Part 1 General

1.1 SECTION INCLUDES

.1 Fibreglass batt insulation for acoustical assemblies.

1.2 RELATED SECTIONS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 09 21 16 - Gypsum Board Assemblies.

.3 Section 09 22 16 - Non-Structural Metal Framing.

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM C553-02, Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.

.2 ASTM C665-01e1, Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.3 ASTM C1320-05, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

.2 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S702-1997, Standard for Mineral Fibre Insulation.

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal .

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

Part 2 Products

2.1 INSULATION

.1 Batt mineral fibre: to ASTM C665 or CAN/ULC S702, for thermal and acoustic applications.

.1 Type: 1.

.2 Thickness: To fill depth of framing unless indicated otherwise.

2.2 ACCESSORIES

.1 Insulation clips:

.1 Impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

.2 Tape: as recommended by manufacturer.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSULATION INSTALLATION

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces and to ASTM C1320.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Do not compress insulation to fit into spaces.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures.

.5 Do not enclose insulation until it has been inspected and approved by Departmental Representative.

3.3 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

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.

.2 Supply and installation of firestopping for all disciplines and applications shall be by this section.

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 roof 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: Blocking required in walls to comply with System Design.

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.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience, certified by the firestop manufacturer.

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. 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.

.4 Schedule: Provide schedule indicating material to be used, building elements to be protected, hourly rating and appropriate references.

.5 Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

.6 Submit material safety data sheets (MSDS) provided with products delivered to job site.

1.9 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.

1.10 ENVIRONMENTAL REQUIREMENTS

.1 Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.

.2 Do not proceed with installation of firestopping materials when temperatures or weather conditions exceed manufacturer's recommendations.

.3 Ventilate solvent based and moisture-cure firestopping per manufacturer's instructions by natural means or, where inadequate, by forced air circulation.

1.11 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).

1.12 SEQUENCING AND SCHEDULING

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

1.13 PRE-INSTALLATION CONFERENCE

.1 Conduct conference at Project site. Review methods and procedures related to firestopping including, but not limited to, the following:

.2 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

.3 Review methods and procedures related to firestopping installation.

.4 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 Acceptable Manufacturers: A/D Fire, Grace, Hilti, 3M or approved equal.

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/ULC-S115.

.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. If damage caused by others, make appropriate repairs at no cost to Departmental Representative.

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 08 11 16 - Aluminum Doors and Frames.

.2 Section 09 21 16 - Gypsum Board Assemblies.

1.3 REFERENCES

.1 ASTM C834-10 - Standard Specification for Latex Sealants.

.2 ASTM C919-12 - Standard Practice for Use of Sealants in Acoustical Applications.

.3 ASTM C920-11 - Standard Specification for Elastomeric Joint Sealants.

.4 ASTM C1330-02(2013) - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

.5 ASTM D5893/D5893M-10 - Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

1.4 SUBMITTALS FOR REVIEW

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and colour availability.

.3 Samples: Submit two sample ribbons of sealant, illustrating sealant colours for selection.

.4 Submit laboratory tests or data validating product compliance with performance criteria specified. Include SWRI validation certificate where required.

.5 Closeout Submittals: Sealant applicator to submit copies of the Manufacturer's Warranty.

1.5 SUBMITTALS FOR INFORMATION

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and field quality control testing.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

.2 Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Condition products to approximately 16 to 21°C for use in accordance with manufacturer's recommendations.

1.7 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

Part 2 Products

2.1 SEALANT MATERIALS

.1 Acoustical sealant: to ASTM C919, single component, non-hardening, non-skinning, synthetic rubber. Acceptable product: Tremco Acoustical Sealant.

.2 Acrylic latex: to ASTM C 834, single component general purpose siliconized acrylic latex sealant. Acceptable product: BASF Sonnolastic Sonolac, GE L100, Tremco Tremflex 834.

.3 Butyl Sealant: to ASTM C1311, single component, solvent release, non-skinning, non-sagging, black colour; Acceptable Products: Tremco Butyl Sealant.

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 C1330, non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants. Size required for joint design.

.4 Closed-Cell Backer Rod: to ASTM C1330, closed-cell polyethylene rod designed for use with cold-applied joint sealants for on-grade or below-grade applications. Size required for joint design.

.5 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.

.6 Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

2.3 COLOURS

.1 Unless indicated otherwise in respective technical specification sections, colour selection is at the option of the Departmental Representative.

2.4 SEALANT SCHEDULE

.1 Perimeters of interior door/window frames and surfaces, where required.

.1 Sealant type: Acrylic latex.

.2 Building envelope applications (vapour barrier/vapour barrier, vapour barrier/wall opening, etc):

.1 Sealant type: Acoustical sealant.

.3 Interior partitions and acoustic applications:

.1 Sealant type: Acoustical sealant.

.4 For locations not included in this schedule, consult with Departmental Representative for proper selection of sealants.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that substrate surfaces and joint openings are clean, dry, and free of frost 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 Clean and prime joints in accordance with sealant manufacturer's written instructions.

.3 Perform preparation in accordance with sealant manufacturer's written instructions.

.4 Protect elements surrounding the work of this section from damage or disfiguration.

3.3 INSTALLATION

.1 Install sealant in accordance with sealant manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.

.4 Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.

.5 Install bond breaker where joint backing is not used.

.6 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

.7 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

.8 Tool joints concave.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.2 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