

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 09 21 16 - Gypsum Board Assemblies: Blocking required in walls to comply with System Design.

1.2 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 E2174-19, Standard Practice for On-site Inspection of Installed Fire Stops.
 - .2 ASTM E2307-19, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus.
 - .3 ASTM E2393-10a (2015), 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

1.3 QUALITY ASSURANCE / QUALITY CONTROL

- .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.

- .3 Inspection: The Department Representative will retain an independent inspection agency to examine penetration and joint firestopping in accordance with ASTM E2174 and ASTM E2393.
- .4 Testing will be paid by the Owner.

1.4 SITE REVIEW

- .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.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Provide data on product characteristics, performance and limitation criteria for all firestopping products to be used on this project.
- .3 Submit WHMIS and MSDS data sheets for all materials used.
- .4 Shop Drawings: Submit System Design listings, indicating ULC or UL for Canada mark 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 (EFRRA) for submittal.
- .5 Schedule: Provide schedule indicating material to be used, building elements to be protected, hourly rating and appropriate references.
- .6 Provide Manufacturer's Installation Instructions including preparation of area to be fire stopped.
- .7 Provide letter from the manufacturer confirming that the sub-contractor is a certified installer of their product and currently in good standing.

1.6 PERFORMANCE REQUIREMENTS

- .1 Penetrations: Provide and install firestopping systems produced to resist the spread of fire, and the passage of smoke and other gases according to requirements indicated, including but not limited to the following:
 - .1 Firestop all penetrations passing through fire resistance rated wall and floor assemblies and other locations as indicated on the drawings.
 - .2 Provide and install complete penetration firestopping systems that have been tested and approved by third party testing agency.

- .3 F - Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, but not less than one hour or the fire resistance rating of the construction being penetrated.
- .4 T - Rated Through-Penetration Firestop Systems: Provide firestop systems with T ratings, in addition to F ratings, where required by Code.
- .5 L – Rated Through-Penetration Firestop Systems: Provide firestop systems with L ratings, in addition to F and T ratings, where required by Code.
- .6 W – Rated Through-Penetration Firestop Systems: Provide firestop systems with W Water Resistance ratings, in addition to F, T and L ratings, where indicated.
- .2 Perimeter Fire Containment Systems: Provide interior perimeter joint systems with fire resistance ratings indicated, but not less than the fire-resistance rating of the floor construction.
- .3 Fire-Resistive Joints: Provide joint systems with fire-resistance ratings indicated, but not less than the fire-resistance rating of the construction in which the joint occurs.
- .4 For firestopping exposed to view, traffic, moisture, and physical damage, provide appropriate firestop systems for these conditions.

1.7 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.

1.8 SINGLE SOURCE RESPONSIBILITY

- .1 Obtain firestop systems for each kind of penetration and construction condition indicated from a single primary firestop systems manufacturer.
- .2 Where selected firestop system manufacturer cannot provide a System Design to suit site conditions, provide a tested and listed firestop System Design from an alternate manufacturer before using an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA).

1.9 SEQUENCING AND SCHEDULING

- .1 Do not cover up firestopping installations until receipt of written notice from the Departmental Representative.

1.10 PRODUCTS DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management HPB.

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.

2.2 ACCEPTABLE PRODUCTS

- .1 Selection of appropriate system to maintain required fire resistance rating is the responsibility of the Installer. 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 EFRRA from the system manufacturer.

2.3 ACCESSORIES

- .1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- .2 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. 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. Limit priming to area of bond.
- .2 Use masking tape to prevent firestopping from contacting adjoining surfaces scheduled to remain exposed. 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 - GENERAL

- .1 Install firestopping material and components in accordance with System Design and manufacturer's written instructions.
- .2 Install permanent warning labels, provided by firestopping manufacturer, adjacent to openings that may be re-penetrated or disturbed. Include following information:
 - .1 Warning that opening has being firestop protected.
 - .2 System Design number.
 - .3 F rating or FT rating.
 - .4 Fire stop products used.
 - .5 Contact person and phone number in case of modification or new penetration of firestop system.

3.4 INSTALLING PENETRATION FIRESTOPS

- .1 Verify that pipes, conduit, cable, and other items penetrating fire rated construction have been permanently installed prior to firestopping.
- .2 Schedule work so partitions and other construction that conceals penetrations are not erected prior to firestopping.
- .3 Install forming/damming materials and other accessories in accordance with manufacturers written instructions.
- .4 Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
- .5 Install materials to contact and adhere to substrates formed by openings and penetrating items.

- .6 Finish to produce smooth, uniform surfaces for fill materials to remain exposed.

3.5 INSTALLING FIRESTOP JOINT SYSTEMS

- .1 Install joint fillers to provide support of firestop materials during application.
- .2 Install in full contact with joint substrates.
- .3 Completely fill recesses provided for joint configuration.
- .4 Provide uniform, cross-sectional shapes and depths relative to joint width that optimize movement capability.
- .5 Tool immediately after application and prior to skinning. Form smooth, uniform beads of configuration required to produce fire-resistance rating, eliminate air pockets and ensure contact and adhesion with sides of joint.

3.6 INSTALLING PERIMETER FIRE BARRIER SYSTEMS

- .1 Install metal framing, curtain wall insulation, mechanical attachments, safing materials and firestop materials in accordance with System Design.

3.7 FIELD QUALITY CONTROL

- .1 Notify Departmental Representative when completed installations are ready for inspection prior to concealing or enclosing area containing firestopping materials.
- .2 Arrange for inspections by Departmental Representative's independent inspection agency.
- .3 Where no deficiencies are found, provide repair of inspected installations, paid by Departmental Representative, as required to comply with requirements of the System Design.
- .4 Where deficiencies are found, repair or replace the firestopping, at no cost to Departmental Representative, to comply with requirements of the System Design.

3.8 CLEANING

- .1 Clean excess materials as work progresses and upon completion of Work.

3.9 PROTECTION OF FINISHED WORK

- .1 Protect firestopping during and after curing period from contact with contaminating substances.
- .2 If damage caused by others, make appropriate repairs at no cost to Departmental Representative.

END OF SECTION