SECTION 23 3300
AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY
A. Includes But Not Limited To:
   1. Furnish and install duct accessories in specified ductwork as described in Contract Documents.

B. Related Sections:
   1. Section 23 0933: Temperature control damper actuators and actuator linkages.
   2. Section 23 3001: Common Duct Requirements.

1.2 REFERENCES
A. American Society for Testing and Materials:
   1. ASTM A 653-02a, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.'
   3. ASTM C 1071-00, 'Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Acoustical Material).'

PART 2 - PRODUCTS

2.1 COMPONENTS
A. Acoustical Liner System:
   1. Duct Liner:
      a. One inch 25 mm thick, 1-1/2 lb 2.2 kg per cu meter density fiberglass conforming to requirements of ASTM C 1071. Liner will not support microbial growth when tested in accordance with ASTM C 665.
      b. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
         1) Ultralite or ToughGard by CertainTeed.
         2) Duct Liner E-M by Knauf Fiber Glass.
         3) Akousti-Liner by Manson Insulation.
         4) Aeroflex Plus by Owens Corning.
         5) Linacoustic by Johns-Manville.
   2. Adhesive:
      a. Category Four Approved Water-Based Products. See Section 01 6000 for definitions of Categories.
         1) Cain: Hydrotak.
         2) Design Polymerics: DP2501 or DP2502 (CMCL-2501).
         3) Duro Dyne: WSA.
         4) Hardcast: IA-901.
         5) Kingco: 10-568.
         7) Mon-Eco: 22-67 or 22-76.
         8) Polymer Adhesive: Glasstack #35.
         9) Techno Adhesive: 133.
b. Category Four Approved Solvent-Based (non-flammable) Products. See Section 01 6000 for definitions of Categories.
   1) Cain: Safetak.
   2) Duro Dyne: FPG.
   3) Hardcast: Glas-Grip 648-NFSE.
   4) Kingco: 15-137.
   5) Miracle: PF-91.
   7) Polymer Adhesive: Q-Tack.
   8) Techno Adhesive: 'Non-Flam' 106.

b. Category Four Approved Solvent-Based (flammable) Products. See Section 01 6000 for definitions of Categories.
   1) Cain: HV200.
   2) Duro Dyne: MPG.
   3) Hardcast: Glas-Grip 636-SE.
   4) Kingco: 15-146.
   5) Miracle: PF-96.
   6) Mon-Eco: 22-22.
   7) Polymer Adhesive: R-Tack.
   8) Techno Adhesive: 'Flammable' 106.

3. Fasteners:
   a. Adhesively secured fasteners not allowed.
   b. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      1) AGM Industries Inc: 'DynaPoint' Series RP-9 pin.
      2) Cain.
      3) Duro Dyne.
      4) Dyn Air: DWT or FWT
      5) Omek dished head 'Insul-Pins.'
      6) Gripnails may be used if each nail is installed by 'Grip Nail Air Hammer' or by 'Automatic Fastener Equipment' in accordance with Manufacturer's recommendations.

B. Flexible Equipment Connections:
   1. 30 oz closely woven UL approved glass fabric, double coated with neoprene.
   2. Fire retardant, waterproof, air-tight, resistant to acids and grease, and withstand constant temperatures of 250 deg F 121 deg C.
   3. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      a. Cain: N-100.
      b. Duro Dyne: MFN.
      c. Dyn Air: CPN with G-90 galvanized off-set seam
      d. Elgen: ZLN.
      e. Ventfabrics: Ventglas.
      f. Ductmate: ProFlex.

C. Duct Access Doors:
   1. Factory built insulated access door with hinges and sash locks. Construction shall be galvanized sheet metal, 24 ga 0.635 mm minimum.
   2. Fire and smoke damper access doors shall have minimum clear opening of 12 inches 300 mm square or larger as shown on Drawings.
   3. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      c. Cesco: HDD.
      d. Flexmaster: Spin Door.
      e. Kees Inc: ADH-D.
      g. Pottorff: 60-HAD.

D. Dampers And Damper Accessories:
1. Locking Quadrant Damper Regulators:
   a. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      2) Dyn Air: QPS-385
      3) Ventfabrics: Ventline 555.
      4) Young: No. 1.

2. Concealed Ceiling Damper Regulators:
   a. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      1) Cain.
      2) Duro Dyne.
      3) Metco Inc.
      4) Ventfabrics: 666 Ventlok.
      5) Young: 301.

3. Volume Dampers:
   a. Factory-manufactured 16 ga 1.59 mm galvanized steel, single blade and opposed blade type with 3/8 inch 10 mm axles and end bearings. Blade width 8 inches 200 mm maximum. Blades shall have 1/8 inch 3 mm clearance all around.
      1) Damper shall operate within acoustical duct liner.
      2) Provide channel spacer equal to thickness of duct liner.
   b. Dampers above removable ceiling and in Mechanical Rooms shall have locking quadrant on bottom or side of duct. Otherwise, furnish with concealed ceiling damper regulator and cover plate.
   c. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      1) Air-Rite: Model CD-2.
      2) American Warming: VC-2-AA.
      3) Arrow: OBDAF-207.
      4) C & S: AC40.
      5) Cesco: AGO.
      6) Daniel: CD-OB.
      8) Pottorff: CD-42.
      9) Ruskin: MD-35.
     10) UTEMP: CD-OB.

4. Motorized Outside Air Dampers:
   a. Low leakage type. AMCA certified.
   b. Damper Blades:
      1) Steel or aluminum airfoil type with mechanically locked blade seals, 8 inch 200 mm blade width maximum measured perpendicular to axis of damper.
      2) Jamb seals shall be flexible metal compression type.
      3) Opposed or single blade type.
   c. Make provision for damper actuators and actuator linkages to be mounted external of air flow.
   d. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      1) Air Balance: AC 526.
      2) American Warming: AC526.
      4) C & S: AC50.
      5) Cesco: AGO3.
      6) Honeywell: D-643.
      7) Pottorff: CD-52.
      8) Ruskin: CD-60.

5. Backdraft Dampers:
   a. Backdraft blades shall be nonmetallic neoprene coated fiberglass type.
   b. Stop shall be galvanized steel screen or expanded metal, 1/2 inch 13 mm mesh.
   c. Frame shall be galvanized steel or extruded aluminum alloy.
   d. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
      1) Air-Rite: Model BDD-3.
5) Daniel: FBD-H/V.
6) Pottorff: 50FBD.
7) Ruskin: NMS2.
8) UTEMP: BFEA.

E. Duct Silencers:
1. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
   a. Air Filter Corp: AIRSAN.
   b. Industrial Acoustic Co.
   c. Titus Products Div.
   d. United McGill Corp.

F. Air Turns:
2. 4-1/2 inch 113 mm wide vane rail. Junior vane rail not acceptable.

G. Branch Tap for Flexible Ductwork:
1. Factory-manufactured rectangular-to-round 45 degree leading tap fabricated of 24 ga 0.635 mm zinc-coated lock-forming quality steel sheets meeting requirements of ASTM A 653, with G-90 coating.
2. One inch wide mounting flange with die formed corner clips, pre-punched mounting holes, and adhesive coated gasket.
3. Manual Volume Damper:
   a. Single blade, 22 ga 0.79 mm minimum
   b. 3/8 inch 10 mm minimum square rod with brass damper bearings at each end.
   c. Heavy-duty locking quadrant on 1-1/2 inch 38 mm high stand-off mounting bracket attached to side of round duct.
4. Category Four Approved Products. See Section 01 6000 for definitions of Categories.
   a. ST-1HD by Air-Rite.
   b. STO by Flexmaster.
   c. HET by Sheet Metal Connectors.

2.2 MANUFACTURERS

A. Contact Information:
11. Daniel Manufacturing, Ogden, UT (801) 622-5924.
2.3 FABRICATION

A. Duct Liner:
   1. Install mat finish surface on airstream side. Secure insulation to cleaned sheet metal duct with continuous 100 percent coat of adhesive and with 3/4 inch 19 mm long mechanical fasteners 12 inches 300 mm on center maximum unless detailed otherwise on Drawings. Pin all duct liner.
   2. Accurately cut liner and thoroughly coat ends with adhesive. Butt joints tightly. Top and bottom sections of insulation shall overlap sides. If liner is all one piece, folded corners shall be tight against metal. Ends shall butt tightly together.
   3. Coat longitudinal and transverse edges of liner with adhesive.

B. Air Turns:
   1. Permanently install vanes arranged to permit air to make abrupt turn without appreciable turbulence, in 90 degree elbows of above ground supply and return ductwork.
   2. Quiet and free from vibration when system is in operation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Duct Liner:
   1. Furnish and install acoustic lining in following types of ducts:
      a. Supply air.
      b. Return air.
      c. Mixed air.
      d. Transfer air.
      e. Relief air.
      f. Exhaust air.
      g. Elbows, fittings, and diffuser drops greater than 12 inches 300 mm in length.

B. Flexible Connections: Install flexible inlet and outlet duct connections to each furnace.

C. Access Doors In Ducts:
   1. Install at each manual outside air damper and at each motorized damper. Locate doors within 6 inches 150 mm of installed dampers.
2. Install within 6 inches 150 mm of fire dampers and in Mechanical Room if possible. Install on side of duct that allows easiest access to damper.

D. Dampers And Damper Accessories:
1. Install concealed ceiling damper regulators.
   a. Paint cover plates to match ceiling tile.
   b. Do not install damper regulators for dampers located directly above removable ceilings or in Mechanical Rooms.
2. Provide each take-off with an adjustable volume damper to balance that branch.
   a. Anchor dampers securely to duct.
   b. Install dampers in main ducts within insulation.
   c. Dampers in branch ducts shall fit against sheet metal walls, bottom and top of duct, and be securely fastened. Cut duct liner to allow damper to fit against sheet metal.
   d. Where concealed ceiling damper regulators are installed, provide cover plate.
3. Install motorized dampers.

END OF SECTION