

STANDARD SPECIFICATION
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DIVISION 7

SECTION 7A INSULATION AND FIRE-STOPPING SYSTEMS

7A.01 GENERAL: Comply with all of the Contract Documents.

7A.02 SCOPE OF WORK: Refer to "Division Scope of Work"

7A.03 WORK NOT INCLUDED

- A. The following items are excluded from the work of this Section:
1. Sprayed fireproofing.

7A.04 SUBMITTALS

- A. Product Data: Submit product data of materials and systems. Include manufacturers installation instruction for each material used.
- B. Test Reports: Provide certified test reports of each insulation type, showing that materials meet specified requirements of this Section.

7A.05 INSULATION

- A. Provide all labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Thermal insulation below roof joists.
 2. Unfaced fiberglass board insulation and foil faced batt/blanket thermal insulation at interior face of exterior masonry walls
 3. Sound insulation at apartment demising walls.
 4. Vapor barriers.
 5. Other building thermal insulation work as they indicated on the Architect Drawings and not specified under this Section.
- B. Insulation shall be manufactured by Owens Corning, CertainTeed Corporation or approved equal determined by Architect/Engineer.
- C. Materials:
1. Roof;

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– Foil faced (Batts or Rolls) Thermal Insulation complies with;
ASTM C 665, Type III, Class B and C. The thermal resistance values for thermal
insulation tested in accordance with ASTM C 518

R-Value – R-30
Thickness – 9 ½ inches
– Vapor Retarded Perm Rating – 0.5 max
– Surface Burning Characteristics
– Maximum flame spread: < 75
– Maximum smoke developed: < 150
(When tested in accordance with ASTM E 84).

Note – See Architect drawings for requirements and installation
details.

OPTIONAL: (See Architect Drawings & Scope of Work)

1a. Roof;

– Spray-applied cellulose thermal insulation manufactured by Applegate Holding,
LLC (MEA 343-89-M Vol.2) or approved equal as determined by
Architect/Engineer.

R-Value – R-30 (minimum)
Thickness ~ 12 inches (minimum)
– Maximum flame spread: 15
– Maximum smoke developed: 0

Notes – See Architect drawings for requirements and
installation details.
– Installation shall be in accordance with New York
City Administrative Code – Acoustical and Thermal
Insulation and manufacturers supplied instructions.

2. Exterior walls;

– Unfaced 24” x 48” fiberglass board insulation complying with;
ASTM C 612, Mineral Fiber Block & Board Thermal Insulation.

R-Value – R-4.3
Thickness – 1” thick
Density – 3.0 pcf

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– Foil faced (Batts or Rolls) Thermal Insulation complies with; ASTM C 665, Type III, Class B and C. The thermal resistance values for thermal insulation tested in accordance with ASTM C 518

R-Value – R-15
Thickness – 3 ½ inches
 – Vapor Retarded Perm Rating – 0.5 max
 – Surface Burning Characteristics
 – Maximum flame spread: < 75
 – Maximum smoke developed: < 150
(When tested in accordance with ASTM E 84).

Note – See Architect drawings for requirements and installation details.

3. Apartment demising walls.

– 3 ½” thick unfaced sound attenuation fire batts (mineral wool /rock wool) manufactured by Owens Corning or approved equal, made of inorganic fibers derived from basalt (volcanic rock).

Note – See Architect drawings for requirements and installation details.

4. Vapor barrier;

– Vapor barrier shall be natural color 6 mil polyethylene film with laboratory-tested vapor transmission rating of 0.13 perms, when tested in accordance with ASTM E 96.

Note – See Architect drawings for requirements and installation details.

B. References:

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

- a. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials
- b. ASTM E 96 - Test Method for Water Vapor Transmission of Materials
- c. ASTM E 136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.
- d. ASTM C 423 - Test Method for Sound Absorption and the Sound Absorption Coefficient by the Reverberation Room Method
- e. ASTM C 518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter
- f. ASTM C 553 - Standard Specification for Mineral Fiber Blanket and

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- g. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation
 - h. ASTM C 665 - Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
2. North American Insulation Manufacturers Association.
- a. NAIMA - Recommendation for installation in Residential and Light-Frame Construction – Fiber Glass Building Insulation.

C. Inspection and Preparation:

- 1. The areas and conditions shall be examined prior to installation.
- 2. Verify that adjacent materials are dry and ready to receive insulation.
- 3. Verify that mechanical and electrical services within the above roofing space have been tested and inspected.

D. Installation:

- 1. Installation of insulation shall be provided prior to gypsum board installation.
- 2. Insulation installed below roof joists shall be installed in strict accordance with manufacturer's recommendations and architectural details.
- 2. Insulation shall fill all spaces below joists, and around piping to form a complete insulating blanket with foil facing down (heated side).
- 3. Insulation shall fill all spaces with foil facing room (heated side), between furring studs at exterior walls except areas for fire-stopping.
- 4. Upon completion of building insulation work at any area, remove debris from work area and leave in broom clean condition.

7A.05 GUARANTEES

- A. Guarantee all insulation work furnished and installed under this Section for (1) one year, in addition to manufacturer's standard warranties. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings.

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7A.06 FIRE-STOPPING

A. General:

1. One Contractor shall be responsible for the furnishing and installing of all building fire-stopping. This includes, but is not limited to the following:
 - a. Fire-stopping at perimeter of apartment.
 - b. Fire-stopping at boiler room ceiling.
 - c. Fire-stopping at plumbing chase wall.
 - d. Fire-stopping at apartment demising walls.
 - e. Fire-stopping at plumbing chase wall between apartments.
 - f. Fire-stopping at Public Hall walls.
 - g. Fire-stopping of all penetrations (pipes, vent ducts, electrical wires and cables, telephone cables, intercom cables, TV cables, etc.)

B. References:

1. ASTM E 84, "Surface Burning Characteristics of Building Materials".
2. ASTM E 119, "Fire Tests of Building Construction and Materials".
3. ASTM E 814, "Fire Tests of Through Penetration Firestops".
4. ANSI/UL263, "Fire Tests of Building Construction and Materials".
5. ANSI/UL723, "Surface Burning Characteristics of Building Materials".
6. ANSI/UL1479, "Fire Tests of Through Penetration Firestops".
7. Underwriters Laboratories Inc. (UL) – Fire Resistance Directory
8. National Fire Protection Association (NFPA) – NFPA 101: Life Safety Code.
9. National Fire Protection Association (NFPA) – NFPA 70: National Electrical Code.

C. Acceptable products:

1. Mineral wool / Rock wool insulation;
 - a. 3 ½" thick unfaced sound attenuation fire batts (mineral wool /rock wool) manufactured by Owens Corning or approved equal, made of inorganic fibers derived from basalt (volcanic rock).
 - b. 1" to 5" thick in ½" increments, high temperature industrial board insulations manufactured by Owens Corning or approved equal,

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made of inorganic fibers derived from basalt (volcanic rock) in semi-rigid to rigid board form, with a thermosetting resin binder.

2. Fire rated gypsum core panels for fireproof enclosures at ventilation ducts;
 - a. 5/8” thick DensArmor™ Plus Fireguard® Interior Guard, interior moisture-resistant, non-combustible gypsum core panel, manufactured by Georgia Pacific Building Products, or approved equal.
 - b. 1” thick Sheetrock® Brand Enhanced Gypsum Liner, moisture-resistant, non-combustible gypsum core panel with 100 percent recycled green face and back paper, manufactured by Georgia Pacific Building Products, or approved equal.

Note - See Architect drawings for standard fire-stopping details.

3. Materials for fire-stopping of penetrations;
 - a. Performance Requirements:
 - a.1 Provide products that upon curing do not re-emulsify, dissolve, leach, and breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.
 - a.2 Provide fire-stop sealants sufficiently flexible to accommodate motion such as pipe vibration, water hammer, thermal expansion and other normal building movement without damage to the seal.
 - a.3 Pipe insulation shall not be removed, cut away or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.
 - a.4 Fire rated pathway devices shall be the preferred product and shall be installed in all locations where frequent cable moves, add-ons and changes will occur.
 - a.5 When mechanical cable pathways are not practical, openings within walls and floors designed to accommodate voice, data and video cabling shall be provided with re-enterable products specifically designed for retrofit.

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- a.6 Penetrants, passing through fire-resistance rated floor-ceiling assemblies contained within chase wall assemblies shall be protected with products tested by being fully exposed to the fire outside of the chase wall. Systems within the UL Fire Resistance Directory that meet this criterion are identified with the words “Chase Wall Optional”.
- a.7 Provide fire-resistive joint sealants sufficiently flexible to accommodate movement such as thermal expansion and other normal building movement without damage to the seal.
- a.8 Provide fire-resistive joint sealants designed to accommodate a specific range of movement and tested for this purpose in accordance with a cyclic movement test criteria as outlined in Standards, ASTM E-1399, ASTM E-1966 or ANSI/ UL 2079.
- a.9 Provide fire-resistive joint systems subjected to an air leakage test conducted in accordance with Standard, ANSI/ UL2079 with published L-Ratings for ambient and elevated temperatures as evidence of the ability of the fire-resistive joint system to restrict the movement of smoke.
- b. **Materials:**
 - Note - Use only fire-stopping products that have been tested for specific fire resistance rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire rating involved for each separate instance.
 - b.1 Fire-Stop Sealants:
Single component latex formulations sealant that upon cure do not re-emulsify during exposure to the moisture, manufactured by (STI) Specified Technologies, Inc. or approved equal.
 - b.2 Fire-Stop Putty:
Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds, manufactured by (STI) Specified Technologies, Inc. or approved equal.
 - b.3 Fire-Stop Pillows:
Re-enterable, non-curing, mineral fiber core encapsulated on six sides with intumescent coating contained in flame retardant poly bag, manufactured by (STI) Specified Technologies, Inc. or approved equal.

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- b.4 Fire Rated Cable Pathway:
EZ-PATH™ Brand device module, comprised of steel raceway with intumescent foam pads allowing 0 to 100 percent cable fill, manufactured by (STI) Specified Technologies, Inc. or approved equal.
- b.5 Fire-Stop Devices:
Factory-assembled steel collars lined with intumescent material sized to fit specific outside diameter of penetrating item, manufactured by (STI) Specified Technologies, Inc. or approved equal.

Table I - Penetrations through Gypsum Wall (1 & 2 hr) with small annular space around penetrating item – less than 2”;

Penetrating Type	Max Size	Products	UL System
Pipe	8” steel, 4” copper	5/8” SpecialSeal LCI	W-L 1222
Air Duct	24” x 30” duct	5/8” SpecialSeal LCI	W-L 7060
Insulated Pipe	6” steel, 4” copper – max 2” insulation	5/8” SpecialSeal LCI	W-L 5121
Electrical wires/cables – large bundle	4” openings	EZ Path Series 33	W-L 3218
Electrical wire/cable – single or small bundle	4” opening	½” SpecSeal LCI	W-L 3210

Table II - Penetrations through Gypsum Wall (1 & 2 hr) with large openings;

Penetrating Type	Max Size of Opening	Products	UL System
Multiple pipes	12” x 26”	SpecSeal Pillows	W-L 1283
Blank opening	Max 273 sq. inch	SpecSeal Pillows	W-L 0010
Blank opening	Max 228 sq. inch	Composite Sheet	W-L 0020

Table III - Penetrations through Concrete Wall/Floor (1 & 2 hr) with small annular space around penetrating – less than 2”;

Penetrating Type	Max Size	Products	UL System
Pipe	8” steel, 4” copper	5/8” SpecialSeal LCI	W-J 1098
Air Duct	24” x 30” duct	5/8” SpecialSeal LCI	W-J 7031
Insulated Pipe	6” steel, 4” copper – max 2” insulation	5/8” SpecialSeal LCI	W-J 5054
Electrical wires/cables – large bundle	4” openings	EZ Path Series 33	W-J 3138
Electrical wire/cable – single or small bundle	4” opening	½” SpecSeal LCI	W-J 3062

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Table IV - Penetrations through Concrete Wall/Floor (1 & 2 hr) with large openings;

Penetrating Type	Max Size of Opening	Products	UL System
Multiple pipes, ducts, cables, etc.	18 sq.ft	SpecSeal Pillows	C-AJ 8093
Blank opening	Max 273 sq. inch	SpecSeal Pillows	C-AJ 0061
Blank opening	Max 228 sq. inch	Composite Sheet	C-AJ 0013

Table VI - Penetrations through Flooring System (Wood joists, 3/4" thick plywood subfloor) with small annular space around penetrating;

Penetrating Type	Max Size	Products	UL System
Pipe	8" steel, 4" copper	3/4" SpecialSeal LCI	F-C 1074
Air Duct	Max 64" sq. inch duct	3/4" SpecialSeal LCI	F-C 7023
Insulated Pipe	4" steel, 4" copper – max 1" insulation	5/8" SpecialSeal LCI	F-C 5043
Electrical wire/cable – single or small bundle	4" opening	3/4" SpecSeal LCI	F-C 3057

Table VII - Penetrations through Flooring System (Wood joists, 3/4" thick plywood subfloor) with large openings;

Penetrating Type	Max Size of Opening	Products	UL System
Multiple pipes, ducts, cables, etc.	724 sq.inch	SpecSeal Pillows	F-C 8043

Note - See Architect drawings for standard fire-stopping details at floor, wall and ceiling penetrations.

D. Submittals:

1. Submit the following items for Architect/Engineer review and Approval;
 - a. - Manufacturer's standard catalog product data for specified products demonstrating compliance with referenced standards and listing numbers of systems in which each product is to be used.
 - b. - Complete schedule of openings, locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance ratings.
 - c. - Product certificates signed by fire-stop system manufacturer, certifying material compliance with applicable code and specified performance characteristics.

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d. - Manufacturer's printed installation instructions.

E. Quality Assurance:

1. Provide fire-stopping systems that comply with the following requirements:
 - a. Fire-stopping tests are performed by a qualified, testing and inspection agency. A qualified testing and inspection agency is UL, or another agency performing testing and follow-up inspection services for fire-stop system acceptable to authorities having jurisdiction.
 - b. Fire-stopping products bear the classification marking of qualified testing and inspection agency.
2. Installer Qualifications: Experience in performing work of this section who is qualified by the fire-stopping manufacturer as having been provided the necessary training to install fire-stop products in accordance with specified requirements.

F. Delivery, Handling and Storage:

1. All fire-stopping materials shall be delivered to the job site in manufacturer's original, unopened, undamaged containers, with identification labels intact identifying product and manufacturer, date of manufacture; lot number; shelf life, if applicable; qualified testing and inspection agency's classification marking; and mixing instruction for multi component products.
2. Handle and store products according to manufacturer's recommendations published in technical materials. Leave products wrapped or otherwise protected and under clean and dry storage conditions until required for installation.
3. Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

G. Project Conditions and Installations:

1. Provide fire-stopping of all stud cavities at each floor and underside of roof sheathing for demising chase partitions, chase wall partition, perimeter exterior walls penetrations, using mineral wool insulation packed tightly in entire cavity and finished with 5/8" thick, Grade X fire-rated gypsum board. See Drawings and Partition Schedule for fire-rating and details.
2. Provide fireproof enclosure at ventilation duct shaft and duct branches, consisting of 1" thick Sheetrock® Enhanced Gypsum Liner Panel Type SLX, and two layers of 5/8" thick, Grade X fire-rated gypsum board. See Drawings for details.

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3. Provide fire-stopping of through-penetrations of floors, walls, partitions, ceilings and roofs using materials indicated by Architect/Engineer or as directed by Architect/Engineer Representative (Fire Stopping Inspector). See Drawings for details.
4. Fire-stopping at penetrations;
 - a. Do not install fire-stopping products at penetrations, when ambient or substrate temperatures are outside limitations recommended by manufacturer.
 - b. Do not install fire-stopping products at penetrations, when substrates are wet due to rain, frost, condensation or other causes.
 - c. Maintain minimum temperature before, during, and for a minimum 3 days after installation of materials.
 - d. Do not use materials that contain flammable solvents.
 - e. Coordinate construction of openings and penetrating items to ensure that through-penetration fire-stop systems are installed according to specified requirements.
 - f. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire-stop system.
5. Install through-penetration fire-stop systems in accordance with Performance Criteria and in accordance with the conditions of testing and classification as specified in published design.
6. Comply with manufacturer's instructions for installation of fire-stopping devices.
7. All fire-stopping installations, that are required to be concealed behind other construction, shall left open, until Architect/Engineer Representative (Fire Stopping Inspector) has examined and approved each installation.

7A.07 CONTROLLED INSPECTIONS

- A. All controlled fire-stopping inspections shall be provided as required by the Department of Buildings for work that requires special consideration.
- B. When all fire-stopping work is done to the satisfaction of the Architect Representative (Fire Stopping Inspector), TR1 Form shall be file with the Department of Buildings certifying that fire-stopping work complies with Building Code City of New York.

END OF SECTION