Section 7720 FIRESTOPPING & SMOKE SEALS (US SPECIFICATION)

1. GENERAL

1.1 FOR THE PURPOSES OF THIS SECTION THE FOLLOWING DEFINITIONS SHALL APPLY;

1.1.1 ***Firestop System;*** means a specific construction consisting of any device intended to close off an opening or penetration during a fire and/or materials that fill an opening in a wall or floor assembly where penetration is by cables, cable trays, conduits, ducts, pipes and any poke through termination device, such as electrical outlet boxes along with their means of support through the wall or the floor opening. (ref: ASTM E-814)

1.1.2 ***Firestop System Report;*** means results reported in accordance with the performance in the tests prescribed in the ASTM E-814 methods. Reports shall include the assembly, the materials and penetrating items of the tested *Firestop Systems* and each condition shall be identified and described. Drawings depicting geometry, exact size (length-width-thickness) and location of firestop systems within the test assembly shall be recorded. (ref: ASTM E-814)

1.1.3 ***Listed System Design;*** means an informational listing by an *Accredited Testing Agency* developed from *Firestop Systems Reports* depicting the correct use and installation of firestop materials. These published listings contain drawings depicting geometry, minimum/maximum dimensions for all the individual components tested including penetration item type and size, annular space, insulating materials used, substrate types and thickness, sealant types and thickness, etc.

1.1.4 ***Fire Compartment;*** means a enclosed space in a building that is separated from all other parts of the building by enclosing construction providing a *Fire Separation* having a required fire-resistance rating. *Fire Compartments* are also referred to as Fire Zones.

1.1.5 ***Fire Resistance Rating;*** means the time in hours or fraction thereof that a material or assembly of materials will withstand the passage of flame and the transmission of heat when exposed to fire under specified conditions of test and performance criteria, or as determined by extension of interpretation derived therefrom as prescribed in the National Building Code.

1.1.6 ***Fire Separation;*** means a construction assembly that acts as a barrier against the spread of fire.

1.1.7 ***Firewall;*** means a type of fire separation of noncombustible construction which subdivides a building or separates adjoining buildings to resist the spread of fire and which has a fire-resistance rating and has structural ability to remain intact under fire conditions for the required fire-rated time.

1.1.8 ***Combustible Construction;*** means that type of construction that does not meet the requirement for noncombustible construction. Combustible means that a material fails to meet the acceptance criteria of Standard Method of test for determination of non-combustibility in Building Materials.

1.1.9 ***Noncombustible Construction;*** means that type of construction in which a degree of fire safety is attained by the use of noncombustible materials for structural members and other building assemblies. Noncombustible means that a material meets the acceptance criteria of , (Standard Method of test for determination of non-combustibility in Building Materials).

1.1.10 ***Authority Having Jurisdiction (AHJ);*** means the governmental body responsible for the enforcement of any part of the Standard Codes or the official or agency designated by that body to exercise such a function and/or the Architect.

1.1.11 ***Service Penetration;*** means any hole or void created in the faces or edges of *Fire Separations* or *Firewalls* for Mechanical and Electrical through penetrations or poke through termination devices and/or other building services.

1.1.12 ***Firestop Material;*** means any material used individually or as a component to create a onsite or off site ASTM E-814 *Firestop Systems*.

1.1.13 ***Single Component Firestop System;*** means a *Firestop Material* that has a *Listed Systems Design* and is used individually without the use of high temperature insulation or other materials to create a firestop systems.

1.1.14 ***Multiple Component Firestop System;*** means a group of *Firestop Materials* that are used within a *Listed Systems Design* to create a *Firestop System*.

1.1.15 ***Smoke Seal;*** means an elastomeric sealant material that has been used for a *Single Component Firestop System* and that has a ASTM E-84 flame spread rating of 25 or less.

1.1.16 ***Tightly Fitted;*** means penetrating items that are cast in place in *Noncombustible Construction* or have "0" annular space in *Combustible Construction*. In C*ombustible Construction Fire Separations* each assembly of this type must have a *Smoke Seal*.

1.1.16 ***Third Party Testing Agency;*** means any accredited Standards Council notified testing agency approved to perform Fire Endurance Testing as outlined in this section of Work which includes any of the following agencies:

1.1.17.1 Underwriters Laboratories (United States), **CUL** mark..

1.1.17.2 Inchcape Testing Service NA Ltd. (formerly Warnock Hersey), **WH** mark

1.2 WORK INCLUDED

1.2.1 Work of this Section comprises *Firestop Materials* and *Listed Systems Designs* intended to act as *Firestop Systems* and *Smoke Seals* at openings around penetrations, at unpenetrated openings, at projecting or recessed items, and at openings and joints within and around *Fire Separations* and *Firewalls*.

1.2.2 Provide seals in all *Fire Rated Separations* and *Firewalls* to form tight barriers to retard the passage of flame and smoke.

1.2.3 The installed seals shall provide and maintain the fire resistance rating of the adjacent floor, wall or other fire separation assembly to the requirements of ASTM E-814 and acceptable to *Authorities Having Jurisdiction* and the Architect.

1.2.4 Firestop and smoke seals within mechanical (i.e. inside sleeves, ducts, dampers) and electrical assemblies (i.e. inside electrical bus ducts, conduits) shall be provided as part of the Work of Divisions 15 and 16 respectively. *Firestop* and *Smoke Seal* around the outside of such mechanical, and electrical assemblies where they penetrate *Fire Rated Separations* and *Firewalls* shall form part of the Work of this Section.

1.2.5 Fluid seals as well as fire and smoke seals are required for all floor penetrations in Laboratories and Operating Rooms in Hospitals, Universities and Schools.

1.3 RELATED WORK

1.3.1 Division 3, Section 03300 - Cast In Place Concrete

1.3.2 Division 4, Section 04200 - Unit Masonry

1.3.3 Division 7, Section 07900 - Joint Sealants.

1.3.4 Division 9, Section 09210 - Gypsum Plaster

1.3.5 Division 9, Section 09215 - Veneer Plaster

1.3.6 Division 9, Section 09250 - Gypsum Board

1.3.7 Division 9, Section 09260 - Shaftwall Systems

1.3.8 Division 9, Section 09265 - Area Separation Walls

1.3.9 Divisions 15, Section 15050- Basic Materials and Methods

1.3.10 Divisions 16, Section 16050- Basic Materials and Methods

1.4 QUALITY ASSURANCE

1.4.1 Provide the work of this Section using competent installers, experienced in the application of the materials and systems being used, approved and trained by the material or system manufacturer.

1.4.2 Firestop Systems shall conform to the (F) and (T) ratings of ASTM E-814 and other local requirements of *Authorities Having Jurisdiction*.

1.4.3 *Firestop Materials* and *Smoke Seal* materials shall have a flame spread rating of 25 or less.

1.5 REFERENCES AND ACCEPTABLE STANDARDS

1.5.1 ASTM E-814 Standard Method of Fire Tests of Firestop Systems.

1.5.2 ASTM E-191 Standard Method of Fire Endurance Tests of Building Construction and Materials.

1.5.3 ASTM E-84 Standard Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies.

1.6 SUBMITTALS

1.6.1 Submit the following:

1.6.1.1 Manufacturer's Listed Systems Designs.

1.6.1.2 Manufacturer's Product Data Sheets.

1.6.1.3 Manufacturer's Materials Safety Data Sheets.

1.6.1.4 Manufacturer's printed instructions for installation on each proposed product.

Manufacturer's prefabricated devices providing descriptions sufficient for identification at the Project site.

1.6.1.6 Manufacturer's Third Party Testing Agency Firestop Systems Report (only if requested).

1.6.1.7 Clearly indicate which firestop sealant products are single component firestops and which are multiple component (ones that require high temperature insulation filler materials to comply with the ASTM E-814 Standard).

1.6.1.8 Samples of each type of firestopping and smoke seal material.

1.6.1.9 Submit Trade Qualifications (TQ) Certificate or related experience of each installer performing work on the site.

1.6.1.10 If an independent firestop contractor is engaged, a copy of that contractors Liability Insurance Policy. (This clause is optional in some jurisdictions)

1.7 DELIVERY AND STORAGE

1.7.1 Deliver and store materials in their original unopened containers. Protect from damage and environmental conditions as noted under manufacturer's recommendations.

2. PRODUCTS

2.1 ACCEPTABLE PRODUCTS AND OR MANUFACTURERS

2.1.1 For the purposes of this specification there are NO GENERALLY APPROVED PRODUCTS OR MANUFACTURERS. Only *Firestop Systems* tested to the ASTM E-814 Standard complete with *Listed Systems Designs* showing their appropriate individual applications are acceptable.

2.2 MATERIALS

2.2.1 All *Firestop Systems* and *Listed Systems Designs* selected for use shall be listed and tested by a Standards a recognized and accredited *Third Party Testing Agency* in accordance with ASTM E-814, Standard Method of Fire Tests of Firestop Systems.

2.2.2 All *Smoke Seal* materials shall have been tested in accordance with ASTM E-84 Standard Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies and have a flame spread classification of 25 or less.

2.2.3 Fire resistance ratings of installed *Firestop Systems* shall not be less than the fire resistance rating of the surrounding *Fire Separation* or *Firewall*.

2.2.4 All *Listed Systems Designs* selected for use shall have a *Smoke Seal* incorporated within the ASTM E814 rated *Firestop Systems*.

2.2.5 All *Firestop Materials* that will come directly in contact with plastic pipe or plastic coated wire shall have undergone *Firestop Material* compatibility testing by *the Firestop Systems* manufacturer and/or the pipe or wire manufacturer.

2.2.6 Where moisture seals are required for floor penetrations in Operating Rooms, Morgues, and Laboratories in Hospitals, Universities and Schools, the *Firestop Materials* selected must be compatible with Formalin. (37% formaldehyde / 63% methanol)

2.2.7 All *Firestop Materials* and *Smoke Seals* shall have elastomeric characteristics to allow for building settling and seismic movement.

2.2.8 All *Firestop Materials* and *Smoke Seals* shall be free of asbestos.

2.2.9 Site *Firestop Systems* must be installed in accordance with the *Listed System Design* limitations, unless

a technical evaluation is approved by one of the acceptable *Third Party Testing Agencies*.

2.2.10 All Listed Systems Designs used must provide an (F) and (T) rating.

3. EXECUTION

3.1 PREPARATION

3.1.1 Examine sizes and conditions of voids to be filled to establish correct thickness and installation of *Firestop Materials*. If silicones are to be used ensure that substrates and penetrating item surfaces are dry, clean and frost free.

3.1.2 Prepare surfaces in contact with *Firestop Systems* and *Smoke Seals* to manufacturer's instructions.

3.1.3 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.2 INSTALLATION

ASTM E-814 tested and *Listed Systems Designs* govern all installations *of Firestop Systems* and *Firestop Materials*.

3.2.2 In all *Firestop Systems* that require mineral wool or ceramic fiber backer or filler materials, these materials must be dry and free of other contaminants before, during and after installation of sealant *Firestop Materials*. Alkaline water contamination of the backer or filler materials may cause corrosion of metallic penetrating items.

3.2.3 Apply *Firestop Systems* and *Smoke Seals* in strict accordance with manufacturer's instructions and *Listed Systems Designs* to provide required temperature and flame rated seals, to prevent the passage of fire and smoke, and where specifically designated, the passage of fluids.

3.2.4 Provide temporary forming and packing as required.

3.2.5 Tool or trowel all exposed surfaces to smooth, neat and tidy finish.

3.2.6 Notify Architect when completed installations are ready for inspection and prior to concealing or enclosing *Firestop Systems* and *Smoke Seals*.

3.3 SERVICE PENETRATION FIRESTOP SYSTEMS

3.3.1 Firestop and smoke seal gaps and holes in all *Fire Separation* and *Firewall* construction through which conduit, wire, cables, ductwork, piping and all other protrusions pass as a result of Work using an appropriate *Listed System Design* identifying substrate type, penetrating material type, penetrating item size, minimum and maximum annular space and overall "FTH" ratings.

3.3.2 In *Combustible Construction* (membrane GWB type) where the framing members are wood a Fire and

Temperature rise "FT" rating is required equal to that of the rating of the *Fire Separation*. Include openings which have been formed and sleeved.

3.3.3 In *Combustible Construction* (membrane GWB type) where paper faced insulation or combustible vapor and air barriers are incorporated within the separation a Fire and Temperature rise "FT" rating is required equal to that of the rating of the *Fire Separation*.

3.3.4 In *Combustible Construction* (membrane GWB type), firestop and smoke seal all through penetrations of the faces as above and firestop and smoke seal all penetrations that enter or exit (transverse) the edges of one *Fire Separation* into another *Fire Separation*. (i.e. where the header or sill plate is penetrated in the interior of a wall separation into the hollow ceiling or floor cavity of the adjacent separation).

3.3.5 In *Combustible Construction* (membrane GWB type), fire taping of service penetrations and HVAC duct work is not acceptable unless a tested ASTM E-814 *Firestop Systems* is submitted.

3.3.6 Apply *Firestop Systems* at unpenetrated openings and sleeves installed for future use through *Fire Separations* and *Firewalls*.

3.3.7 Install 1/4" to 3/8" bead of firestop caulking at interface of retaining angles around fire dampers, where angles meet fire-rated assembly, and between retaining angles and fire damper, both sides of penetration. At floor locations, sealant bead at top of assembly is adequate.

3.3.8 Where necessary, remove fiberglass insulation and replace with mineral wool insulation from insulated pipes and ducts where such services penetrate a *Fire Separation* or *Firewall* unless the Listed Systems Design permits such insulation to remain within the *Firestop System*.

3.4 HORIZONTAL JOINT AND CURTAIN WALL FIRESTOP SYSTEMS

3.4.1 For joint configurations through floor slabs, ceilings and roof *Fire Separation* unless otherwise stipulated; The detail to be used shall state the substrate material that it has been tested for i.e.; (concrete to concrete) or (concrete to metal). Where metal curtain wall assemblies are meeting floor slab assemblies, use only *Listed Systems Designs* that have been tested to ASTM E-814 for concrete to metal curtain wall performance.

3.4.2 ***Single Component Firestop Systems***; Install as per the *Listed Systems Design* with the following additional provisions;

3.4.2.1 All Listed Systems Designs selected for use shall have a smoke seal incorporated within the *Firestop System*.

3.4.2.2 For joints 1" (25mm) and under in width; Install as per *Listed Systems Design*.

3.4.2.3 For joints 1 ¼" to 3" (30mm-75mm); Install 6 lb./pcf mineral wool board stock at a depth of 4" (100mm). Cut mineral wool board stock 10% over the width dimension and compress into the opening.

3.4.2.4 For joints 3" (75mm) and over; Use mineral wool as above and insert impaling clips on 16" (400mm) centers. Impaling clips, minimum heavy gauge galvanized steel 25 mm wide x 0.65 mm thick, Z formed, dimensions to suit location and width of void to be filled. Butt succeeding sections of mineral wool backer material tightly up against preceding. Leave no voids.

Multiple Component Firestop Systems; Install as per the *Listed Systems Design* with the following additional provisions;

3.4.3.1 All *Firestop Systems* selected for use shall have a *Smoke Seal* incorporated within the *Listed System Design.*

3.4.3.2 For all joints 1" to 3" (25mm-75mm); Install 6 lb./pcf mineral wool board stock at a depth of 4" (100mm). Cut mineral wool board stock 10% over the width dimension and compress into the opening.

3.4.3.3 For joints 3" (25mm) and over; Use mineral wool as above and insert impaling clips on 16" (400mm) centers. Impaling clips, minimum heavy gauge galvanized steel 25 mm wide x 0.65 mm thick, Z formed, dimensions to suit location and width of void to be filled. Butt succeeding sections of mineral wool backer material tightly up against preceding. Leave no voids.

3.5 VERTICAL JOINT AND WALL FIRESTOP SYSTEMS

3.5.1 Firestop and Smoke Seals at top of masonry and gypsum wall board *Fire Separations* and *Firewalls* which extend nominally to within 20 mm of underside of deck above. Provide adequate depth of material to fill gap flush with face of wall, except as otherwise specified.

3.5.2 Insert at both sides of vertical joints where masonry or concrete *Firewalls* or *Fire Separations* intersect with *Fire Separations* of *Combustible Construction* (GWB).

3.5.3 Insert at both sides of control and sway joints in masonry or concrete *Firewalls* or *Fire Separations.*

3.5.4 Where wall/slab junction is exposed in finished work, apply a concrete gray in color fire-rated sealant to gap, tooling to a concave joint.

3.6 EXPOSED SERVICE PENETRATIONS IN CEILING OF UNDERGROUND PARKING AREAS

3.6.1 Where the bottom of a *Firestop System* is exposed, seal bottom side of the assembly with a fire rated elastomeric firestop sealant.

3.7 SCHEDULE OF LOCATIONS

3.7.1 Service Penetrations:

3.7.1.1 All Mechanical penetrations and poke through termination devices in *Fire Separations* and *Firewalls*.

3.7.1.2 Penetrations in Sills and Headers of gypsum wall board *Fire Separations.* (interior of wall)

3.7.1.3 All Electrical penetrations and poke through termination devices in *Fire Separations* and *Firewalls*.

3.7.1.4 All Telecommunication and Cable penetrations and poke through termination devices in *Fire Separations* and *Firewalls*.

3.7.1.5 All HVAC penetrations and poke through termination devices in *Fire Separations* and *Firewalls*.

3.7.1.6 All Sprinkler Heads protruding from *Fire Separations*.

3.7.2 Joint Firestopping:

3.7.2.1 Concrete Vertical or Horizontal Joints with dissimilar *Firewalls* or *Fire Separations.*

3.7.2.2 Top of Masonry *Fire Separations* and *Firewalls* to under side of slabs and decks.

3.7.2.3 Masonry Vertical or Horizontal Joints with dissimilar *Firewalls* or *Fire Separations.*

3.7.2.4 Gypsum Wall Board Vertical or Horizontal Joints with dissimilar *Firewalls* or *Fire Separations.*

3.7.2.5 Slab edge to curtain wall assembly.

3.7.2.6 All Mechanical Damper Joints in *Fire Separations* and *Firewalls.* Completely around all wall and floor dampers, both sides of the wall on wall dampers, top side only in floor dampers.

3.8 ABNORMAL CONDITIONS NOT COVERED BY SUBMITED LISTED SYSTEMS DESIGNS

3.8.1 Where any of the following conditions are encountered ***after*** Work has commenced notify the Architect and/or the site Engineer prior to proceeding.

3.8.1.1 Penetrating item materials not covered by Listed Systems Design(s)

3.8.1.2 Penetrating item sizes exceeding the parameters of Listed Systems Design(s)

3.8.1.3 Annular spaces exceeding the parameters of Listed Systems Design(s)

3.8.1.4 Vertical or horizontal joints exceeding the parameters of Listed Systems Design(s)

3.9 FIRESTOP SYSTEM ON SITE IDENTIFICATION (Optional unless specified)

3.9.1 Each *Firestop System* installed shall be identified for assurance purposes with a tag or sticker permanently affixed to the Work containing the following information.

3.9.1.1 The *Firestop System* manufacturers name.

3.9.1.1 The *Firestop System Third Party Testing Agencies* assigned *Listed Systems Design* number.

3.9.1.3 Name and Address of the Contractor performing the Work.

3.9.1.4 Name and/or Trade Qualification Certificate (TQ) number of the installer.

3.10INFORMATION TO BE RETAINED ON SITE AT ALL TIMES

3.10.1 Firestop *System* Trade Qualification Certificate (TQ) or installer Resume of experience.

3.10.2 *Firestop System* Manufacturer's *Listed Systems Designs*, Product Data Sheets and Materials Safety Data Sheets.

3.10.3 *Firestop System* Manufacturer's printed instructions for installation on each product and prefabricated device.

3.11 CLEAN UP

3.11.1 Remove excess materials and debris and clean adjacent surfaces immediately after application to satisfaction of Construction Manager. Remove and or correct staining and discoloring of adjacent surfaces as directed.

3.11.2 Remove temporary dams after initial set of *Firestop Systems* where such materials are left exposed in finished areas and flame spread rating of such materials exceed a value of 25.

3.12 TESTING

3.12.1 Destructive Testing

3.12.1.1 Cut tests will be performed at random locations throughout the Work to check for Firestop Systems component sealant depths and fill weights of filler/backer materials.

3.12.2 Non Destructive Testing

3.12.2.1 At the Authority Having Jurisdiction or Architects discretion perform a series of 5 fog tests to random locations as designated by Architect. Should any penetration, joint or void, under the jurisdiction of this Section, emit visible fog, make repairs and replace deficiencies and re-perform fog test at no addition cost to Contractor.

3.12.2.2 Fog units (machines) shall have a formulation output range of 6.8 L/h. Formulation particle size 0.5 - 25 microns. Fogging agent shall be non-toxic, non-staining and shall provide a heavy fog at 30 PPM with a permissible airborne level concentration of 50 PPM.

3.12.2.3 Fog at a rate of 4 s / 2.8 m3. Maintain the fog density until inspection is complete.

END OF SECTION

FOR INSERTION IN OTHER *NOTES TO THE SPECIFIER* DIVISIONS OF THE GENERAL

SPECIFICATION.

All holes or voids created in Fire Separations or Firewalls for single penetrating Mechanical or

Division 3 - Concrete: Insert in Section 3300. Cast in Place Concrete:
Also insert references in Sections 3400 (Precast Concrete) back to this Section.

Electrical service items the annular space shall not exceed 1" (25mm) for items up to 2" (50mm) in outside diameter. For penetrating items over 2" (50mm) in outside diameter the annular space must not exceed 1 ½" (37mm). For metallic sprinkler pipe up to 3 ½", the annular space must be not less than 1 ½" (37mm) and shall not exceed a maximum of 2" (50mm). For metallic pipe over 3 ½" the minimum annular space must be not less than 2" (50mm) and shall not exceed a maximum of 3" (75mm).

1.All holes or voids created in *Fire Separations* or *Firewalls* for multiple Mechanical and Electrical service

maximum 1 ” (25mm)) at the top of all *Fire Separations* or *Firewalls* constructed of unit masonry. 3.All joints at the top of *Fire Separations* or *Firewalls* constructed of unit masonry shall be sealed in accordance with *Section 7270: Firestop and Smoke Seals* and forms part of the Work of this Section. 4.All holes or voids created in *Fire Separations* or *Firewalls* for single penetrating Mechanical or Electrical service items the annular space shall not exceed 1” (25mm) for items up to 2” (50mm) in outside diameter. For penetrating items over 2” (50mm) in outside diameter the annular space must not exceed 1 ½” (37mm). For metallic sprinkler pipe up to 3 ½”, the annular space must be not less than 1 ½” (37mm) and shall not exceed a maximum of 2” (50mm). For metallic pipe over 3 ½” the minimum annular space must be not less than 2” (50mm) and shall not exceed a maximum of 3” (75mm). 5.All holes or voids created in *Fire Separations* or *Firewalls* for multiple Mechanical and Electrical service

penetration items must not exceed 50% of the overall fill ratio of the penetrating items.

Division 4 - Masonry: Insert in Section 4200, Unit Masonry

2.Maintain an expansion joint **(minimum of ½” (12mm),** penetration items must not exceed 50% of the overall fill ratio of the penetrating items.

Division 7 - Thermal and Moisture Protection: Insert in Section 7900, Joint Sea

6.All Acoustic, Vapor and Air

Barrier sealants used within or
around the perimeter of Fire Separations and Firewalls must conform to ASTM E-84 and have a flame spread rating of

or Drywall Contractor use these paragraphs; 7.All Acoustic, Vapor and Air Barrier sealants and GWB adhesives used within or around the perimeter of *Fire Separations* must conform to ASTM E-84 and have a flame spread rating of 25 or less unless they were included within the *Fire Separation* at the time of original testing. 8.All Mechanical and Electrical service penetrations that pass through, transverse or terminate within *Fire Separations* must be firestopped in accordance with ***Section 7270: Firestop and Smoke Seals*** and forms part of the Work of this Section. 9.All holes or voids created or framed in *Fire Separations* for Mechanical and Electrical service penetrations the annular space shall not exceed 1” (25mm) for penetrating items up to 2” (50mm) in outside diameter. For penetrating items over 2” (50mm) in outside diameter the annular space must not exceed 1 ½” (37mm). 10.All holes or voids created or framed in *Fire Separations* for multiple Mechanical and Electrical service penetration items must not exceed 50% of the overall fill ratio of the penetrating items.

If Mechanical and Electrical firestopping is to be performed by another contractor use these paragraphs in Section 9050;

11.All Acoustic, Vapor and Air Barrier sealants and GWB adhesives used within or around the perimeter of *Fire Separations* must conform to ASTM E-84 and have a flame spread rating of 25 or less unless they were included within the *Fire Separation* at the time of original testing.

12.All holes or voids created or framed in *Fire Separations* for Mechanical and Electrical service penetrations the annular space shall not exceed 1” (25mm) for penetrating items up to 2” (50mm) in outside diameter. For penetrating items over 2” (50mm) in outside diameter the annular space must not exceed 1 ½” (37mm).

13.All holes or voids created or framed in *Fire Separations* for multiple Mechanical and Electrical service

25 or less unless they were included within the *Fire Separation* or *Firewall* at the time of original testing.

If Mechanical and Electrical firestopping is to be performed by the Gypsum Wall Board (GWB)

Division 9 - Finishes: Insert in Section 9050. Gypsum Board

Also insert references in Sections 9210, 9215, 9260, and 9265 back to Section 9050

Contractor use these paragraphs; 14.All mechanical items that pass through or terminate within *Fire Separations* or *Firewalls* must be firestopped in accordance with ***Section 7270: Firestop and Smoke Seals*** and forms part of the Work of this Section. 15.All recessed Mechanical boxes or panels in *Fire Separations* shall be noncombustible (steel) and must be separated by at least one stud or joist cavity. Back to back installations and/or Combustible (plastic) boxes and panels are not allowed unless the gypsum board trade has construct a fire rated enclosure equal to that of the *Fire Separation* rating around each box or panel. 16.All holes or voids created in *Fire Separations* or *Firewalls* for single penetrating items the annular space shall not exceed 1" (25mm) for penetrating items up to 2" (50mm) in outside diameter. For penetrating items over 2" (50mm) in outside diameter the annular space must not exceed 1 ½" (37mm). For metallic sprinkler pipe, the annular space for pipe up to 3 ½" must be a minimum of 1 ½" (37mm). For metallic sprinkler pipe over 3 ½" the minimum annular space must be 2" (50mm). 17.All holes or voids created in *Fire Separations* or *Firewalls* for multiple penetrating mechanical items must have a fill ratio not less than 50% of the overall void or hole size.

If Mechanical firestopping is to be performed by another contractor use these paragraphs in Section 15050 18.All recessed Mechanical boxes or panels in *Fire Separations* shall be noncombustible (steel) and must be separated by at least one stud or joist cavity. Back to back installations and/or Combustible (plastic) boxes and panels are not allowed unless the gypsum board trade has construct a fire rated enclosure equal to that of the *Fire Separation* rating around each box or panel. 19.All holes or voids created in *Fire Separations* or *Firewalls* for single penetrating items the annular space shall not exceed 1" (25mm) for penetrating items up to 2" (50mm) in outside diameter. For penetrating items over 2" (50mm) in outside diameter the annular space must not exceed 1 ½" (37mm). For metallic sprinkler pipe, the annular space for pipe up to 3 ½" must be a minimum of 1 ½" (37mm). For metallic sprinkler pipe over 3 ½" the minimum annular space must be 2" (50mm).

penetration items must not exceed 50% of the overall fill ratio of the penetrating items.

If Mechanical firestopping is to be performed by a Mechanical

Division 15 - Mechanical: Insert in Section 15050, Basic Materials and Methods

20.All holes or voids created in *Fire Separations* or *Firewalls* for multiple penetrating mechanical items must have a fill ratio not less than 50% of the overall void or hole size.

If Electrical firestopping is to be performed by the Electrical

Division 16 - Electrical: Insert in Section 16050, Basic Materials and Methods

Contractor use these paragraphs; 21.All Electrical items that pass through, transverse or terminate within *Fire Separations* or *Firewalls* must be firestopped in accordance with ***Section 7270: Firestop and Smoke Seals*** and forms part of the Work of this Section. 22.All recessed Electrical boxes or panels in *Fire Separations* shall be noncombustible (steel) and must be separated by at least one stud or joist cavity. Back to back installations and/or Combustible (plastic) boxes and panels are not allowed unless the gypsum board trade has construct a fire rated enclosure equal to that of the *Fire Separation* rating around each box or panel. 23.All holes or voids created in *Fire Separations* or *Firewalls* for single penetrating wires, cables and conduit the annular space shall not exceed 1" (25mm) for penetrating items up to 2" (50mm) in outside diameter. For penetrating items over 2" (50mm) in outside diameter the annular space must not exceed 1 ½" (37mm). 24.All holes or voids created in *Fire Separations* or *Firewalls* for multiple penetrating electrical items must have a fill ratio not less than 50% of the overall void or hole size.

If Electrical firestopping is to be performed by another contractor use these paragraphs in Section 16050; 25.All recessed Electrical boxes or panels in *Fire Separations* shall be noncombustible (steel) and must be separated by at least one stud or joist cavity. Back to back installations and/or Combustible (plastic) boxes and panels are not allowed unless the gypsum board trade has construct a fire rated enclosure equal to that of the *Fire Separation* rating around each box or panel. 26.All holes or voids created in *Fire Separations* or *Firewalls* for single penetrating wires, cables and conduit the annular space shall not exceed 1" (25mm) for penetrating items up to 2" (50mm) in outside diameter. For penetrating items over 2" (50mm) in outside diameter the annular space must not exceed 1 ½" (37mm). 27.All holes or voids created in *Fire Separations* or *Firewalls* for multiple penetrating electrical items must have a fill ratio not less than 50% of the overall void or hole size.

For comments or questions regarding this specification or the following 2 pages of "Notes to the Specifier" contact the address below.

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