

SECTION 05520

BALLASTED COOLING TOWER GUARDRAIL SYSTEM

\*\* NOTE TO SPECIFIER \*\*

This section is based on the products of Peak Fall Protection, Inc. which is located at:

1230 Perry Rd.
Apex, NC 27502
Toll Free: 866-387-9965
Email:info@peak-fp.com
www.peak-fp.com,

Diversified Fall Protection specializes in the design, engineering, fabrication, installation, and certification of fall protection safety systems.  Our team of safety professionals can provide assistance with your facility starting with a hazard analysis site assessment to determine the most effective solution for your specific application.

PART 1 – GENERAL

* 1. SECTION INCLUDES

A. Design, engineering, fabrication, and installation of a ballasted, non-penetrating guardrail system for rooftop-mounted cooling towers including:

1. Perimeter guardrail with vertical support posts
2. Integrated access ladder and self-closing swing gate
3. Ballasted base assemblies with protective rubber pads
	1. REFERENCES
		1. Occupational Safety and Health Administration (OSHA)
			1. OSHA CFR 1926.500-503 – Fall Protection
			2. OSHA 29 CFR 1910.23 – Walking-Working Surfaces
		2. American Institute of Steel Construction (AISC): Load and Resistance Factor Design.
		3. ASTM International:
			1. ASTM A36 - Standard Specification for Carbon Structural Steel.
			2. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
			3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
		4. American Welding Society: AWS D1.1 - Structural Welding Code.

1.3 SUBMITTALS

A. Product Data and Shop Drawings

B. Installation details and methods

C. PE-stamped layout showing loading compliance

D. Details on member sizes, post spacing, ladder, base, fittings, and connections

1.4 QUALITY ASSURANCE

* + 1. Manufacturer Qualifications:
			1. Provide products for a manufacturer that specializes in the design, fabrication, and installation of permanent railing systems with a minimum of ten years of documented experience. Companies such as miscellaneous steel fabricators that do not normal design and fabricate fall permanent railing components are not acceptable.
			2. Manufacturer shall carry specific liability insurance (products and completed operations) in an amount not less than $5,000,000 to protect against product failure.
			3. Manufacturer shall provide samples of product for inspection or outside agency testing at the request of the owner. Manufacturer shall be compensated for additional product.
		2. Installer Qualifications:
			1. Installation contractor shall be trained or qualified by manufacturer.
			2. The fall protection install contractor shall maintain appropriate insurances as applicable for the installation of fall protection systems. Installer shall have specific liability insurance (products and completed operations) in an amount not less than $5,000,000. Proof of these insurance listings shall be supplied with the submittals listed in herein.
			3. Welding methods shall comply with AWS D1.1 and welding personnel shall be certified in accordance with AWS requirements.
	1. DELIVERY, STORAGE, AND HANDLING
1. Deliver labeled and protected components
2. Inspect prior to installation
3. Store indoors and protect against corrosion

PART 2 – PRODUCTS

2.1 MANUFACTURER

Diversified Fall Protection
24400 Sperry Dr.

Westlake, OH 44145

800-504-4016
[www.fallprotect.com](http://www.fallprotect.com)

* 1. SYSTEM DESIGN REQUIREMENTS
1. OSHA-compliant guardrail height: 42" top rail, 21" midrail
2. 200 lb concentrated load at top rail, 150 lb at midrail
3. Wind resistance: Minimum 150 mph
4. Maximum rooftop bearing pressure: 3.0 psi
5. System must not penetrate roofing membrane
6. Mechanical connections to HVAC components are not permitted
7. Supplemental attachments to rooftop dunnage or platforms are permitted where necessary
8. Posts must be removable or shiftable to permit access to unit panels
9. Pipe-fitting modular design using galvanized set screw fitting components

2.3 MATERIALS

A. Guardrail Sections & Posts

1. 1.66" OD x 13 GA or greater wall thickness, min yield strength of 46 ksi
2. Hot-dip galvanized finish or Gatorshield
3. Set screw fittings (e.g., elbows, tees, flanges)
4. Malleable plug caps on exposed top ends
5. Telescoping perimeter braces at corners and at intermediate intervals, as required

B. Ballasted Base Assemblies

1. 18" Ø x 1/4" steel with stiffeners
2. Integrated rubber pad (min. 3/8")
3. Designed to receive vertical post via pinned connection
4. Hot-dip galvanized finish
5. Must include provision for water drainage

C. Toe Boards

1. 3.5" high, galvanized, integrated with rail and splice fittings
2. Required at all guardrail perimeter edges

D. Ladder & Access Gate

1. Safety swing gate with self-closing hinge and positive latching
2. Ladder from rooftop to top of unit with integrated side rails
3. Connection brackets to guardrail system
4. Non-roof penetrating design

PART 3 – EXECUTION

* 1. EXAMINATION
1. Confirm roofing surface integrity and layout matches approved drawings
2. Coordinate with trades to avoid obstructions to maintenance panels or fans
	1. INSTALLATION

A. Install per manufacturer’s instructions and manufacturer shop drawings

B. Align and level all posts and rails

C. Secure posts to ballasted bases using bolted pinned connections

D. Torque set screws to 29 ft-lbs

E. Field fit telescopic braces and removable post assemblies as required

F. Spray any scratched or damaged material with appropriate touch up compound, such as cold-galvanizing spray for galvanized pipe.

* 1. ADJUSTMENTS & PROTECTION
1. Inspect installation for plumb and secure fit
2. Touch up galvanized surfaces as needed
3. Protect completed system during construction

END OF SECTION 05520