**Price Perforated Return**

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

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

The following specification is for a defined application. Price would be pleased to assist in developing a specification for your specific need.

**PART 1 – GENERAL**

* 1. **Section includes**:
1. Perforated Return
	1. **Related Requirements**
2. Section 01 30 00 – Administrative Requirements
3. Section 01 40 00 – Quality Requirements
4. Section 01 74 21 – Construction/Demolition Waste Management and Disposal
5. Section 01 78 00 – Closeout Submittals
6. Section 01 79 00 – Demonstration and Training
	1. **Reference Standards**
7. All referenced standards and recommended practices in this section pertain to the most recent publication thereof, including all addenda and errata.
8. ASHRAE Standard 55 – Thermal Environmental Conditions for Human Occupancy
9. ASHRAE Standard 70 – Method of Testing the Performance of Air Outlets and Air Inlets
10. ASTM 610 – Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
11. ASTM 714 – Test Method for Evaluating Degree of Blistering of Paints
12. ASTM D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
13. ASTM D1654 – Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
14. ASTM D4752 – Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub
15. NFPA 90A – Standard for the Installation of Air-Conditioning and Ventilating Systems

**1.04 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, and NC designation.
3. Shop Drawings: Indicate configuration, general assembly, and materials used in fabrication.
4. Project Record Documents: Record actual locations of units and control components.
5. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions (if applicable), and maintenance and repair data.
6. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
7. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

**1.06 Quality Assurance**

1. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum ten years of documented experience.

**1.07 Warranty**

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

**PART 2 – PRODUCTS**

**2.01 Manufacturer**

1. Basis of Design: Price Industries, Inc.
2. Perforated Ceiling Diffusers Matching Return: Model PDDR
3. Fire-Rated Perforated Ceiling Diffusers Matching Return, Flush Face: Model PDDR-FR
4. Fire-Rated Perforated Ceiling Diffusers Matching Return, Extended Face: Model PDDRE-FR
5. General:
	1. The perforated face return diffuser shall be supplied to match supply air models in appearance and detail and provide ducted or non-ducted return airflow.
	2. For plenum return, non-ducted applications, the return diffuser shall be provided with a special frame assembly to maximize free area.
	3. The extended face return diffusers shall match the extended face supply diffusers for 15/16 inch tegular tile ceilings.

**2.02 Perforated Face Ceiling Diffuser Matching Return**

1. Description:
	1. Furnish and install Price model PDDR return diffusers in sizes and capacities as shown by the plans and air distribution schedule.
2. Construction:
	1. The return diffusers shall consist of a perforated air distribution face of no less than 51 percent free area, a heavy gauge steel back pan with [round] or [square] inlet collars as noted on the plans.
	2. The perforated face screen construction shall be (**select one**):
		1. [Steel]
		2. [Aluminum]
	3. The perforated face shall be removable from the diffuser face and shall be hinged for ease of removal of the face screen for cleaning purposes.
3. Paint Specification:
	1. Paint finish shall be (**select one**):
		1. Baked-on powder coat finish.
			1. The paint film thickness shall be a minimum of 2 mils.
			2. The finish shall have a hardness of 2H as tested in accordance with ASTM D3363.
			3. The finish shall pass an ASTM B117 Corrosive Environment Salt Spray Test for 1000 hours with no measurable creep, rusting or blistering as per ASTM D1654, D610 and D714.
			4. The finish shall pass an ASTM D870 Water Immersion test of a minimum of 500 hours with no measurable with no rusting or blistering as per ASTM D610 and D714.
			5. The finish shall have an impact resistance of 100 inch-pounds in accordance with ASTM D2794.
		2. All components shall have a custom finish in a color to match a customer supplied sample.
4. Mounting Frame:
	1. The diffuser mounting frame shall be suitable for lay-in or surface mount applications with the following frame style (**select one**):
		1. Style 3 – 15/16 inch wide flat T-bar
		2. Style 1 – Surface mount
		3. Style 17B – 9/16 inch wide bolt slot style T-bar
		4. Style 15 – 15/16 inch wide flat T-bar for installation with tegular ceiling tiles
		5. Style 4 – concealed spline
		6. Style 2 – Snap-in
5. Options (**select all that apply**):
	1. Beaded Extended Neck:
		1. The diffuser shall be supplied with a beaded neck extended to a depth of 2-1/2 inches.
	2. Insulated Back pan (T-bar mounting frame only):
		1. AFI –The diffuser back pan shall be externally insulated with ½ inch fiberglass with foil/scrim vapor barrier which meets the requirements of UL 181 and NFPA 90A.
		2. R6 – The diffuser back pan shall be externally insulated with a molded heavy duty foil/scrim vapor barrier with an R-value of six. The insulation shall meet the requirements of UL 181 and NFPA 90A. (**24 x 24 inch size only**)
	3. Light Shield:
		1. The diffuser shall be supplied with a light shield to reduce visibility in the ceiling plenum from the room side. (**Available for 22 x 22 inch and 22 x10 inch inlet sizes only**)
	4. Damper:
		1. The diffuser shall be supplied with a steel opposed blade volume control damper (VCS3).

**2.03 Fire-Rated Perforated Ceiling Diffusers Matching Return, Flush Face**

1. Description:
	1. Furnish and install Price model PDDR-FR return diffusers in sizes and capacities as shown by the plans and air distribution schedule.
	2. Diffusers shall be Fire-Rated Assemblies listed in the UL, Underwriters Laboratories Fire Resistance Directory and in the ULC, Underwriters Laboratories of Canada Equipment and Materials Directory.
	3. Diffusers shall meet UL time versus temperature test criteria and NFPA 90A requirements.
	4. This design is intended for use in an exposed grid suspended ceiling (T-bar Lay-in) with up to a three-hour rating and must be installed in accordance with the installation instructions.
2. Construction:
	1. The return diffusers shall consist of a perforated air distribution face of no less than 51 percent free area, and a heavy gauge steel back pan with [round] or [square] inlet collars as noted on the plans.
	2. The diffuser construction shall be steel.
	3. The perforated face shall be removable from the diffuser face and shall be fitted with hinges for ease of removal of the face screen for cleaning purposes.
	4. The diffuser shall incorporate a non-adjustable fire-rated ceiling radiation damper.
3. Paint Specification:
	1. Paint finish shall be (**select one**):
		1. Baked-on powder coat finish.
			1. The paint film thickness shall be a minimum of 2 mils.
			2. The finish shall have a hardness of 2H as tested in accordance with ASTM D3363.
			3. The finish shall pass an ASTM B117 Corrosive Environment Salt Spray Test for 1000 hours with no measurable creep, rusting or blistering as per ASTM D1654, D610 and D714.
			4. The finish shall pass an ASTM D870 Water Immersion test of a minimum of 500 hours with no measurable with no rusting or blistering as per ASTM D610 and D714.
			5. The finish shall have an impact resistance of 100 inch-pounds in accordance with ASTM D2794.
		2. All components shall have a custom finish in a color to match a customer supplied sample.
4. Damper:
	1. The diffuser shall be supplied with a galvanized steel, non-adjustable, fire-rated ceiling radiation damper.
5. Thermal Blanket:
	1. The diffuser shall be externally wrapped with a non-asbestos thermal blanket.
6. Options (**select all that apply**):
	1. Volume Control:
7. The diffuser shall be supplied with a steel volume control damper that is room side adjustable for balancing.
	1. Fusible Link:
8. The diffuser shall be supplied with a fusible link rated for (**select one**):
	* + 1. 165 degrees Fahrenheit.
			2. 212 degrees Fahrenheit.

**2.04 Fire-Rated Perforated Ceiling Diffusers Matching Return, Extended Face**

1. Description:
	1. Furnish and install Price model PDDRE-FR return diffusers in sizes and capacities as shown by the plans and air distribution schedule.
	2. Diffusers shall be Fire-Rated Assemblies listed in the UL, Underwriters Laboratories Fire Resistance Directory and in the ULC, Underwriters Laboratories of Canada Equipment and Materials Directory.
	3. Diffusers shall meet UL time versus temperature test criteria and NFPA 90A requirements.
	4. This design is intended for use in an exposed grid suspended ceiling (T-bar Lay-in) with up to a three-hour rating and must be installed in accordance with the installation instructions.
2. Construction:
	1. The return diffusers shall consist of a perforated air distribution face of no less than 51 percent free area that extends 3/8 inch below the ceiling plane, and a heavy gauge steel back pan with [round] or [square] inlet collars as noted on the plans.
	2. The diffuser construction shall be steel.
	3. The perforated face shall be removable from the diffuser face and shall be fitted with hinges for ease of removal of the face screen for cleaning purposes.
	4. The diffuser shall incorporate a non-adjustable fire-rated ceiling radiation damper.
3. Paint Specification:
	1. Paint finish shall be (**select one**):
		1. Baked-on powder coat finish.
			1. The paint film thickness shall be a minimum of 2 mils.
			2. The finish shall have a hardness of 2H as tested in accordance with ASTM D3363.
			3. The finish shall pass an ASTM B117 Corrosive Environment Salt Spray Test for 1000 hours with no measurable creep, rusting or blistering as per ASTM D1654, D610 and D714.
			4. The finish shall pass an ASTM D870 Water Immersion test of a minimum of 500 hours with no measurable with no rusting or blistering as per ASTM D610 and D714.
			5. The finish shall have an impact resistance of 100 inch-pounds in accordance with ASTM D2794.
		2. All components shall have a custom finish in a color to match a customer supplied sample.
4. Damper:
	1. The diffuser shall be supplied with a galvanized steel, non-adjustable, fire-rated ceiling radiation damper.
5. Thermal Blanket:
	1. The diffuser shall be externally wrapped with a non-asbestos thermal blanket.
6. Options (**select all that apply**):
	1. Volume Control:
7. The diffuser shall be supplied with a steel volume control damper that is room side adjustable for balancing.
	1. Fusible Link:
8. The diffuser shall be supplied with a fusible link rated for (**select one**):
9. 165 degrees Fahrenheit.
10. 212 degrees Fahrenheit.

**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 diffusers.

**3.03 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.