

SECTION 15936

AIR INLETS AND OUTLETS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Diffusers.
2. Registers.
3. Grilles.
4. Louvers.
5. Lowered Penthouses.
6. Gravity Roof Hoods.
7. Gravity Roof Ventilators.
8. Goosenecks.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15050 - Basic Mechanical Materials and Methods.
3. Section 15900 - Ductwork and Accessories.
4. Section 15930 - Air Terminal Units.
5. Section 15990 - Testing, Adjusting and Balancing.

1.02 REFERENCES

- A. Air Diffusion Council (ADC) 1062 - Certification, Rating and Test Manual.
- B. Air Movement and Control Association (AMCA) 500 - Test Method for Louvers, Dampers and Shutters.
- C. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 70 - Methods of Testing for Rating the Air Flow Performance of Outlets and Inlets.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. General:

- a. Provisions for balancing air flow from outlets or into inlets shall be included in the specifications as well as indicated on the Drawings, though combined outlets and other dangers shall not be used.
- b. Air quantities and distribution pattern shall be shown on the Drawings.
- c. Identify outlet and inlet types on Drawings using the following basic code recognitions:

Supply (S)
Exhaust (E)
Return (R)
Transfer (T)
Diffuser (D) for air pattern control (include damper for volume control).
Grille (G) no volume control, inlet or outlet.
- d. When more than one type is used, add a schedule item reference number after the code name, i.e. SD-1, ER-2,etc.
- e. Specify balancing dampers and indicate on Drawings on duct take-off to diffusers, grilles and registers, to minimize acoustical problems in balancing air flow.
- f. Diffusers and grilles shall be designed to maximize ADPI across the full range of expected air flows.

2. Intakes and Relief:

- a. Design fresh air intakes protected from the prevailing winds.
- b. Locate unprotected vertical plane intake louvers on the South or East.
- c. Specify storm type louvers and provide sufficient distance or directional change of fresh air between the outside air intake louver and the dampers and the filters to eliminate or at least minimize snow and rain being carried to the air filters. Do not exceed manufacturer's recommended inlet velocities to also help minimize snow and rain.
- d. Roof type intakes or relief are to be minimized and are only acceptable where no other solution is possible.

Where the design solution requires roof type intakes or reliefs, design and specify hoods with hinges and quick-release fasteners for ease of access to dampers.

- e. Use ingenuity in the preliminary design stages to achieve pleasing Architectural

solutions to avoid any unnecessary roof openings.

f. Intakes and outlets shall be separated.

g. Do not place intakes near loading docks.

1.04 QUALITY ASSURANCE

A. Test and rate performance of air outlets and inlets in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.

B. Test and rate performance of louvers in accordance with AMCA 500.

PART 2 - PRODUCTS

2.01 CEILING DIFFUSERS

A. Manufacturers:

Anemostat
Carnes
Krueger
Metal-Aire
Price
Titus
Tuttle-Bailey

B. Round Ceiling Diffusers (SD-).

C. Rectangular Louvered Ceiling Diffuser (SD-).

D. Perforated-Face Ceiling Diffuser (SD-) Upon approval of University Engineer.

2.02 CEILING REGISTERS AND GRILLES

A. Manufacturers:

Anemostat
Carnes
Krueger
Metal-Aire
Price
Titus
Tuttle-Bailey

B. Ceiling Supply Registers and Grilles (Adjustable Curved Blades) (SR-) (SG-)

C. Ceiling Exhaust and Return Registers and Grilles (Louvered Rectangular) (ER-) (RR-) (EG-) (RG-).

D. Ceiling Exhaust and Return Registers and Grilles (Perforated Face) (ER-) (RR-) (EG-) (RG-).

E. Ceiling Grid Core Exhaust and Return Registers and Grilles (Egg Crate) (ER-) (RR-) (EG-) (RG-).

2.03 CEILING SLOT DIFFUSERS (SD-)

A. Manufacturers:

Anemostat
Carnes
Carrier
Donco
Krueger
Metal-Aire
Price
Tempmaster
Titus

2.04 CEILING LINEAR EXHAUST AND RETURN GRILLES (EG-) (RG-)

A. Manufacturers:

Anemostat
Carnes
Krueger
Metal-Aire
Price
Titus

2.05 WALL SUPPLY REGISTERS AND GRILLES (SR-) (SG-)

A. Manufacturers:

Anemostat
Carnes
Krueger
Metal-Aire
Price
Titus

(RG-)

A. Manufacturers:

Anemostat
Carnes
Krueger
Metal-Aire
Price
Titus

2.07 LINEAR WALL SUPPLY REGISTERS AND GRILLES (SR-) (SG-)

A. Manufacturers:

Anemostat
Carnes
Metal-Aire
Krueger
Price
Titus

2.08 LINEAR FLOOR SUPPLY REGISTERS AND GRILLES (SR-) (SG-)

A. Manufacturers:

Anemostat
Carnes
Krueger
Metal-Aire
Price
Titus

2.09 FLOOR SUPPLY REGISTER AND GRILLES (SR-) (SG-)
(Heavy duty service only)

A. Manufacturers:

Anemostat
Krueger
Metal-Aire
Price
Titus

2.10 LOUVERS

A. Manufacturers:

Airstream
American Warming/Air Balance
Arrow
C.E.Sparrow
Dowco
Greenheck
Krueger
Louvers and Dampers, Inc.
Penn Ventilator
Ruskin

2.11 LOUVERED PENTHOUSES

A. Manufacturers:

American Warming
Arrow
Dowco
Greenheck
Louvers and Dampers, Inc.
Penn Ventilator
Ruskin

2.12 GRAVITY ROOF HOODS

A. Manufacturers:

Acme
C.E. Sparrow
Carnes
Greenheck
Louvers and Dampers, Inc.
Loren Cook
Mallory
Penn Ventilator

B. Fabricate air inlet or exhaust hoods in accordance with SMACNA HVAC Duct Construction Standards.

2.13 GRAVITY ROOF VENTILATORS

A. Manufacturers:

Acme
Carnes
Greenheck
Loren Cook
Mallory
Louvers and Dampers, Inc.
Penn Ventilator

2.14 GOOSENECKS

- A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards. Provide removable screen in discharge. Discharge to be cut back 45. Opening of discharge shall not face north or west.

2.15 RETURN-AIR GRILLES

- A. Perforated-face R.A. grilles are preferred for ceiling applications. Any other type of grille requires UCB approval.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. In general, for project specifications, remove "Design Requirements" sub-paragraph A in Part 1, paragraph 1.03 "System Description" of this Design Guide and use list to expand on specific requirements of installation for each product specified.

END OF SECTION