SECTION 23 07 13 - DUCT INSULATION

PART I - GENERAL

1.1 WORK INCLUDES
   A. Ductwork Insulation.
   B. Fan Insulation.
   C. Insulation Jackets.
   D. Insulation Lagging.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS
   A. Type F: Flexible Fiberglass Wrap, 1.0 lb./cu. ft., ASTM C553 Type I & II.
   B. Type R: Rigid Fiberglass Board, 3.0 lb./cu. ft., ASTM C612 Type IA.
   C. Type L: Flexible Fiberglass Liner (for transfer ducts only); 1.5 lb/cu. ft.
   D. Type P: Rigid Polyisocyanurate Board, ASTM C591.
   E. Type PH: Rigid Phenolic Foam Board (e.g. TRYMER Green), ASTM C1126 Type III.
   F. Type E: Cellular Flexible Elastomeric Foam Sheet, ASTM C534 Grade 1.

2.2 JACKETS, FACTORY APPLIED
   B. FSK (Foil Scrim Jacket): Aluminum-foil vapor barrier, fiberglass-reinforced scrim with kraft-paper backing.

2.3 TAPES, ADHESIVES, COATINGS, FASTENERS
   A. Provide in accordance with insulation manufacturer’s specifications and requirements.

2.4 LAGGING, FIELD INSTALLED
   A. ALUM: Aluminum, .020” thick, stucco embossed finish.

2.5 MATERIAL PROPERTIES
   A. Insulation material shall satisfy material property requirements of referenced ASTM standard. For convenient summary of referenced ASTM standards see Insulation Specification Materials Guide as presented by National Commercial and Industrial Insulation Association (NIA).
   B. All duct insulation materials including jackets, tapes, adhesives and coatings shall meet ASTM E84 25/50 Flame Spread/Smoke Development requirements.

PART 3 – EXECUTION

3.1 INSTALLATION
   A. General Requirements
      1. Install insulation in accordance with manufacturer’s instructions and applicable codes.
      2. Install insulation in accordance with National Commercial and Industrial Insulation (NIA) Standard. [Note to AE: Any experienced insulation contractor will be familiar with this

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It provides proper installation procedures for all types of insulation. By referencing this standard it becomes unnecessary to identify exhaustive installation procedures. NIA is to insulation what SMACNA is to ductwork.

3. Install insulation after ductwork has been inspected and tested unless otherwise authorized by the AE.

4. Provide insulation with vapor barrier when air conveyed may be below ambient temperature.

5. Provide continuity of insulation and vapor barrier through penetrations unless code prohibits.

6. Provide continuity of insulation and vapor barrier through hangers and at supports.

7. Provide high-density inserts at hangers and supports to prevent compression of insulation.

8. Provide protection at each corner of insulated ductwork extending to or through floors or curbs. Construct of sheet metal angle. Extend minimum 12” above floor/curb.

B. Additional Requirements for Outdoor Installations

1. Ensure that insulation jacket is sealed waterproof, vapor tight.

2. Provide tightly fitted metal lagging with overlapped sections properly oriented for prevailing weather.

3. Mechanically attach lagging sections. Seal all seams and penetrations watertight.

C. Specific Requirements for Insulation Type

1. Type F - Flexible Fiberglass Wrap
   a. Mechanically attach at bottom of ducts over 24” wide and on all sides of vertical ducts.
   b. Include the use of staples in attaching adjoining insulation. Cover staples with adhesive tape.

2. Type R - Rigid Fiberglass Board
   a. Mechanically attach with welded pins and clips.

3. Type L - Flexible Duct Liner (for transfer ducts only)
   a. Mechanically fasten and fully adhere insulation to duct. Attachment with adhesive only is not allowed.
   b. Butt liner tight without gaps at transverse joints and completely coat edges with adhesive. Coat frayed edges and damaged areas with approved coating.
   c. Duct dimensions given are net inside dimensions. Ensure that duct size is adequate to achieve design dimensions.

4. Type P – Rigid Polyisocyanurate Board
   a. Mechanically attach. Secure with adhesive as needed.

5. Type PH – Rigid Phenolic Board
   a. Mechanically attach. Secure with adhesive as needed.

6. Type E - Cellular Flexible Elastomeric Foam
   a. Generously adhere insulation to duct or fan. Fully adhere at joints.
3.2 APPLICATION SCHEDULE (Not applicable to laboratory or specialty ductwork)

<table>
<thead>
<tr>
<th>SERVICE</th>
<th>INSULATION TYPE</th>
<th>JACKET TYPE</th>
<th>LAGGING</th>
<th>INSULATION THICKNESS*</th>
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<td>FSK</td>
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<td>1 ½&quot;</td>
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<tr>
<td>Transfer Ducts</td>
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<td>Ducts and Fans in Wet or Humid Indoor Environments</td>
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*Insulation thickness shall satisfy ASHRAE Standard 90.1.

END OF SECTION 23 07 13

This section of the U of I Facilities Standards establishes minimum requirements only. It should not be used as a complete specification.