

## **Capital Projects Group**

# **Firestopping and Smoke Seal Systems Specification**

Specification 20 05 55

Revision 0

Date: August 2018

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an Agency of the Government of Ontario

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# Amendment Record Sheet

Amendment in Clause No.	Date of Amendment	Description of Changes

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**1. GENERAL**

**1.1. SCOPE OF WORK**

- 1.1.1. Provide firestopping and smoke seal systems as detailed on drawings and as specified herein.
- 1.1.2. This Section specifies material requirements for firestopping and smoke seal systems that are common to mechanical work Sections and it is a supplement to each Section and is to be read accordingly.

**1.2. DESIGN REQUIREMENTS**

- 1.2.1. Smoke and fire seal materials and manufacturers to be specifically approved for each application of penetrated surfaces, specifically ULC certified with designated reference number for its specific installation.
- 1.2.2. Supply products of a single manufacturer for use on work of this Project.

**1.3. RELATED WORKS**

- 1.3.1. Section 20 05 05 - Mechanical Work General Instructions.
- 1.3.2. Section 20 05 10 - Basic Mechanical Materials and Methods.

**1.4. REFERENCE STANDARDS**

- 1.4.1. Standards and codes to be latest editions adopted by and enforced by local governing authorities.
- 1.4.2. CAN/ULC S115 Standard Method of Fire Tests of Firestop Systems.
- 1.4.3. CAN/ULC S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- 1.4.4. ULC Guide No. 40 U19 for Service Penetration Assemblies and Firestopping Materials.

**1.5. WARRANTY**

- 1.5.1. Products to be guaranteed by manufacturer, for a minimum of 2 years after acceptance by Metrolinx.

**1.6. DELIVERY, STORAGE AND HANDLING**

- 1.6.1. Handle and store products in accordance with manufacturer's instructions, in locations approved by Metrolinx. Include one copy of these instructions with product at time of shipment.

## **1.7. SUBMITTALS**

- 1.7.1. Refer to submittal requirements in Section 20 05 05.
- 1.7.2. At least 4 weeks prior to work commencing, submit a sample of each type of material requirements for firestop and smoke seal systems in applied form. Identify each system with manufacturer's name and type, ULC designation, and proposed use. After samples are reviewed, work is to conform to reviewed samples.
- 1.7.3. Submit a product data sheet and WHIMIS sheet for each firestopping and smoke seal product.
- 1.7.4. Submit for review, full company name and experience of proposed firestopping and smoke seal system applicator.
- 1.7.5. Submit letter of proper firestopping and smoke seal certification as specified in Part 3 of this Section.
- 1.7.6. Product Data
  - a) Submit manufacturer's Product data indicating:
    - 1) technical data, supplemented by bulletins, component illustrations, detailed views, technical descriptions of items, and parts lists;
    - 2) performance criteria, compliance with appropriate reference standards, characteristics, limitations, and troubleshooting protocol;
    - 3) product transportation, storage, handling, and installation requirements;
    - 4) product identification in accordance with Metrolinx requirements.
- 1.7.7. Shop Drawings
  - a) Submit shop drawings sheets for product, including:
    - 1) installation drawings with specific to installations ULC certifications;
    - 2) schedule of opening locations and sizes, penetrating items, and required listed ULC design numbers to seal openings to maintain fire resistance ratings.
- 1.7.8. Commissioning Package
  - a) Submit the following in accordance with Sections 20 05 05 and 20 05 40:
    - 1) Commissioning Plan;
    - 2) Commissioning Procedures;

- 3) Certificate of Readiness;
- 4) complete test sheets specified in Section 20 05 40 and attach them to the Certificate of Readiness;
- 5) Source Quality Control inspection and test results and attach to the Certificate of Readiness.

#### 1.7.9. Commissioning Closeout Package

- a) Submit the following in accordance with Section 20 05 05:
  - 1) Deficiency Report;
  - 2) Commissioning Closeout Report;
  - 3) submit the following for each Product for incorporation into the Operation and Maintenance Manuals in accordance with Section 20 05 05:
    - i) Identification: Manufacturer's name, type, year, serial number, number of units, capacity, and identification to related systems;
    - ii) functional description detailing operation and control of components;
    - iii) performance criteria and maintenance data;
    - iv) safety precautions;
    - v) product storage, preparation, handling, and installation requirements.

### 1.8. QUALITY ASSURANCE

- 1.8.1. Comply with firestopping and smoke seal product manufacturer's recommendations regarding suitable environment conditions for product installation.
- 1.8.2. Include for manufacturer's authorized representative to inspect and verify each installation and application. Submit test report signed and verified by system installer's authorized representative and manufacturer's representative.
- 1.8.3. Manufacturers Qualifications
  - a) Manufacturer shall be ISO 9000, 9001 or 9002 certified. Manufacturer of product shall have produced similar product for a minimum period of five years. When requested by Consultant, an acceptable list of installations with similar product shall be provided demonstrating compliance with this requirement.

- b) Where manufacturers provide after installation onsite inspection of product installations, include for manufacturer's authorized representative to perform onsite inspection and certificate of approvals.

#### 1.8.4. Installers Qualifications

- a) Applicator is to have a minimum of three years of successful experience on projects of similar size and complexity, and applicator's qualifications are to be submitted to Consultant for review.
- b) Installers of systems are to be fully qualified and experienced installers of respective products and work in which they are installing.
- c) Installer to be manufacturer trained and certified on specific product. Submit copy of training certificate with shop drawings.

#### 1.8.5. Regulatory Requirements

- a) Products and work to comply with applicable local governing authority regulations, bylaws and directives.
- b) Include for required inspections and certificate of approvals of installation work from local governing authorities.

## 2. PRODUCTS

### 2.1. FIRESTOPPING AND SMOKE SEAL SYSTEM MATERIALS

- 2.1.1. Asbestos-free, elastomeric materials and intumescent materials, tested, listed and labelled by ULC in accordance with CAN/ULC S115, and CAN/ULC S101 for installation in ULC designated firestopping, and smoke seal systems to provide a positive fire, water and smoke seal and a fire resistance rating (flame, hose stream and temperature) no less than fire rating for surrounding construction.
- 2.1.2. Firestopping and smoke seal material system to be specifically ULC certified with designated reference number for its specific installation. As part of shop drawing submission, submit copies of firestopping drawings with ULC certificate and system number for each specific installation.
- 2.1.3. Materials are to be compatible with abutting dissimilar materials and finishes and complete with primers, damming and back-up materials, supports, and anchoring devices in accordance with firestopping manufacturer's recommendations and ULC tested assembly. Coordinate material requirements with trades supplying abutting areas of materials.
- 2.1.4. Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance ratings.

- 2.1.5. Typically, for openings of up to 250 mm (10") in diameter, provide putty pad type firestop materials equivalent to Specified Technologies Inc. "SpecSeal" intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibres or silicone compounds.
- 2.1.6. Typically, for openings of greater than 250 mm (10") in diameter, and for rectangular openings, provide pillow type firestop materials equivalent to Specified Technologies Inc. "SpecSeal" re-enterable, non-curing, mineral fibre core encapsulated on six sides with intumescent coating contained in a flame retardant poly bag.
- 2.1.7. Pipe insulation forming part of a fire and smoke seal assembly: rigid, sectional, sleeve type, fire-rated, non-combustible, longitudinally split mineral wool or basalt pipe insulation with a reinforced vapour barrier jacket, and compatible with ULC S115 and ULC S101 firestopping.
- 2.1.8. Supply products of a single manufacturer for use on work of this Division.
- 2.1.9. Acceptable certification to also include certification by Underwriters Laboratories of Northbrook IL, using tests conforming to ULC-S115 and given cUL listing published by UL in their "Products Certified for Canada (cUL) Directory".
- 2.1.10. Standard of acceptance manufacturers are:
  - a) Specified Technologies Inc.;
  - b) 3M Canada Inc.;
  - c) Tremco;
  - d) A/D Fire Protection Systems;
  - e) Nelson;
  - f) Hilti Canada;
  - g) Or approved equivalent.

### **3. EXECUTION**

#### **3.1. INSTALLATION OF FIRESTOPPING AND SMOKE SEAL MATERIALS**

- 3.1.1. Where work penetrates or punctures fire rated construction, provide ULC certified, listed and labelled firestopping and smoke sealing packing material systems to seal openings and voids around and within raceway and to ensure that continuity and integrity of fire separation is maintained. Openings not in immediate vicinity of working areas are to be firestopped and sealed same day as being opened.

- 3.1.2. Install firestopping and smoke seal materials for each installation in strict accordance with specific ULC certification number and manufacturer's instructions. Comply with local governing building code requirements and obtain approvals from local building inspection department. Ensure that openings through fire separations do not exceed maximum size wall opening, and maximum and minimum dimensions indicated in ULC Guide No. 40 U19 for Service Penetration Assemblies and firestopping materials.
- 3.1.3. Ensure that continuity and integrity of fire separation is maintained and conform to requirements of latest edition of ULC publication "List of Equipment and Materials, Volume II, Building Construction".
- 3.1.4. Comply with following requirements:
  - a) examine substrates, openings, voids, adjoining construction and conditions under which firestop and smoke seal system is to be installed. Confirm compatibility of surfaces;
  - b) verify penetrating items are securely fixed and properly located with proper space allowance between penetrations and surfaces of openings;
  - c) report any unsuitable or unsatisfactory conditions to Consultant in writing, prior to commencement of work. Commencement of work will mean acceptance of conditions and surfaces;
  - d) mask where necessary to avoid spillage and over coating onto adjoining surfaces. Remove stains on adjacent surfaces;
  - e) prime substrates in accordance with product manufacturer's written instructions;
  - f) provide temporary forming as required and remove only after materials have gained sufficient strength and after initial curing;
  - g) tool or trowel exposed surfaces to a neat, smooth, and consistent finish;
  - h) remove excess compound promptly as work progresses and upon completion;
  - i) at fusible link damper locations, seal perimeter of angle iron framing on both sides of wall or slab with ULC listed and labelled sealant materials to provide a positive smoke seal.
- 3.1.5. Notify Consultant when work is complete and ready for inspection, and prior to concealing or enclosing firestopping and smoke seal materials and service penetration assemblies. Arrange for final inspection of work by local governing authority inspector prior to concealing or enclosing work. Make any corrections required.

- 3.1.6. On completion of firestopping and smoke sealing installation, submit a Letter of Assurance to Consultant certifying the firestopping and smoke sealing installation has been carried out throughout the building to service penetrations and that installation has been performed in strict accordance with requirements of local governing building code, any applicable local municipal codes, ULC requirements, and manufacturer's instructions.
- 3.1.7. Manufacturer's authorized representative to inspect and verify each installation and provide a test report signed by installing trade and manufacturer's representative. Test report to list each installation and respective ULC certification and number.
- 3.1.8. Where work requires removal of existing firestopping materials and replacement of firestopping materials after penetration changes have been made, ensure that replacement material is same material and manufacturer of existing if any remains in place, or ensure that all existing material is removed before installation of replacement material.

**END OF SECTION**