

SECTION 32 17 43 – PAVEMENT SNOWMELTING SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: Complete engineered modular hydronic snow and ice melting system for pavement applications, including heat exchange panels and factory-fused interconnecting tubing with UV protection, distribution manifolds, accessories, and specialized controls for automatic operation.

B. Application Types:

Ground-Mounted: At-grade installation for sidewalks, driveways, patios, and other paved surfaces.

Pedestal-Mounted: Elevated modular system for roof decks, balconies, plazas, and terraces.

C. Related Sections:

Section 23 83 18 – Radiant-Heating Hydronic Snow-Melting Equipment: For coordination with primary heating plant, pumps, heat exchangers, and other mechanical components not integral to the pavement snow melting panels.

1.2 PERFORMANCE REQUIREMENTS

A. Thermal Output: Minimum 300 Btu/hr/sq ft (as required by design).

B. Surface Coverage: Modular panels shall provide even temperatures across the adjoining surface (e.g., pavers) for maximum energy transfer without striping.

C. Structural Load:

Ground-Mounted: Full load-bearing panels shall utilize 3 lb/ft³ density EPS insulation with minimum 60 psi compressive strength to prevent crushing or paver settling.

Pedestal-Mounted: Panels shall have a minimum compressive strength of 60 psi with 1 lb/ft³ density EPS insulation with insulation removed at supported corners; pavers requiring central pedestal support shall use 3 lb/ft³ density EPS.

D. Compliance: System complies with ICC-ES PMG-1788 certification for hydronic radiant heating applications.

E. Operating Limits: Maximum operating pressure 37 PSI at 140°F maximum supply temperature.

F. The system is not oxygen barring and requires ALL FLUID CONTACTING COMPONENTS TO BE NON-FERROUS. A stainless-steel heat exchanger is an acceptable barrier to ferrous components.

G. All exposed plastic components to be UV protected with infused carbon black.

H. Paver Implosion Prevention (Pedestal-Mounted): Where required, modular Panels shall be attached to pedestals at each corner with appropriate fasteners to prevent paver dangerous implosion from heavy impacts.

I. Wind Uplift Prevention (Pedestal-Mounted): Where required, modular Panels and paver assemblies shall be fastened to pedestals at each corner via an appropriate system allowing convenient disassembly while meeting wind uplift specifications.

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets, including preparation, storage, handling, and installation recommendations.

B. Shop Drawings: Detailed ThermaPANEL system layout, manifold locations, zoning, tubing runs, and integration with finish surfaces; based on as-built dimensions provided by Contractor.

C. Certifications: ICC-ES PMG-1788 report.

D. Operation and Maintenance Data: Include glycol monitoring, seasonal changeover, filter cleaning and troubleshooting.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Single source from Therma-HEXX Corporation.

B. Installer Qualifications: Experienced in hydronic radiant systems; trained in socket fusion welding (if used) and system balancing/startup. Manufacturer training or guidance required.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect components from unnecessary environmental exposure, impact, and abuse prior to installation.

B. Store all components in original packaging in secure location.

C. Keep panels pressurized during installation where possible to detect pressure drop issues.

1.6 SYSTEM ENGINEER

A. The system engineer shall be the manufacturer, Therma-HEXX Corporation, responsible for complete system design, engineering, layout, zoning, performance verification, and provision of shop drawings.

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Basis of design: ThermaPANEL

Therma-HEXX Corporation, Portsmouth, NH;

(603) 319-8815 www.therma-hexx.com

B. Substitutions: Not permitted without prior approval.

C. Tray systems comprised of aluminum sheets and embedded non UV protected tubing, or electrical trace wire are not acceptable substitutions due to performance and UV exposure limitations.

2.2 MODULAR HEAT EXCHANGE PANELS

A. Material: Carbon black infused Bimodal copolymer of LLDPE/HDPE with UV and chlorine resistance.

B. Dimensions: Nominal 24" x 24" (actual 23.5" x 23.5") x 1.5" total thickness (panel body ~0.4–0.5" with attached insulation). Half panels (11.5" x 23.5") available for edges/steps.

C. Interconnects: Factory-fused PE-RT SDR-9 tubing (0.625" OD / 1/2" CTS); socket fusion welded to eliminate mechanical joints under permanent surfaces.

D. Fluid Capacity: Approximately 0.26 gallons per panel ($\pm 10\%$).

E. Insulation: Factory-attached 1" rigid EPS foam underside (3 lb/ft^3 for load-bearing ground-mounted; 1 lb/ft^3 standard for pedestal-mounted, with 3 lb/ft^3 for central pedestal support where required).

F. Accessories: Proprietary alignment disks/rings for paver securing and 1/8" drainage gaps (pedestal applications). Trimmable and filler panels where indicated.

G. Acceptable onsite connections: ASTM F1807 metal insert fittings utilizing a copper crimp ring (or alternate stainless-steel clamps) and ASTM F2159 plastic insert fittings utilizing a copper crimp ring (or alternate stainless-steel clamps), for SDR9 PE-RT tubing.

H. Manifolds can use the approved ASTM F1807 compression fitting type.

I. All fittings and connections shall be non-ferrous (e.g., brass, copper alloy, or stainless steel) to comply with system requirements.

2.3 RELATED MATERIALS

A. PE-RT tubing, copper fittings, manifolds, filters, pumps, expansion tank, air elimination, glycol feeder, controls — as specified by Therma-HEXX unless noted "by others".

B. Interlocking concrete pavers, bedding material, joint material, base materials, and adjustable pedestals — by others.

PART 3 – EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify substrates are properly prepared, level, and free of debris that could puncture panels.

B. Coordinate with other trades for sequencing.

3.2 INSTALLATION – GENERAL

A. Install per manufacturer's instructions, approved shop drawings, and ICC-ES PMG-1788 guidelines.

B. Pressure test manifolds and main piping only, not panels, to 100 PSI (air or per specs) before panel connection; isolate expansion tank and air eliminator during initial tests.

C. Install panels in rows; connect to manifolds and pressurize sequentially (max 50 PSI, see ICC-ES listing). Reference manufacturer training manual.

D. For exterior applications, minimize exposure; cover promptly with finish surface. Do not step or lean on pedestal mounted Panels.

E. Fill and purge: Use water for initial test, blow out, then fill with premixed glycol solution (concentration per location/climate). Never isolate expansion tank with fluid in the system.

F. Install air elimination (coalescing preferred), line-size wye filters on manifolds, 60 PSI relief valve on system, and automatic glycol feeder/pressurization (max 14–17 PSI, low-pressure shutoff at 5 PSI).

G. Provide 4' loops of connecting tubing over access points (e.g., roof drains, scuppers) to allow temporary displacement of panels for future servicing without disconnecting or cutting tubes.

3.3 GROUND-MOUNTED INSTALLATION

A. Prepare compacted sub-base per approved shop drawings. The ground-mounted base shall meet ICPI guidelines specifically designed for the intended use with specified pavers by others.

B. Anchor panels to concrete substrate using 3" concrete screws/washers at designated points (start from center) if required.

C. Screed 1" bedding sand or stone dust over panels (fill gaps).

D. Install interlocking pavers directly on screeded sand; tamp/add joint material and re-tamp per specifications by others.

3.4 PEDESTAL-MOUNTED INSTALLATION

A. Layout adjustable pedestals per system manufacturer's plans; set first rows level/plumb.

B. Unfold pre-connected panel rows across pedestals (span at least two pedestals per panel for structural stability).

C. Immediately place pavers atop panels; use alignment rings to lock corners and maintain 1/8" (or specified) drainage gaps. Provide secure perimeter to prevent paver movement.

D. For 2 cm porcelain pavers or other uncertified surfaces, mechanically fasten ThermaPANEL corners to pedestals using manufacturer-approved screws to prevent paver implosion or injury hazards from heavy object impact. As an alternative, install a centrally located pedestal beneath the ThermaPANEL for additional support.

E. Ensure minimum 3" plenum space below panels to roof membrane for manifold placement.

F. Maintain clear, open gaps between pavers to allow air pressure equalization and reduce wind uplift effects. Configurations that block or restrict airflow through paver gaps are not permitted where wind uplift is a concern.

G. All plastic tubing exposed to sunlight in paver gaps shall be UV protected with infused carbon black.

3.5 FIELD QUALITY CONTROL

A. Pressure Testing: Air test to 50 PSI for 1 hour minimum prior to finish installation. Hot fluid test: Circulate 120–140°F fluid at operating pressure to verify panel and connection integrity.

B. System Balancing: Mains piping shall be reverse return unless otherwise noted. Adjust manifold flow meters to full open.

C. Acceptance: Document tests; retain failed panels or other supplied components for manufacturer evaluation and warranty.

3.6 CONTROLS AND SEASONAL OPERATION

A. Provide moisture and temperature sensors in highest load zones or as specified per plan.

B. Include seasonal changeover (manual three-way valve and differential control) for warm-weather heat diversion (e.g., to pool).

C. Instruct Owner on monitoring glycol concentration, pressure, and changeover.

3.7 PROTECTION

A. Protect installed system until Substantial Completion.

B. Repair/replace damaged components.

END OF SECTION 32 17 43