

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Firestopping at all penetrations and perimeter locations of fire resistance rated assemblies, including firestopping of mechanical and electrical service penetrations.

**1.2 SUMMARY**

- .1 Provide firestop systems consisting of materials, or combination of materials, installed to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations, blank openings, construction joints, or at perimeter fire containment in or adjacent to fire-rated barriers in accordance with the requirements of the Building Code and authorities applicable to this project.
- .2 Provide firestop systems at locations including, but not limited to, the following:
  - .1 Penetrations through fire-resistance-rated floor and ceiling assemblies requiring protected openings including both empty openings and openings that contain penetrations.
  - .2 Penetrations through fire-resistance-rated wall assemblies including both empty openings and openings that contain penetrations.
  - .3 Membrane penetrations in fire-resistance-rated wall assemblies where items penetrate one side of the barrier.
  - .4 Joints in fire-resistance-rated assemblies to allow independent movement.
  - .5 Joints, through penetrations and membrane penetrations in Smoke Barriers and Smoke Partitions.
- .3 Section does not include provision of ULC/UL Listed components which are part of penetrating item assembly, i.e. fire dampers in ductwork, etc.

**1.3 RELATED SECTIONS**

- .1 Section 09 21 16 - Gypsum Board Assemblies:

**1.4 REFERENCES**

- .1 Underwriters' Laboratories of Canada (ULC).
  - .1 Guide BXUVC, Fire Resistance Ratings.
  - .2 Guide XHEZC, Firestop Systems.
  - .3 CAN/ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction and Materials.
  - .4 CAN/ULC-S102, Standard Test Method for Surface Burning Characteristics of Building Materials.
  - .5 CAN/ULC-S115, Standard Method of Fire Tests of Firestop Systems.
- .2 Underwriters Laboratories Inc. (UL).
  - .1 Guide BXUV7, Fire Resistance Ratings Certified for Canada.
  - .2 Guide XHEZ7, Through-penetration Firestop Systems Certified for

Canada.

.3 UL 2079, Tests for Resistance of Building Joint Systems.

.3 American Society for Testing and Materials (ASTM).

.1 ASTM E2174, Standard Practice for On-site Inspection of Installed Fire Stops.

.2 ASTM E2307, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus.

.3 ASTM E2393, Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.

.4 International Firestop Council (IFC).

.1 Guidelines for Evaluating Firestop Systems Engineering Judgments

## **1.5 DEFINITIONS**

.1 Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, water and hot gases through penetrations and joints between fire rated wall, floor and roof assemblies.

.2 System Design: An assembly of products designed to maintain the integrity of fire-rated construction when tested in accordance with CAN/ULC-S115, designed by a voting IFC member, certified by an independent ULC licensed testing agency, and ULC/UL Listed.

## **1.6 QUALITY ASSURANCE**

.1 Firestop installation must meet requirements of CAN/ULC-S115 tested assemblies.

.2 For firestop applications for which no ULC or UL System Design is available through a manufacturer, a manufacturer's Engineering Judgment to be submitted to local Authorities Having Jurisdiction for review and approval prior to installation. Engineering Judgment drawings must follow requirements set forth by the International Firestop Council.

## **1.7 QUALITY CONTROL**

.1 Inspection: The Departmental Representative may retain an independent inspection agency to examine penetration and joint firestopping in accordance with ASTM E2174 and ASTM E2393.

.2 Testing will be paid by Departmental Representative, except where testing reveals non-compliant installation, for which replacement is to be paid by Installer.

## **1.8 SUBMITTALS**

.1 Submit in accordance with Section 01 33 00.

.2 Product Data: Provide data on product characteristics, performance and limitation

criteria.

- .3 Shop Drawings: Submit System Design listings, indicating ULC or UL design number and including illustrations, applicable to each firestop configuration.
  - .1 Where there is no System Design available for a particular firestop configuration, the Installer to pay for and obtain, from the firestop manufacturer, an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRRA) for submittal.
- .4 Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

## **1.9 ENVIRONMENTAL REQUIREMENTS**

- .1 VOC Limitations: For all materials supplied by this Section, the total VOC content must be less than or equal to 250 g/L, less water, when tested to ASTM D2369.
- .2 Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.
- .3 Do not proceed with installation of firestopping materials when temperatures or weather conditions exceed manufacturer's recommendations.
- .4 Ventilate solvent based and moisture-cure firestopping per manufacturer's instructions by natural means or, where inadequate, by forced air circulation.

## **1.10 PRE-INSTALLATION MEETING**

- .1 Conduct Pre-Construction Meeting at Project site two (2) weeks prior to start of Work.
  - .1 Review methods and procedures related to firestopping including, but not limited to, the following:
    - .1 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
    - .2 Review methods and procedures related to firestopping installation.
    - .3 Verify reinforcement, blocking and other ancillary components required by the System Design, installed by others, are in place.

## **Part 2 Products**

### **2.1 ACCEPTABLE MANUFACTURERS**

- .1 Provide firestopping and smoke seal systems only from manufacturers publishing ULC Listed or UL Certified for Use in Canada System Designs tested in accordance with CAN/ULC-S115:
  - .1 VOC Limit: 250 g/L.
  - .2 Acceptable Manufacturers: A/D Fire, Grace, Hilti, 3M.

## **2.2 ACCEPTABLE PRODUCTS**

- .1 Selection of appropriate system to maintain required fire resistance rating is the responsibility of the Installer.
  - .1 All systems or EJs are to be submitted for review.
- .2 Selection to be based on specified performance requirements and is limited to ULC Listed or UL Certified for Use in Canada System Designs tested in accordance with CAN/ULCS115.
- .3 Substitution of products, components or accessories forming part of a System Design is not acceptable, unless accompanied by an EJ or EFRA from the system manufacturer.
- .4 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- .5 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place, as required by System Design.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify openings are ready to receive the work of this section.
- .2 Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping.
- .3 Verify that blocking, anchoring devices, back-up materials, clips, sleeves, supports and other related materials is in place where required by System Design.
- .4 Do not apply firestopping to painted surfaces or surfaces treated with sealers, curing compounds, water repellent or other coatings unless compatibility of materials has been verified.
- .5 Notify the Departmental Representative of unsatisfactory conditions.
  - .1 Do not proceed with installation until unsatisfactory conditions have been corrected.
- .6 Commencement of Work will be considered acceptance of conditions.

### **3.2 PREPARATION**

- .1 Prime substrates where recommended by firestopping manufacturer using manufacturer's recommended products and methods.

- .2 Use masking tape to prevent firestopping from contacting adjoining surfaces scheduled to remain exposed.
  - .1 Remove tape on completion of installation, without disturbing the firestopping seal with substrates.
- .3 Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
- .4 Remove incompatible materials which may affect bond.

### **3.3 INSTALLATION**

- .1 Install firestopping material and components in accordance with ULC System Design and manufacturer's written instructions.
- .2 Install permanent warning labels in both official languages that opening has been firestop protected, provided by firestopping manufacturer, adjacent to openings that may be re-penetrated or disturbed.
- .3 Verify that pipes, conduit, cable, and other items penetrating fire rated construction have been permanently installed prior to firestopping.
- .4 Schedule work so partitions and other construction that conceals penetrations are not erected prior to firestopping.
- .5 Install forming/damming materials and other accessories in accordance with manufacturers written instructions.
- .6 Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
- .7 Install materials in a manner that contacts and adheres to the substrates formed by openings and penetrating items.
- .8 Finish to produce smooth, uniform surfaces for fill materials to remain exposed.

### **3.4 FIELD QUALITY CONTROL**

- .1 Notify Departmental Representative when completed installations are ready for inspection prior to concealing or enclosing area containing firestopping materials.
- .2 Where deficiencies are found, repair or replace the firestopping, at no cost to Departmental Representative, to comply with requirements of the System Design.

**END OF SECTION**

**Part 1        General**

**1.1            SECTION INCLUDES**

- .1        Preparing substrate surfaces.
- .2        Sealant and joint backing.

**1.2            RELATED SECTIONS**

- .1        Section 09 21 16 - Gypsum Board Assemblies.

**1.3            REFERENCES**

- .1        American Society for Testing of Materials (ASTM).
  - .1        ASTM C834-00e1, Standard Specification for Latex Sealants.
  - .2        ASTM C919-02, Standard Practice for Use of Sealants in Acoustical Applications.

**1.4            SUBMITTALS FOR REVIEW**

- .1        Submit in accordance with Section 01 33 00
- .2        Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and colour availability.

**1.5            DELIVERY, STORAGE AND HANDLING**

- .1        Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact.
- .2        Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

**Part 2        Products**

**2.1            SEALANT MATERIALS**

- .1        Acoustical sealant: To ASTM C919, single component, non-hardening, non-skinning, synthetic rubber.
- .2        Acrylic latex: To ASTM C 834, single component general purpose siliconized acrylic latex sealant.
- .3        Silicone, one part: To ASTM C 920, Type S, Grade NS, Class 25, single component neutral cure silicone sealant, plus minus 50% joint movement capability.

- .4 Silicone, mildew resistant: To ASTM C 920, single component mildew resistant silicone sealant, +/- 25% movement capability.

## **2.2 ACCESSORIES**

- .1 Primer: Type recommended by the sealant manufacturer and compatible with joint forming materials.
- .2 Joint Cleaner: Non-corrosive and non-staining type recommended by sealant manufacturer and compatible with joint forming materials.
- .3 Soft Backer Rod: To ASTM C 1330, non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants. Size required for joint design.
- .4 Joint Filler: Closed-cell polyethylene joint filler designed for use in cold joints, construction joints, or isolation joints wider than 6 mm. Size required for joint design.
- .5 Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

## **2.3 COLOURS**

- .1 Unless otherwise indicated in the respective sections of the specifications, the choice of color by the Departmental Representative. Use clear where possible.

## **2.4 SEALANT SCHEDULE**

- .1 Perimeters of interior door/window frames and surfaces, where required.
  - .1 Sealant type: Acrylic latex or Silicone, one part; refer to technical specification section.
- .2 Countertop backsplash at wall.
  - .1 Sealant type: Silicone, mildew resistant.
- .3 Interior partitions and acoustic applications:
  - .1 Sealant type: Acoustical sealant.
- .4 For locations not included in this schedule:
  - .1 Consult with Architect for proper selection of sealants.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify that substrate surfaces and joint openings are clean and dry and ready to receive work.

- .2 Verify that joint backing and release tapes are compatible with sealant.

### **3.2 PREPARATION**

- .1 Remove loose materials and foreign matter which might impair adhesion of sealant.
- .2 Protect elements surrounding the work of this section from damage or disfiguration.

### **3.3 INSTALLATION**

- .1 Perform preparation and install sealant in accordance with sealant manufacturer's instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- .4 Tool joints concave.

### **3.4 CLEANING**

- .1 Clean adjacent soiled surfaces.

### **3.5 PROTECTION OF FINISHED WORK**

- .1 Remove masking tape and excess sealant.
- .2 Protect sealants until cured.

**END OF SECTION**