**Price Linear Displacement Floor Grille**

**Division 23 – Heating, Ventilating, and Air Conditioning**

**Section 23 37 13 – Diffusers, Registers, and Grilles**

**PART 1 – GENERAL**

* 1. **Section includes**:
1. Linear Displacement Floor Grilles.
	1. **Related Requirements**
2. Section 01 30 00 – Administrative Requirements
3. Section 01 40 00 – Quality Requirements
4. Section 01 60 00 – Product Requirements
5. Section 01 74 19 – Construction/Demolition Waste Management and Disposal
6. Section 01 78 00 – Closeout Submittals
7. Section 01 79 00 – Demonstration and Training
8. Section 23 31 00 – HVAC Ducts and Casings
9. Section 23 32 00 – Air Plenums and Chases

**1.03 Reference Standards**

1. All referenced standards and recommended practices in this section pertain to the most recent publication thereof, including all addenda and errata.
2. ASHRAE 55 – Thermal Environmental Conditions for Human Occupancy
3. ASHRAE 70 – Method of Testing the Performance of Air Outlets and Air Inlets
4. ASTM D610 – Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
5. ASTM D714 – Standard Test Method for Evaluating Degree of Blistering of Paints
6. ASTM D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
7. ASTM D4752 – Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub

**1.04 Administrative Requirements**

1. Pre-installation Meeting: Conduct a pre-installation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
2. Sequencing: Ensure that utility connections are achieved in an orderly and efficient manner.

**1.05 Submittals**

1. See Section 01 30 00 – Administrative Requirements for submittal procedures.
2. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate airflow, static pressure, and sound power levels for each of the second through sixth octave bands in dBA.
3. Shop Drawings: Indicate equipment assemblies and indicated dimensions, required clearances, method of field assembly, and Revit models.
4. Coordination Drawings: Include floor plans, and other details drawn to scale in which the following items are show and coordinated with each other, based on input from installers of the items involved:
	* + 1. Floor and underfloor-mounted items including;
				1. Floor Structure (floor tiles, concrete, etc.)
				2. Floor finishing (carpet, tile, etc.)
				3. Access panels
				4. Electrical components
				5. Plumbing
				6. Networking components
				7. Terminal Units and other HVAC components
5. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists.
6. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

**1.06 Quality Assurance**

1. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
2. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

**1.07 Warranty**

1. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
2. Provide 12 month manufacturer warranty from date of shipment for displacement grilles.

**PART 2 – PRODUCTS**

**2.01** **Displacement Grilles**

1. Basis of Design: Price Industries, Inc.
2. Linear Displacement Floor Grille: Model DFGL
3. Performance:
4. Air shall be delivered to the space at low noise levels and low velocities with low induction horizontal flow resulting in a stratified zone temperature distribution within the occupied zone.
5. The grille manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE 70.
6. Performance data for Draft Rate (%DR) shall be provided based on tests in accordance with ASHRAE 55.
7. A software program shall be available to aid in performance assessment by allowing room comfort evaluation for specific operating conditions and grille locations.
	* 1. If evaluation software is not available, the manufacturer shall supply, free of charge, a CFD model of the representative spaces completed by a modeling contractor who has demonstrable qualifications to model such a space.
		2. The qualifications shall include no less than 10 years of experience in the modeling of displacement ventilation systems, thorough validation of the code through comparison to empirical data, as well as a list of references.

**2.02** **Linear Displacement Floor Grille**

1. General:
2. Furnish and install Price Model DFGL linear displacement floor grille with the sizes, configurations, capacities, and options as indicated on the plans and air outlet schedule.
3. Construction:
4. The linear displacement floor grille shall be constructed with an extruded aluminum frame and core construction, with an equalization baffle and directional vanes securely retained in the grille vanes.
5. The equalization baffle shall be constructed of perforated aluminum and shall be available in [a black finish] or [a finish matching the grille finish].
6. The grille shall have a removable core section with bars spaced [1/4 inch] or [7/16 inch] on center and fixed deflection of [0], [15], or [30] degrees. The core shall have extruded aluminum bars mechanically locked into extruded aluminum receiving bars.
7. The grille bars shall have a [3/4 inch] or [1-1/4 inches] wide border with heavy duty extruded aluminum construction with precise factory mitered corners and reinforcing support bars for additional support. The core shall be held in the border with removable core clips, allowing the removal of the core without special tools.
8. The grille finish shall be (**select one**):
9. All aluminum components shall have a baked-on powder coat finish. Epoxies and their derivatives shall not be acceptable. Visible non-metallic components shall not be acceptable.
10. The paint finish must demonstrate no degradation when tested in accordance with ASTM D1308 (covered and spot immersion) and ASTM D4752 (MEK double rub) paint durability tests.
11. The paint film thickness shall be a minimum of 2.0 mils.
12. The finish shall have a hardness of 2H.
13. The finish shall withstand a minimum salt spray exposure of 500 hours with no measurable creep in accordance with ASTM D1654, and 1000 hours of exposure with no rusting or blistering as per ASTM D610 and ASTM D714.
14. The finish shall have an impact resistance of 80 inch-pounds.
15. All aluminum components shall a custom finish to match a customer supplied sample.
16. Mounting/Fastening:
	1. The grille shall be attached to the floor (select one):
		1. With countersunk screws (only for 1 inch and 1-1/4 inch border).
		2. With straight screws (only for ¾ inch border).
		3. With spring clips.
		4. Without screw holes.

**PART 3 – EXECUTION**

**3.01 Examination**

* 1. Verify that conditions are suitable for installation.
	2. Verify that field measurements are as shown on the drawings.

**3.02 Installation**

1. Install in accordance with manufacturer’s instructions.
2. See drawings for the size(s) and locations of displacement grilles.
3. Connect to ductwork in accordance with Section 23 31 00.

**3.03 Adjusting**

1. Ensure supply air to the displacement grilles.
2. Balance outlets according to manufacturer’s recommendations.
3. Verify that field measurements are as shown on the drawings.

**3.04 Field Quality Control**

1. See Section 01 40 00 – Quality Requirements for additional requirements.

**3.05 Cleaning**

1. See Section 01 74 19 – Construction Waste Management and Disposal for additional requirements.

**3.06 Closeout Activities**

1. See Section 01 78 00 – Closeout Submittals for closeout documentation requirements.
2. See Section 01 79 00 – Demonstration and Training for additional requirements.