PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Foam-plastic board insulation.
2. Glass-fiber board insulation.
3. Mineral-wool board insulation.
4. Glass-fiber blanket insulation.
5. Mineral-wool blanket insulation.
6. Spray-applied cellulosic insulation.
7. Spray polyurethane foam insulation.

B. Related Sections:
1. Division 1 Section “Sustainable Design Requirements”.
2. Division 7 Section(s) "SBS Modified Bituminous Roofing” for insulation specified as part of roofing construction.
3. Division 7 Section "Fire-Resistive Joint Systems" for insulation installed as part of a perimeter fire-resistive joint system.

1.3 QUALITY ASSURANCE

A. The work of this section shall be performed by a company which specializes in the type of thermal insulation work required for this Project, with a minimum of 5 years of documented successful experience and shall be performed by skilled workmen thoroughly experienced in the necessary crafts.
1. Work shall be performed in compliance with Owner's insurance underwriters' requirements, and UL approvals and testing for materials, assemblies and procedures.

B. Manufacturer shall specialize in manufacturing the type of thermal insulation specified in this section, with a minimum of 5 years of documented successful experience, and have the facilities capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty.

C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

D. Manufacturer’s identification tags or marks are not acceptable on surfaces which will remain exposed to view after installation.
1. Evidence of “patching” after removal of tags or marks is not acceptable.

1.4 SUBMITTALS

A. Submit the following according to Conditions of the Construction Contract and Division 1 Specification Sections.

B. Product Data: For each type of product indicated.

C. LEED Submittals:
1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

E. Research/Evaluation Reports: For foam-plastic insulation, from ICC-ES.

F. Hazardous Materials Notification: In the event no product or material is available that does not contain asbestos, PCB or other hazardous materials as determined by the Owner, a "Material Safety Data Sheet" (MSDS) equivalent to OSHA Form 20 shall be submitted for that proposed product or material prior to installation.

G. Asbestos and PCB Certification: After completion of installation, but prior to Substantial Completion, Contractor shall certify in writing that products and materials installed, and processes used, do not contain asbestos or polychlorinated biphenyls (PCB), using format in Article 3 of General Conditions.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with General Conditions and Division 1 Section “Product Requirements”.

B. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

C. Protect foam-plastic board insulation as follows:
1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

1.6 WARRANTY

A. Comply with General Conditions and Division 1 Section “Product Requirements”.

PART 2 PRODUCTS

2.1 UNAUTHORIZED MATERIALS

A. Materials and products required for work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the Owner.

2.2 ACCEPTABLE MANUFACTURERS

A. Products of the manufacturers specified in this section establish the minimum functional, aesthetic and quality standards required for work of this section.

B. Substitutions: Comply with General Conditions using form in Division 1 Section “Substitution Request Form”.

C. Recycled Content: For materials containing post-industrial (pre-consumer) and/or post-consumer recycled content, contractor shall document the cost and percentage (by weight) of each material broken out by post-industrial (pre-consumer) and post-consumer content.

2.3 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Dow Chemical Company (The).
   b. Owens Corning.
2. Type X, 15 psi (104 kPa).
3. Type IV, 25 psi (173 kPa).
4. Type VI, 40 psi (276 kPa).
5. Type VII, 60 psi (414 kPa).
6. Type V, 100 psi (690 kPa).

B. Polyisocyanurate Board Insulation: ASTM C1289, Type I, Class 1 or Class 2, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Atlas Roofing Corporation.
   b. Dow Chemical Company (The).
   c. Rmax, Inc.
   d. Johns Manville

C. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

2.4 GLASS-FIBER BOARD INSULATION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. CertainTeed Corporation.
   2. Johns Manville.
   3. Owens Corning.

B. Unfaced, Glass-Fiber Board Insulation: ASTM C612, Type IA; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84, passing ASTM E136 for combustion characteristics.
   1. Nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C).
   2. Nominal density of 6 lb/cu. ft. (96 kg/cu. m), thermal resistivity of 4.4 deg F x h x sq. ft./Btu x in. at 75 deg F (30.5 K x m/W at 24 deg C).

C. Foil-Faced, Glass-Fiber Board Insulation: ASTM C612, Type IA; faced on one side with foil-scrim-kraft or foil-scrim-polyethylene vapor retarder, with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84.
   1. Nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C).
   2. Nominal density of 6 lb/cu. ft. (96 kg/cu. m), thermal resistivity of not less than 4.34 deg F x h x sq. ft./Btu x in. at 75 deg F (30.1 K x m/W at 24 deg C).

D. Sustainability Requirements: Provide glass-fiber board insulation as follows:
   1. Low Emitting: Insulation tested according to ASTM D5116 and shown to emit less than 0.05-ppm formaldehyde.

2.5 MINERAL-WOOL BOARD INSULATION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Owens Corning.
   2. Thermafiber.

B. Unfaced, Mineral-Wool Board Insulation: ASTM C612; with maximum flame-spread and smoke-developed indexes of 15 and zero, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.
   1. Nominal density of 4 lb/cu. ft. (64 kg/cu. m), Types IA and IB, thermal resistivity of 4 deg F x h x sq. ft./Btu x in. at 75 deg F (27.7 K x m/W at 24 deg C).
   2. Nominal density of 6 lb/cu. ft. (96 kg/cu. m), Type II, thermal resistivity of 4.16 deg F x h x sq. ft./Btu x in. at 75 deg F (28.8 K x m/W at 24 deg C).
   3. Nominal density of 8 lb/cu. ft. (128 kg/cu. m), Type III, thermal resistivity of 4.35 deg F x h x sq. ft./Btu x in. at 75 deg F (30.2 K x m/W at 24 deg C).
   4. Fiber Color: Darkened, where indicated.

C. Foil-Faced, Mineral-Wool Board Insulation: ASTM C612; faced on one side with foil-scrim or foil-scrim-polyethylene vapor retarder; with maximum flame-spread and smoke-developed indexes of 25 and 5, respectively, per ASTM E84.
   1. Nominal density of 4 lb/cu. ft. (64 kg/cu. m), Types IA and IB, thermal resistivity of 4 deg F x h x sq. ft./Btu x in. at 75 deg F (27.7 K x m/W at 24 deg C).
   2. Nominal density of 6 lb/cu. ft. (96 kg/cu. m), Type II, thermal resistivity of 4.16 deg F x h x sq. ft./Btu x in. at 75 deg F (28.8 K x m/W at 24 deg C).
   3. Nominal density of 8 lb/cu. ft. (128 kg/cu. m), Type III, thermal resistivity of 4.35 deg F x h x sq. ft./Btu x in. at 75 deg F (30.2 K x m/W at 24 deg C).

2.6 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. CertainTeed Corporation.
   2. Johns Manville.
   3. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.

C. Reinforced-Foil-Faced, Glass-Fiber Blanket Insulation: ASTM C665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.

D. Foil-Faced, Glass-Fiber Blanket Insulation: ASTM C665, Type III (reflective faced), Class B (faced surface with a flame-propagation resistance of 0.12 W/sq. cm); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.

E. Sustainability Requirements: Provide glass-fiber blanket insulation as follows:
1. Low Emitting: Insulation tested according to ASTM D5116 and shown to emit less than 0.05-ppm formaldehyde.

2.7 MINERAL-WOOL BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Owens Corning.
2. Thermafiber.

B. Unfaced, Mineral-Wool Blanket Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.

C. Reinforced-Foil-Faced, Mineral-Wool Blanket Insulation: ASTM C665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less per ASTM E84); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.

2.8 SPRAY-APPLIED CELLULOSIC INSULATION

A. Self-Supported, Spray-Applied Cellulosic Insulation: ASTM C1149, Type I (materials applied with liquid adhesive; suitable for either exposed or enclosed applications), chemically treated for flame-resistance, processing, and handling characteristics.

2.9 SPRAY POLYURETHANE FOAM INSULATION

A. Closed-Cell Polyurethane Foam Insulation: ASTM C1029, Type II, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. BASF Corporation.
b. Dow Chemical Company (The).
c. Johns Manville.
2. Minimum density of 1.5 lb/cu. ft. (24 kg/cu. m), thermal resistivity of 6.2 deg F x h x sq. ft./Btu x in. at 75 deg F (43 K x m/W at 24 deg C).

2.10 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
b. Gemco; Spindle Type.
2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

B. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Gemco; 90-Degree Insulation Hangers.
2. Angle: Formed from 0.030-inch- (0.762-mm-) thick, perforated, galvanized carbon-steel sheet with each leg 2 inches (50 mm) square.

3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

C. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches (38 mm) square or in diameter.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. AGM Industries, Inc.; RC150 or SC150.
   b. Gemco; Dome-Cap R-150 or S-150.
2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
   a. Crawl spaces.
   b. Ceiling plenums.
   c. Attic spaces.
   d. Where indicated.

D. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch (25 mm) between face of insulation and substrate to which anchor is attached.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Gemco; Clutch Clip.

E. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. AGM Industries, Inc.; TACTOO Adhesive.
   b. Gemco; Tuff Bond Hanger Adhesive.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches (610 mm) o.c. both ways on inside face, and as recommended by manufacturer. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.
1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Division 4 Section "Unit Masonry Assemblies."

B. Cellular-Glass Board Insulation: Install with closely fitting joints using adhesive pad or serrated trowel attachment method according to manufacturer's written instructions.

3.4 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Foam-Plastic Board Insulation: Seal joints between units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
   1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
   2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
   3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
   4. Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
   5. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
   6. For blankets without flanges, install a cross member within metal-framed wall cavities to help support blankets.
   7. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
      a. Exterior Walls: Set units with facing placed toward exterior of construction.
      b. Interior Walls: Set units with facing placed toward areas of high humidity.

D. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions.
   1. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked.
   2. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.
   3. Board tamp sprayed insulation surface and apply Monoglass adhesive to seal the tamped insulation surface, in accordance with insulation manufacturer's written instructions.

E. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
   1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

F. Glass Fiber Duct Liner Board Insulation:
   1. Install Insulation firmly against back-up structure where indicated on the Drawings.
   2. Keep all joints and abatement tight.
      a. Where insulation is exposed to view in finished areas locate panel joints behind face trim or other covers.

3.5 INSTALLATION OF INSULATION IN CEILINGS FOR SOUND ATTENUATION

A. Where glass-fiber blankets are indicated for sound attenuation above ceilings, install blanket insulation over entire ceiling area in thicknesses indicated. Extend insulation 48 inches (1219 mm) up either side of partitions.

3.6 INSTALLATION OF INSULATION FOR CONCRETE SUBSTRATES

A. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
   1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
   2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
   3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness.
   4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.7 INSTALLATION OF CURTAIN-WALL INSULATION

A. Install board insulation in curtain-wall construction where indicated on Drawings according to curtain-wall manufacturer's written instructions.
   1. Hold insulation in place by securing metal clips and straps or integral pockets within window frames, spaced at intervals recommended in writing by insulation manufacturer to hold insulation securely in place without touching spandrel glass. Maintain cavity width of dimension indicated between insulation and glass.
   2. Install insulation where it contacts perimeter fire-containment system to prevent insulation from bowing under pressure from perimeter fire-containment system.

3.8 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

3.9 INSULATION TYPES

A. TYPE 1: MINERAL FIBER BLANKET INSULATION:
   1. Type: "Thermafiber FIRESPAN" Curtain Wall Insulation, CW90, mineral fiber curtain wall semirigid insulation blanket conforming to ASTM C612, Classes 3 and 4.
   2. Facing/Vapor Retarder: Unfaced.
   3. Surface Burning Characteristics: Flame Spread 25/Smoke Developed 5/ASTM E84 and ASTM E136.
   4. Density: Nominal 8.0 pcf.
   5. Thermal Resistance: R=4.3 per 1" thickness; U = 0.23 per 1" thickness/ASTM C518.
   6. Thickness: 4" or as shown on drawings.
   7. Insulation at transparent spandrel glass locations to be black faced on the exterior side to avoid read-thru.

B. TYPE 2: GLASS FIBER REINFORCED POLYISOCYANURATE FOAM PLASTIC:
   1. Type: Johns Manville "ENRGY3" Insulation Board complying with ASTM C1289, Type I, Class 1.
   2. Finish: Plain Factory Finish with foil facers on both sides of the core.
   3. Thermal Resistance: R=5.6 per 1" thickness.
   4. Compression Resistance: 20 psi.
   5. Thickness: 3" or as indicated on drawings.

C. TYPE 3: GLASS FIBER BATT INSULATION:
   1. Type: Owens-Corning Fiberglas "Flame Spread 25", glass fiber insulation batts conforming to property requirements of ASTM C665, Type III, Class A.
   2. Facing/Vapor Retarder: Foil-reinforced-kraft (FRK) on one side.
   3. Surface Burning Characteristics: Flame Spread 25/Smoke Developed 50/ASTM E84 and ASTM E136.
   4. Thermal Resistance: R=11 for 3-1/2" thickness, R=19 for 6-1/4" thickness.
   5. Thickness: 6 1/4" or as shown on drawings.

D. TYPE 4: MINERAL FIBER SAFING INSULATION:
   1. Type: "Thermafiber" mineral fiber safing insulation, regular color, vapor retarding foil-faced designed for placing between floor slab and "Thermafiber" curtain wall insulation and conforming to ASTM C612, Classes 1 and 2 with waiver of identification-marking requirement.
   2. Surface Burning Characteristics: Flame Spread 15/Fuel Contributed 0/Smoke Developed 0/ASTM E84 and ASTM E136.
   3. Density: Nominal 4.0 pcf.
   4. Thermal Resistance: R=16 per 4" thickness, in accordance with ASTM C518.
   5. Thickness/Location: 4" minimum thick in width and length as shown on drawings or required.

E. Type 5: Insulation as specified in Division 7 Section "Hot Fluid-Applied Rubberized Asphalt Waterproofing".

F. TYPE 6: Insulation as specified in Division 7 Section "SBS Modified Bituminous Roofing".

G. TYPE 7: SPRAY-APPLIED INSULATION:
   1. Type: International Cellulose "K-13" sprayable cellulose fiber conforming to ASTM C177 complete with SK-2000 adhesive.
   2. Color: Light Gray.
   3. Surface Burning Characteristics: Flame Spread 5/Fuel Contributed 5/Smoke Developed 0/ASTM E84.

4. Thermal Resistance: R=3.8 per inch; K Factor 0.26 BTU/hr/°F/sq. ft/inch thick.
5. Thickness: To achieve R=19 or as shown on drawings.
6. For Thicker than 5" Horizontal Applications: Stick-clips and chicken wire are required.
   a. Stick-Clips: AGM Industries "Tactoo" Insul-Hangers with self-locking washers and "Tactoo" adhesive.
   b. Stucco Netting: Galvanized type with 3/4" to 1" openings.
   c. Place stick-clips 16" on centers.
      1) Spray 5" thick of "K-13".
   d. Place chicken wire over 5" thick "K-13" and secure in place with self-locking washers.
   e. Spray final application of "K-13" to required R-Value.
7. For Abrasion Resistant Protective Coating, apply International Cellulose "ProTek-13" protective coating with Flame Spread Rating not to exceed 5 when tested per ASTM E84 per manufacturer's recommendations.
   a. Ensure total coverage of K-13 insulation is achieved, approximately 20 mils thick.
   b. Color: Light gray.
   c. Location: Where indicated on drawings.

H. TYPE 8: DUCT LINER BOARD INSULATION:
1. Type: Owens-Corning Fiberglas “Duct Liner Board” fabricated from rigid resin bonded fibrous glass boards with a black pigmented coating on airstream side conforming to NFPA 90A and 90B and ASTM C1071.
2. Surface Burning Characteristics: Flame Spread 25/Smoke Developed 50/UL 723.
3. Thickness: 2” or as shown on drawings.

END OF SECTION