall be provided at the end of all straight runs for expansion of the metal duct inside enclosure. Where reinforcements are used, the thickness of the reinforcing material is to be added to the clearance.

• **3. Duct Insulation** – HNNZC (Guide No. 40 U21.9). "Super Firetemp® T-Board" insulating board, nominal thickness 51 mm, installed to form a complete enclosure to cover the metal duct in accordance with the manufacturer's installation instructions and shall include the following features:

(a) The steel reinforcement provided at the bottom of the metal duct should rest on the insulating board. The clearance between the sides of the metal duct and the insulating board shall be a minimum of 12.7 mm. If stiffeners are used to reinforce the metal duct, the clearance between the stiffeners on the sides of the metal duct and the insulating board shall be a minimum of 12.7 mm. The clearance between the top side of the metal duct and the insulating board shall be a minimum of 25.4 mm. If stiffeners are used to reinforce the metal duct, the clearance between the stiffeners on the top of the metal duct and the insulating board shall be a minimum of 25.4 mm. Provide clearance at the end of all straight runs to allow for expansion of the metal duct inside the insulating board enclosure. Allow 50.8 mm of expansion for each 3.05 m of straight run.

(b) Butt joints in the insulating boards shall be staggered a minimum of 305 mm from other butt joints. No more than two adjacent joints should be placed in a common plane surrounding the duct.

(c) Insulating boards shall be fully supported on the two opposite ends. Where the insulating boards cannot be supported on the two opposite ends, spacers cut from the insulating boards shall be installed in accordance with the manufacturer's installation instructions.

(d) Cement all butt joints in the insulating board with Super Calstik Adhesive by buttering both mating surfaces with cement. Super Calstik shall be applied in quantities so that it squeezes out when the joints are mated together.

(e) Fasten insulating board sections together with 115 mm long Type "S" drywall screws at joints where the insulating boards meet at right angles. Screws shall be spaced a minimum of 205 mm OC. Screws placed adjacent to the joints in the insulating board shall be a maximum 50 mm from the ends. Joints formed in the insulating board at external vertical corners shall be reinforced by 51 mm x 51 sections cut from the insulating board and installed as per the manufacturer's installation instructions.

(f) Spackle all joints and screw heads in the insulating boards with Super Calstik Adhesive.

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**4. Support Rod** - Nominal 16 mm minimum diameter steel threaded rod, passing through pre-drilled hole and bolted with nut and washer on top of floor. Where the dimension of the duct is 450 mm x 965 mm or smaller based on perimeter, nominal 12.7 mm diameter steel threaded support rods passing through pre-drilled holes and bolted with nut and washer on top of floor. Hilti Type HD or equivalent concrete expansion anchors embedded a minimum 52 mm into the concrete may be used to fix 12.7 mm diameter support rods in concrete floor.

**5. Cradle** - Steel angle, 63.5 mm by 63.5 mm by 6.35 mm thick used to support insulated duct at 1200 mm OC maximum. Hung from floor with Support Rods (Item 5). Support rods passing through holes drilled in the flange of the steel angle and connected with washers and double nuts on the bottom of the steel angle. Where the dimension of the duct is 450 x 985 mm or smaller based on the perimeter, 51 mm by 51 mm by 6.35 mm thick steel angle may be used.

## Firestop System Installation

(2 h)

**6. Firestop System Component** – XHJZC (Guide No. 40 U19.13). Installed in accordance with manufacturer's instructions and as described herein:

(a) **Firestop Insulation** - Type "Firetemp® Wrap" with the polypropylene sheathing removed or ULC labelled mineral wool insulation with minimum density 64 kg/m<sup>3</sup> compressed to 67% minimum and installed into the opening to a minimum depth of 164 mm in a floor system or a wall system. Material to be recessed 6.5 mm from both surfaces of floor or wall to allow for the installation of sealant (Item 7b).

• (b) **Firestop System Component** – XHJZC (Guide No. 40 U19.13). Type "J.M. Firetemp CI" intumescent sealant applied over insulation (Item 7a) symmetrically to both surfaces of wall or floor, to a minimum depth of 6.5 mm flush with both surfaces.

(c) **Duct Collar** "Super Firetemp® T - Board" shall be cut into 57 mm thick by minimum 51 mm wide sections and installed around the perimeter of the fire stop by cementing it to the duct enclosure by Super Calstik Adhesive and fastening with 115 mm long Type "S" drywall screws, at minimum 203 mm OC. Duct collar shall be installed symmetrically on both surfaces of a wall or floor.

• (d) **Firestop System Component** – XHJZC (Guide No. 40 U19.13). Type "J.M. Firetemp CI" intumescent sealant applied as a minimum 6 mm bead at the joint formed between the 57 mm wide insulating board collar at the perimeter of the fire stopping and the masonry wall or floor (Item 1).

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**Firestop System Installation**  
**(1-1/2 h)**

7. **Firestop System Component** – XHJZC (Guide No. 40 U19.13). Installed in accordance with manufacturer's instructions and as described herein:

(a) **Firestop Insulation** -Type "Firetemp<sup>®</sup> Wrap" with the polypropylene sheathing removed or ULC labelled mineral wool insulation with minimum density 64 kg/m<sup>3</sup> compressed to 67% minimum and installed into the opening to a minimum depth of 107 mm in a floor system or 177 mm in a wall system. Material to be recessed 6.5 mm from top surface of wall or both surfaces of a wall to allow for the installation of sealant (Item 7b).

• (b) **Firestop System Component** – XHJZC (Guide No. 40 U19.13). Type "J.M. Firetemp CI" intumescent sealant applied over insulation (Item 7a) to a minimum depth of 6.5 mm flush with top surface of floor or symmetrically to both surfaces of wall.

(c) **Duct Collar** "Super Firetemp<sup>®</sup> T - Board" shall be cut into 57 mm thick by minimum 51 mm wide sections and installed around the perimeter of the fire stop by cementing it to the duct enclosure by Super Calstik Adhesive and fastening with 115 mm long Type "S" drywall screws, at minimum 203 mm OC. Duct collar shall be installed on the top surface of a floor or symmetrically to both surfaces of a wall.

• (d) **Firestop System Component** – XHJZC (Guide No. 40 U19.13). Type "J.M. Firetemp<sup>®</sup> CI" intumescent sealant applied as a minimum 6 mm bead at the joint formed between the 57 mm wide insulating board collar at the perimeter of the fire stopping and the masonry wall or floor (Item 1).

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