SECTION 23 37 00
AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The work of this section shall include, but is not limited to, the following:
   1. Air Outlets
   2. Air Inlets
   3. Accessories for Air Inlets and Air Outlets

1.2 RELATED DOCUMENTS

A. Section 23 05 01 - Mechanical General Provisions

B. Section 23 05 93 - Mechanical Systems Balancing

C. Section 23 07 00 - HVAC Duct, Piping, Equipment and Breeching Insulation

D. Section 23 31 00 - Ductwork

E. Section 23 33 19 - Acoustics

F. Division 26 - Electrical

G. Refer to Architectural Drawings and Specifications for floor, wall and ceiling construction.

1.3 SUBMITTALS

A. Submit manufacturer's performance data including air throw and drop, outlet velocities, total and velocity pressures and acoustic performance.

B. Submit manufacturer's specifications of construction including materials, installation instruction and adjustment data.

C. Submit product accessories.

D. Submit samples, color and finish selections, schedule of sizes and model number for review by the Architect prior to fabrication.

E. Schedule of air outlets and air inlets indicating drawing designation, room location, quantity, model number, size, and accessories furnished.

1.4 QUALITY ASSURANCE

A. Air outlets and inlets to be tested in accordance with:
   1. ARI 885-90: Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets.
   2. ARI 880-94: Air Terminal Test Standard.
   3. ANSI/ASHRAE 70-91: Air Diffuser Performance Standard, Isothermal and Cooling.
   4. ASHRAE 55-91: Thermal Environmental Conditions for Human Occupancy.
   5. ASHRAE 113-90: Method of Testing for Room Air Distribution.

B. All air inlets and outlets shall be factory painted or anodized. Paint or anodized finish shall pass a 100 hour ASTM D117 Corrosive Environments Salt Spray Test without creepage, blistering or deterioration of film. The finish must pass a 250 hour ASTM-870 Water Immersion Test and an ASTM D-2794 Reverse Impact Cracking Test with a 50 inch-pound force applied. Finish (pencil) hardness shall be minimum HB to H.

C. For all components provided with fiberglass acoustic lining, refer to Section 23 07 00 - HVAC Duct,

Piping, Equipment and Breeching Insulation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Drawings and schedules indicate specific requirements of air inlets and air outlets and are based on the specific requirements of the systems indicated. Other manufacturers' products with equal quality, appearance, finish and performance characteristics may be considered. Refer to Section 23 05 01 - Mechanical General Provisions for alternates or substitutions.

B. Air Inlets and Outlets: Price, Titus, Krueger, Air Factors, Air Concepts, Trox, Halton, DuctSox.

C. Accessories: Dampers, equalizing grids, turning vanes, extractors, plenums, hardware and frames shall be provided by the same manufacturers as the air inlets and air outlets provided.

2.2 GENERAL

A. Air distribution outlets as shown on the Drawings shall accommodate the air volume and throw indicated to maintain a maximum terminal velocity of 50 feet per minute in the occupied area. The overall noise level produced by all of the supply air outlets and exhaust or return air inlets in various rooms shall not exceed specified limits.

B. Refer to Architectural Drawings and Specifications for reflected ceiling plans, elevations, wall and ceiling types and construction. Air outlets and inlets in fire rated ceilings or walls must be all steel construction. Coordinate frame and border types to accommodate the wall or ceiling specified or shown on the Architectural Drawings.

C. All dampers provided shall be operable from the face of the Air Inlet or Air Outlet.

D. Model numbers noted herein are Price unless otherwise noted.

2.3 OUTLET TYPES

A. Square Ceiling Diffuser, Plaque:
   1. Provide architectural square panel supply diffusers, all steel construction.
   2. Diffuser shall have a 22 gauge steel face panel that captures a secondary 22 gauge panel. Provide uniform appearance if different neck sizes are used. The back pan shall be one piece precision die-stamped.
   3. Sizes indicated on Drawings are neck sizes.
   4. Baked white enamel finish.
   5. Type CD-A: 24-inch by 24-inch face size. Price Model SPD or approved equal.
   6. Type CD-B: 12-inch by 12-inch face size. Price Model SPD or approved equal.

B. Sidewall Double Deflection Supply Register:
   1. All aluminum register with rear vertical and front horizontal adjustable roll formed type blades.
   2. Provide model AG-35-AA aluminum opposed blade volume control damper.
   3. Frames shall be 1.25 inches wide by 0.05-inch thick aluminum, interlocked at the corners and mechanically staked to form a rigid frame with flush joints and countersunk screw holes.
   4. Aluminum blades shall be space on 0.75-inch centers and extend completely through the side frame on each side. Blades shall be individually adjustable without loosening or rattling and shall be securely held in place with permanently spring tensioned wire.
   5. Baked white enamel finish.
   6. Type SR-A: Price Model 520 or approved equal.

C. Sidewall Double Deflection Supply Register (Residential):
   1. All aluminum register with rear vertical and front horizontal adjustable roll formed type blades.
   2. Provide model AG-35-AA aluminum opposed blade volume control damper.

3. Frames shall be 1.25 inches wide by 0.05-inch thick aluminum, interlocked at the corners and mechanically staked to form a rigid frame with flush joints and countersunk screw holes.
4. Aluminum blades shall be space on 0.75-inch centers and extend completely through the side frame on each side. Blades shall be individually adjustable without loosening or rattling and shall be securely held in place with permanently spring tensioned wire.
5. Baked white enamel finish.
6. Type SR-B: Price Model 520 or approved equal.

7.

D. Sidewall Stair Pressurization Register:
   1. Provide extruded aluminum register with horizontal fixed blades (no vertical adjustable near blades), aluminum opposed blade volume control damper, gasketed frame with concealed screw fastening.
   2. Baked enamel finish.
   3. Type SR-C: Price Model RCG or approved equal.

E. Linear Supply Diffuser, Slot Type:
   1. Provide extruded aluminum linear diffusers with steel pattern controllers.
   2. Slot width shall be as shown on schedule
   3. Provide one-piece diffuser lengths up to 6 feet. Longer lengths shall be joined with alignment strips and pins to form a continuous appearance with all joints flush.
   4. Number of slots, lengths, air volume border type, frame type, and fastening or mounting type as indicated on the Drawings.
   5. The pattern controller shall be an aerodynamically curved “ice-tong” shaped steel deflector capable of 180-degree pattern adjustment from the face of the diffuser and shall accommodate dampering as required. Maximum pattern controller length shall be 3 feet. Provide multiple sections as required over the full active length of the diffusers.
   6. Clear anodized finish.
   7. Type LD-A: Price Model SD
   8. Type LDA-A: Price Model SDS150 with Price SDB150 Plenum. 3’-0” Length
   9. Type LDA-B: Price Model SDS150 with Price SDB150 Plenum. 4’-0” Length
   10. Type LDA-C: Price Model SDS150 with Price SDB150 Plenum. 5’-0” Length

F. Linear Supply Diffuser, Bar Type:
   1. Provide extruded aluminum linear diffuser for floor, sill or sidewall application.
   2. Fixed bars 1/8 inch thick and parallel to the long dimension, locked into an extruded aluminum border. Provide rear support bars parallel to the short dimension on maximum 9 inch centers or 6 inch centers for floor application.
   3. Air deflection shall be 0 degrees.
   4. Bar spacing shall be ¼ inch.
   5. Provide one-piece diffuser lengths up to 6 feet. Longer lengths shall be joined with alignment strips and pins to form a continuous appearance with all joints flush.
   6. Provide diffuser length, width, air volume and fastening method as shown on the Drawings.
   7. Confirm boarder and frame type with architect before procurment
   8. Clean anodized finish.
   9. Type FD-A: Price Model LBP – 15A.

2.4 INLET TYPES

A. Ceiling Perforated Register:
   1. Provide all steel construction.
   2. Flush perforated face shall be an exact match in construction, mounting type and appearance to the perforated face air outlets as specified.
   3. Perforated face shall be easily unlatchable from the back pan.
   4. Face area as shown on the Drawings.

5. Baked white enamel finish.
6. Type EG-A: Price Model PDDR. 24x24
7. Type EG-B: Price Model PDDR. 12x12

B. Square Ceiling, Plaque:
1. Provide architectural square panel supply diffusers, all steel construction.
2. Diffuser shall have a 22 gauge steel face panel that captures a secondary 22 gauge panel. Provide uniform appearance if different neck sizes are used. The back pan shall be one piece precision die-stamped.
3. Sizes indicated on Drawings are neck sizes.
4. Baked white enamel finish.
5. Type EG-C: 12-inch by 12-inch face size. Price Model SPD or approved equal.

C. Louvered Return Grille:
1. Return grille shall be used for sidewall or ceiling return or exhaust. All aluminum construction with one set of horizontal fixed blades, set at 45-degree fixed deflection, ¾-inch spacing.
2. Baked enamel finish.
3. Type ER-B: Price Model 630.

PART 3 - EXECUTION

3.1 GENERAL

A. Drawings indicate general arrangement of ducts, fittings, and accessories to achieve air volume, noise criteria, airflow pattern, throw, and pressure drop. Locations indicated on the Architectural drawings shall take precedence. For lay-in ceiling panels, locate in the center of the panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

3.2 INSTALLATION

A. Install air outlet and air inlet with airtight connection to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

B. After installation of diffusers, registers, and grilles, inspect exposed finish. Clean exposed surfaces to remove burrs, dirt, and smudges. Replace diffusers, registers, and grilles that have damaged finishes.

C. Install diffusers, registers, and grilles level and plumb, according to manufacturer's written instructions.

D. All visible interior surfaces of air inlets shall be factory painted flat black.

E. All visible exterior surfaces of air inlets or outlets shall be factory painted in a color as selected by the Architect.

END OF SECTION 23 37 00