

**SECTION 233713 DIFFUSERS, REGISTERS & GRILLES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, apply to this Section.

1.2 SUMMARY

- A. This Section includes ceiling- and wall-mounted diffusers, registers, and grilles.
- B. Related Sections include the following:
  - 1. Division 8 Section "Fixed Louvers" for fixed and adjustable louvers and wall vents, whether or not they are connected to ducts.
  - 2. Division 23 Section "Duct Accessories" for fire dampers and volume-control dampers not integral to diffusers, registers, and grilles.
  - 3. Division 23 Section "Testing, Adjusting, and Balancing" for balancing diffusers, registers, and grilles.

1.3 DEFINITIONS

- A. Diffuser: Circular, square, or rectangular air distribution outlet, generally located in the ceiling and comprised of deflecting members discharging supply air in various directions and planes and arranged to promote mixing of primary air with secondary room air.
- B. Grille: A louvered or perforated covering for an opening in an air passage, which can be located in a sidewall, ceiling, or floor.
- C. Register: A combination grille and damper assembly over an air opening.

1.4 SUBMITTALS

- A. Product Data: For each product indicated, include the following:
  - 1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
  - 2. Diffuser, Register, and Grille Schedule: Indicate Drawing designation, room location, quantity, model number, size, and accessories furnished.
  - 3. Assembly Drawing: For each type of air outlet and inlet; indicate materials and methods of assembly of components.
- B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

- C. Samples for Initial Selection: For diffusers, registers, and grilles with factory-applied color finishes.
- D. Samples for Verification: For diffusers, registers, and grilles, in manufacturer's standard sizes to verify color selected.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

### 2.2 DIFFUSER SCHEDULE

- A. Square Diffuser <CD>.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Price.
    - b. Titus.
    - c. Carnes Co. Inc.
    - d. Krueger.
    - e. Anemostat.
    - f. Or approved equal.
  - 2. Material:
    - a. Typical Areas: Steel.
    - b. Corrosive or High Humidity Areas: Aluminum.
  - 3. Finish: Baked enamel, color selected by Architect.
  - 4. Duct Connection: Round or square as required.
  - 5. Face Style: Square, panel. Refer to schedule for types that required adjustable pattern.
  - 6. Mounting: Flush. Nominal 24"x24" Lay in. Plaster frame where required and coordinate final frame with ceiling type.
  - 7. Pattern: 4 way or as indicated on drawings.
  - 8. Accessories: Include the following:
    - a. Equalizer deflectors.
    - b. Operating keys.
- B. Round Diffuser<CD>.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Price.
    - b. Titus.
    - c. Carnes Co. Inc.

- d. Krueger.
  - e. Anemostat.
  - f. Or approved equal.
2. Material:
- a. Typical Areas: Steel.
  - b. Corrosive or High Humidity Areas: Aluminum.
3. Finish: Baked enamel, color selected by Architect.
  4. Duct Connection: Round as required.
  5. Face Style: Round, 3-cone.
  6. Mounting: Plaster frame or duct mounted as required.
  7. Pattern: Fixed.
  8. Dampers: Aluminum opposed blade with adjusting screw.
  9. Accessories: Include the following:
    - a. Equalizer deflectors.
    - b. Operating keys.

**2.3 REGISTER or GRILLE SCHEDULE**

**A. Register or Grille <SR, ER, RR, RG, TG>.**

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Price.
  - b. Titus
  - c. Carnes Co. Inc.
  - d. Krueger.
  - e. Anemostat.
  - f. Or approved equal.
2. Material: Aluminum or Steel; refer to device schedule.
3. Finish: Baked enamel, color as selected by Architect.
4. Face Blade Arrangement: Fixed horizontal.
5. Rear Blade Arrangement: Fixed vertical.
6. Frame: 1 inch wide.
7. Mounting: Countersunk screw.
8. Damper Type: Adjustable opposed-blade assembly.
9. Accessories: Include plaster frame as applicable and damper operating key.

**B. Specialty Supply Register <SR>:**

1. Products:
  - a. Price.
  - b. Titus
  - c. Carnes Co. Inc.
  - d. Krueger.
  - e. Anemostat.
  - f. Or approved equal.

2. Material: Aluminum.
3. Finish: Baked enamel, color selected by Engineer.
4. Face Blade Arrangement: Adjustable vertical spaced 3/4 inch apart.
5. Rear Blade Arrangement: Adjustable horizontal spaced 3/4 inch apart.
6. Border: 1-3/8 inches wide.
7. Mounting: Direct spiral duct-mounted.
  - a. All direct spiral duct-mounted supply grilles shall be constructed with radius end caps and foam gaskets for a tight seal to the duct diameter.
8. Damper Type: Aluminum, adjustable by screw, air scoop damper/extractor.
9. Damper Type: Adjustable opposed-blade assembly.

## 2.4 LINEAR SLOT DIFFUSER

### A. Linear Slot Diffuser

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Price.
  - b. Titus.
  - c. Carnes Co. Inc.
  - d. Krueger.
  - e. Anemostat.
  - f. Or approved equal.
2. Material: Extruded Aluminum
3. Finish: Baked enamel, color as selected by Architect.
4. Frame: Heavy duct extruded aluminum
5. Slots: Refer to device schedule for number and width.
6. Adjustable pattern damper.
7. Insulated sheet metal boot and plenum.

## 2.5 LINEAR JET-SLOT DIFFUSER

### A. Linear Slot Diffuser

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Price.
  - b. Titus.
  - c. Carnes Co. Inc.
  - d. Krueger.
  - e. Anemostat.
  - f. Or approved equal.
2. Material: Extruded Aluminum
3. Finish: Baked enamel, color as selected by Architect.
4. Frame: Heavy duct extruded aluminum.
5. Slots: Refer to device schedule for number and width.
6. Adjustable pattern damper.
7. Insulated sheet metal boot and plenum.

2.6 SOURCE QUALITY CONTROL

- A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install diffusers, registers, and grilles level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practicable. For units installed in lay-in ceiling panels, locate units in the center of panel. It is the responsibility of the contractor to review architectural drawings and provide applicable mounting frame for type of surface or ceiling indicated on architectural drawings. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.
- C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

3.4 CLEANING

- A. 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. Final cleaning is by the General Contractor.

END OF SECTION 233713