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

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

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

**PART 1 – GENERAL**

* 1. **Summary**
1. This section includes the following:
2. Linear ducted plenums.

**1.02 Related Documents**

1. Section 01 30 00 – Administrative Requirements
2. Section 01 40 00 – Quality Requirements
3. Section 01 60 00 – Product Requirements
4. Section 01 74 19 – Construction/Demolition Waste Management and Disposal
5. Section 01 78 00 – Closeout Submittals
6. Section 01 79 00 – Demonstration and Training
7. Section 23 30 00 – HVAC Air Distribution
8. Section 23 32 00 – Air Plenums and Chases
	1. **Reference Standards**
9. All referenced standards and recommended practices in this section pertain to the most recent publication thereof, including all addenda and errata.
10. ASHRAE Standard 55 – Thermal Environmental Conditions for Human Occupancy
11. ASHRAE Standard 62.1 – Standards for Ventilation and Indoor Air Quality
12. ASHRAE Standard 70 – Method of Testing the Performance of Air Outlets and Air Inlets
13. ASTM Standard D610 – Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
14. ASTM Standard D714 – Standard Test Method for Evaluating Degree of Blistering of Paints
15. ASTM Standard D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
16. ASTM Standard D1654 – Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
17. ASTM Standard D4752 – Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub
18. ASTM Standard E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
19. NFPA Standard 70A, Article 100 – National Electrical Code

**1.04 Administrative Requirements**

A. 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.

B. 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:
	1. Provide data indicating configuration, general assembly, materials used in fabrication, rated capacities, and furnished specialties and accessories.
	2. Include drawings indicating size, profiles and dimensional requirements of the linear floor grilles that are based on the specific system indicated.
	3. Include catalog performance ratings that indicate air volume flow, initial pressure drops, sound performance, and throw, as tested in accordance with ASHRAE 70.
3. Shop Drawings: For each type of product indicated, include the following:

1. Equipment assemblies and indicated dimensions.

2. Required clearances.

3. Method of field assembly.

4. Revit models.

1. Coordination Drawings:
	1. Include floor plans, and other details, drawn to scale, on which the following items are shown and coordinated based on input from installers:
	2. Floor or 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
2. Operation and Maintenance Data: Include manufacturer’s descriptive literature, operating instructions, maintenance schedules and repair data, and parts lists.

**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.
2. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.
3. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100 by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

**1.07 Warranty**

1. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
2. Provide 12 month manufacturer warranty from date of shipment for grilles and registers.

**PART 2 – PRODUCTS**

**2.01 General**

1. Basis of Design: Global IFS Industries, Inc.
2. Linear Ducted Plenum [Global IFS Model LDP]
3. General Product Information:
4. Furnish and install Global IFS model LDP linear ducted plenums of the sizes and capacities indicated on the drawings or outlet schedule.
5. Unit sizes shall be selected in accordance with ASHRAE guidelines and manufacturer’s literature.
6. Manufacturers shall demonstrate that they have successfully supplied and installed underfloor HVAC products, as well as the computer modeling thereof for a minimum of 10 years.
7. Manufacturers must be pre-qualified to bid based on the completion of a minimum of [xx] jobs in similar climates.
8. Manufacturers shall provide a list of completed jobs and references.

**2.02 Linear Ducted Plenum**

1. Description:
2. Furnish and install Global IFS model LDP with the sizes, core style, configurations and capacities indicated on the plans and air outlet schedule.
3. Performance:
4. The manufacturer of the linear floor grilles shall provide performance data for air volume, initial pressure drop, and sound levels.
5. Air shall be delivered to the space without the use of nozzles.
6. All data must be tested in accordance with the most recent publication of ASHRAE 70.
7. Construction:
	1. The plenum shall be constructed of minimum 22 gauge steel.
	2. The plenum shall have a finished height of 10-3/8 inches, and shall be suitable for installation above conduit in a twelve inch raised floor.
	3. The plenum shall be [floor tile] or [pedestal] supported.
	4. The plenum shall have a [6 inch], [8 inch], or [10 inch] diameter inlet.
	5. Pedestal support brackets shall be constructed from 16 gauge steel.
8. Finish:
9. The plenum shall be finished in pre-painted black powder coat.
10. Mounting/Fastening:
	1. Floor tile supported units shall be supplied with a 1/2 inch flange on all sides.
	2. Pedestal supported units shall be supplied with support brackets attached to the units.
	3. Support pedestals shall be positioned without the use of tools.
	4. Pedestal and pedestal heads shall be provided by others.
11. Options:
12. Fiber-Free acoustic insulation:
13. Insulation shall comply with UL 181 erosion, mold growth and humidity requirements in accordance with ASHRAE 62.1, and shall have a maximum flame/smoke spread of 25/50 for both the insulation and the adhesive when tested in accordance with ASTM E84.
14. The insulation shall be secured with adhesive.
15. Insulation thickness shall be 1/2 inch thick, three pound density, R-value of 2.0.

**PART 3 – EXECUTION**

**3.01 Examination**

A. Verify that conditions are suitable for installation.

B. Verify that field measurements are as shown on the drawings.

**3.02 Manufacturer’s Field Services**

* + 1. The manufacturer shall provide the services of an underfloor air systems specialist. This engineer shall make at a minimum the following trips to the site with construction and design personnel.
			1. The first trip to the job shall occur right before the raised access floor is being installed. The Global IFS engineer will inspect and ensure proper installation of Global IFS products. While on site, the Global IFS engineer will also inspect the area near the Global IFS products for any obvious concerns with construction within the underfloor plenum in regard to the air tightness of the plenum. Any deficiencies found shall be brought to the general contractor's attention on site that day. Site observation report shall be made and emailed to the Engineer of Record for approval. If approved they shall forward the report to the construction team as appropriate. The Global IFS engineer will address any issues regarding the equipment supplied by Global IFS to help ensure a successful completion of the project. Global IFS will not be held liable for issues outside of the operation of the product supplied by Global IFS.
			2. The second trip to the job shall occur during the building commissioning process. The engineer shall verify proper operation and installation of the Global IFS supplied equipment and assist to solve problems that may prevent project completion due to said equipment. Any deficiencies found shall be brought to the general contractor's attention on site that day. Site observation report shall be made and emailed to the Engineer of Record for approval. If approved they shall forward the report to the construction team as appropriate. The Global IFS engineer will address any issues regarding the goods supplied by Global IFS to help ensure a successful completion of the project. Global IFS will not be held liable for issues outside of the operation of the product supplied by Global IFS.

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**3.03 Installation**

1. Install linear floor grilles level and plumb.
2. Complete installation and startup checks according to manufacturer’s instructions and perform the following.

1. Verify that inlet duct connections are as recommended by manufacture to achieve proper performance.

2. Verify that any identification tags are visible.

3. Verify locations of thermostats, humidistats, and other exposed control sensors with drawings and room details before installation.

1. Maintain sufficient clearance for normal services, maintenance, or in accordance with construction drawings.
2. See drawings for the size(s) and locations of linear floor grilles.
3. Connect to ductwork in accordance with Section 23 31 00.

**3.04 Adjusting**

1. Balance outlets according to manufacturer’s recommendations.
2. Verify that field measurements are as shown on the drawings.

**3.05 Field Quality Control**

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

**3.06 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.