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**Twin City Fan & Blower Guide Specification
HVAC Gravity Louvered Penthouse Ventilators: Model TEL**

**Twin City Fan & Blower Model TEL Series, HVAC Gravity Louvered Penthouse Ventilators**, are multi-tiered aluminum units with a removable aluminum hood.

**Application**

The TEL provides for natural gravity exhaust or relief ventilation.

Throat Opening (Rectangular): 12 x 12 inches to 84 x 144 inches (305 x 305 mm to 2,134 x 3,658 mm).

Airflow: Up to 49,516 CFM (84,127 m3/hour) at 0.05 inches wg (12 Pa)

Airflow: Up to 85,765 CFM (145,713 m3/hour) at 0.15 inches wg (37 Pa)

Twin City Fan & Blower (TCF) is an industry leading designer and manufacturer of high quality commercial and industrial fans and is a division of Twin City Fan Companies, Ltd. Our extensive product line includes centrifugal fans and blowers, axial fans, and power roof ventilators. For the commercial market, TCF supplies ventilation fans for retail and office buildings, restaurants, schools, hospitals, and government buildings. TCF’s industrial fans are used in a wide variety of process applications for numerous industries including Petrochemical, Nuclear, Cement, Steel, and Air Pollution Control. Special materials, construction, coatings, and accessories are available to fit any application requirements.

TCF has completed thousands of successful installations across the globe and has a proven track record for tackling the most technically complex applications within the fan industry. TCF is also known for its technical design capabilities, comprehensive testing services, and responsive sales team. Due to the company’s extensive expertise and long-standing reputation for proven quality, TCF products continue to be specified around the globe.

TCF occupies over 1,000,000 sq. ft. of manufacturing space across ten facilities in the U.S, with expanded manufacturing and service operations located in South America, Europe, India, China, and Singapore. Headquarters are located in Minneapolis, Minnesota, which houses the management, sales and marketing, accounting, human resources, material management, engineering personnel, as well as a state-of-the-art AMCA accredited testing lab.

We recommend you consult with your Twin City Fan & Blower Sales Representative, who can be contacted through: Twin City Fan & Blower, Minneapolis MN; (763) 551-7600; email: tcf\_sales@tcf.com; [www.tcf.com](http://www.tcf.com).

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SECTION 23 37 23.16 – HVAC GRAVITY LOUVERED PENTHOUSE VENTILATORS

1. GENERAL
	* + 1. SUMMARY
				1. Section includes HVAC gravity louvered penthouse relief ventilators.
			2. ACTION SUBMITTALS
				1. Product Data: Include the following:

Rated capacities and operating characteristics.

Flow Performance Data: Flow performance curves with flow, and static pressure.

Furnished specialty components.

Specified accessories.

Dimensioned standard drawings indicating dimensions, weights, and attachments to other work.

Specifier: If Contractor will be required to provide engineering drawings and calculations for vibration, seismic, or high wind design, insert requirements here.

* + - 1. INFORMATIONAL SUBMITTALS
				1. Source quality-control reports.
				2. Field quality-control reports.
				3. ISO-9001 certificate.
			2. CLOSEOUT SUBMITTALS
				1. Operation and Maintenance Data: Include routine maintenance, adjustment requirements, safety information, and troubleshooting guide.
			3. QUALITY ASSURANCE
				1. Manufacturer Qualifications: Approved ISO 9001-compliant manufacturer listed in this Section with minimum 10 years' experience in manufacture of similar products in successful use in similar applications, and with an ASME NQA-1 compliant Program.

Specifier: Retain paragraph below if Owner allows substitutions but requires strict control over qualifying of substitutions.

Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

Product data, including certified independent test data indicating compliance with requirements.

Project references: Minimum of 5 installations not less than 5 years old, with Owner contact information.

Sample warranty.

Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.

Approved manufacturers must meet separate requirements of Submittals Article.

* + - 1. COORDINATION
				1. Coordinate sizes and locations of supports required for HVAC gravity louvered penthouse ventilators.
				2. Coordinate sizes and locations of roof curbs, and roof penetrations.
			2. FIELD CONDITIONS
				1. Handling and Storage: Handle and store units in accordance with manufacturer's published instructions. Examine units upon delivery for damage. Store units protected from weather.
			3. WARRANTY

Specifier: Consult TCF for available special Project-specific warranties.

* + - * 1. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to furnish replacement components for units that demonstrate defects in workmanship or materials under normal use within warranty period specified.

Warranty Period: 12 months from startup or 18 months from shipment by manufacturer, whichever first occurs.

1. PRODUCTS
	* + 1. MANUFACTURER
				1. Basis-of-Design Manufacturer: Provide HVAC gravity Louvered Penthouse ventilators manufactured by **Twin City Fan & Blower**, Minneapolis MN; (763) 551-7600; email: tcf\_sales@tcf.com; website: [www.tcf.com](http://www.tcf.com).
				2. Source Limitations: Obtain HVAC gravity Louvered Penthouse ventilators from a single manufacturer.
			2. PERFORMANCE REQUIREMENTS
				1. HVAC Gravity Louvered Penthouse Ventilator Performance Ratings: [Project site elevation- based] [Sea level elevation-based].

Specifier: Retain following paragraph for gravity roof ventilators with electric actuators, limit switches, or other electrical accessories.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70.
			1. HVAC GRAVITY LOUVERED PENTHOUSE VENTILATORS
				1. Description: Provide HVAC gravity louvered penthouse relief ventilators.

Basis of Design Product: **Twin City Fan & Blower, Model TEL**.

* + - * 1. Fabricate units of extruded aluminum louvers with double rain-snow baffles, and cross-broke, removable, aluminum hood.
				2. Fabricate unit top covers of aluminum, with cross-break and reinforcement. Miter cut corners and continuously weld seams.
				3. Fabricate unit louvers of aluminum.
				4. Provide internal reinforcement and bracing.
				5. Fabricate unit base of aluminum.

Specifier: A bird screen is included as a standard feature of the TEL ventilator. In the following paragraph, select standard galvanized steel or optional aluminum material.

* + - * 1. Provide [galvanized steel wire] [expanded aluminum mesh] bird screen
				2. Finish: Galvanized mill finish internal parts, and uncoated external [aluminum] and [galvanized steel] parts exposed to weather.

Specifier: The first paragraph below is manufacturer's standard finish. Those that follow are optional finishes. Select finish that is required.

If fans specified for the project have different finishes, include the finish for each fan on the Drawings and delete here.

[None]

[Enamel, Gray]

[Enamel, Color Matched]

[Epoxy, Black]

[Phenolic Heresite, Gray]

[Carbocoat 30, Black]

[Transcoat 161, Black].

* + - * 1. Accessories:

Specifier: Accessories listed in subparagraphs below are optional TCF features for this unit. Consult TCF representative for recommended options based upon Project requirements.

Specifier: When backdraft dampers are required, select one in the following paragraph. If both types of dampers are required on various units, coordinate with fan schedule on drawings to indicate which damper type is associated with each fan.

When damper is required, select option for damper shelf below.

Backdraft Damper, [Automatic] [Motorized], parallel-blade type. Adjust backdraft damper to close when fan is not running.

Fabricate frame from galvanized steel.

Fabricate blades from aluminum, mill finish, with vinyl edge seals.

Specifier: Retain the following paragraph for motorized backdraft dampers, and select required voltage for actuator power.

Backdraft damper actuator suitable for [24] [115] [208] [230] [460] [575] VAC, single phase. [Provide transformer for [575] V actuator.]

Damper Shelf: Form louvered penthouse throat to include a shelf to support backdraft dampers.

Penthouse Base Gasket: Provide foam rubber gasket material for field installation under base of penthouse.

Specifier: When required, select option for mastic coating on exposed side of insulation lining in the following paragraph.

Insulated Penthouse Cap: Provide bolt-on weatherproof aluminum penthouse cap with 1 inch (25 mm) fiberglass lining [coated with mastic on side exposed to airflow]. Form penthouse cap with pitch to assure positive runoff.

Select roof curb options in the following paragraph that coordinate with building design and roof membrane system.

Roof Curb: [Canted] [Self-flashing] [\_\_\_\_\_], [8 inches (203 mm.)] [12 inches (305 mm)] [18 inches (457 mm)] [\_\_\_\_\_] high, unvented [, with 1-1/2 inch (38 mm) thick insulation].

Insect Screen: Provide aluminum wire insect screen on inboard face of louvered surfaces.

Snow Screen: Provide aluminum bird screen over aluminum insect screen.

Provide louvered, top-hinged side access panel to allow entry without removing top hood.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine areas to receive fans. Notify Engineer regarding conditions that may adversely affect installation, operation, or maintenance of HVAC gravity louvered penthouse ventilators. Proceed with installation once conditions are in accordance with manufacturer's published instructions.
			2. PROTECTION
				1. Protect adjacent construction and finished surfaces during installation and testing.
			3. INSTALLATION
				1. Install HVAC gravity louvered penthouse ventilators in accordance with Contract documents and manufacturer's published instructions.

Specifier: Insert applicable installation requirements for vibration, seismic, and high wind design if applicable to installation.

* + - * 1. Install HVAC gravity louvered penthouse ventilator units with adequate clearances for service and maintenance.

Specifier: Coordinate duct installation and specialty arrangements with schematics on Drawings and with requirements specified in duct systems. If Drawings are explicit enough, these requirements may be reduced or omitted.

* + - * 1. Duct Connections: Drawings indicate general arrangement of ducts and duct accessories. Where indicated on Drawings, make final duct connections with flexible connectors. Flexible connectors are specified in Division 23 section "Air Duct Accessories."

Install connecting ducts with adequate clearances for service and maintenance.

Specifier: Retain the following paragraph and subparagraphs only if the units specified include electrical components.

* + - * 1. Electrical Connections: Connect wiring in accordance with NFPA 70.

Ground and bond equipment according to Division 26 section "Grounding and Bonding for Electrical Systems."

Connect to lightning protection system according to Division 26 section "Lightning Protection."

* + - * 1. Equipment Identification: Label units according to Division 23 section "Identification for HVAC Piping and Equipment."
			1. FIELD QUALITY CONTROL

Specifier: Select option in paragraph below to define the party responsible for final tests and inspections to be performed.

* + - * 1. [Owner will retain] [Contractor shall retain] qualified testing agency to perform field tests and inspections.

Specifier: Retain first paragraph below to describe tests and inspections to be performed.

* + - * 1. Tests and Inspections:

Verify that unit is secured to supports, and that duct connections are complete.

Verify that cleaning is complete.

* + - * 1. Submit test and inspection reports.
			1. ADJUSTING AND CLEANING
				1. Adjust, clean, and maintain installed units in accordance with manufacturer's published instructions.

END OF SECTION