

# Short Form Guide Specification

## Nuheat Floor Warming System

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### PART 1 GENERAL

#### 1.01 SUMMARY

**A.** Scope of work — Provide a pre-formed electric radiant Nuheat system that is manufactured to fit the shape of the floor. This will ensure evenly distributed warmth throughout the floor. The product thickness shall not exceed 1/8” and must be protected by a 25 year warranty. Provide Nuheat floor sensing thermostat or other Nuheat controls with a class **A GFCI** protection.

#### 1.02 SECTION INCLUDES

**A.** Nuheat floor-warming system

#### 1.03 REFERENCE STANDARDS

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI—current edition)

UI (US) 1693; UL (CAN/CSA) C22.2 #217; NEC Article 424 Floor Warming Systems

TILE COUNCIL OF AMERICA (TCA) Tile Council of America — Ceramic Tile

AMERICAN SOCIETY for TESTING & MATERIALS (ASTM — current edition)

#### 1.04 SUBMITTALS

Submit shop drawings and manufacturers' product data

Submit manufacturer's installation instructions.

#### **Submit proof of Nuheat 25 Year Warranty (Exclusive of Controls)**

For alternate materials, submit independent laboratory test results confirming compliance with specifications listed in Part 2 — Products at least thirty (30) days before bid date.

#### 1.05 CERTIFICATES

**A.** Manufacturer’s certification that mat system materials being provided are suitable for the intended use, meet or exceed the referenced Underwriter’s Laboratory (UL) and the Canadian Standards Association (CSA)

#### 1.06 QUALITY ASSURANCE

Tile Manufacturer/Suppliers/Installers (single source responsibility) a company that has specialized in floor warming systems, with one (1) year minimum experience. Obtain floor warming mat from a single source with resources to provide products of consistent quality in appearance and physical properties. Installation System Manufacturer/Supplier (single source responsibility): Company specializing in floor warming installation systems and Certified by Manufacturer as having completed *Certified Installer Program*. Obtain products from single source manufacturer to ensure consistent quality and compatibility. Submit laboratory confirmation of installation systems.

Identify proper usage of specified materials using positive analytical method.

Installer qualifications: company specializing in installation of floor warming system materials with one (1) year documented experience with installations of similar scope, materials and design. All first – time installers must call Nuheat prior to installing the product to validate the warranty.

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Perform three resistance and insulation tests according to manufacturer's instructions to ensure the mats are working properly.

### 1.07 WARRANTY

The Contractor warrants the work of this section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of one (1) year. This special warranty extends the period of limitations contained in the General Conditions. Countersign warranty by installer and manufacturer. The manufacturer of installation systems shall provide a comprehensive non-prorated written twenty-five (25) year warrantee against defective products which covers replacement materials and applies only under ceramic tile, marble and natural stone applications.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

**A.** Except as otherwise approved in advance by the Architect, provide the following where called for on the drawings.

Floor Warming mats as manufactured by: **Nuheat Industries Limited 1 800.778.9276**

**B.** Products should meet following requirements:

- a. Uniform consistent heating
- b. Custom footprint by design
- c. Produces 12 watts per square foot or 41 BTU per square foot
- d. Consistent wire spacing to reduce site irregularities and eliminate cold spots
- e. 110 VAC or 220 VAC mat designs
- f. Mat to consist of 21.5 - 31 awg insulated resistance wire
- g. Porous nylon polyester blended fabric to keep wire spacing and heat consistent
- h. Continuous stainless steel braided sheathing as ground for all wires
- i. Mat to be approximately 1/8" thick and water resistant

**C.** Thermostat Control: For increased zone warming efficiency, sensing thermostat shall include

- a. Programmable control features
- b. Controllable temperature
- c. Four programs per day
- d. Floor-sensor or thermo-coupler that ensures the power cycles, once timer reaches temperature
- e. Built-in GFCI

### 2.02 INSTALLATION MATERIALS

Install according to manufacturer's instructions.

**A.** Floor Warming Membranes

*Membranes should be shown in the drawings, carefully defining required locations and heights.*

**1.** Where indicated on the drawings and elsewhere as required provide a warming mat using one of those listed on the "Tested Materials" list of the Underwriter's Laboratory (UL) or the Canadian Standards Association (CSA) or provide a similar system approved in advance by the Architect.

**Nuheat Inc.**

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## PART 3 EXECUTIONS

### 3.01 SUBSTRATE EXAMINATION

- A. Verify that floor surfaces to be covered with floor warming mat, ceramic tile, mosaics, pavers, trim units, or thresholds are sound and conform to good design/engineering practices and rigid with maximum deflection of  $L/360$  distributed uniformly over the span.
- B. Concrete cured a minimum of twenty-eight (28) days at 70°F with a saturated surface dry (SSD) condition, including an initial seven (7) day period of wet curing
- C. Concrete slab to have steel trowel or light broom finish when mat is installed by the thin-set method
- D. Clean and free of dirt, oil, grease, sealers, curing compounds, form oil, or loose plaster, paint, and scale
- E. All first-time installers must call Nuheat at 1-800-778-9276 to have project reviewed.

### 3.02 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
- B. Coordinate with other trades as needed to assure that proper substrata are provided to receive the work of this section.
  - 1. Horizontal surfaces: Plumb within 1/4" in ten feet in all directions.
- C. Condition of surfaces to receive warming mat (*if curing compounds are used, then the concrete must be heavily scarified*):
  - 1. Verify that surfaces to receive mortar setting bed and mat are firm, dry, clean, and free from dust, wax, grease, sealers, and all other contamination which may reduce or prevent adhesion.
  - 2. Verify that grounds, anchors, plugs, recess frames, bucks, electrical work, mechanical work, and similar items under the mat have been installed before proceeding with the installation of mortar bed or mat.

*Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. Beginning of work constitutes acceptance of substrate or surface conditions.*

### 3.03 INSTALLATION—Electric System

- A. General
  - 1. Comply with pertinent provisions of the referenced standards, except as otherwise directed by the Architect or specified herein.
  - 2. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.

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3. Do not install tile floors over membrane until the membrane has been tested and accepted. To confirm the proper power consumption of your mat, perform the resistance test. Ensure that the resistance reading is within the range of plus 10% to minus 5% of the resistance rating listed on the mat tag.
  4. To confirm that there is no short to ground in the mat, perform the insulation test. Mark test results on warranty card and ensure they match manufacturer's recorded information on the mat tag.
- B. Install according to TCA installation methods and written instructions:**
- TCA # RH 130 EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar**
- TCA # RH 135 Cementious Backer Units/ Fiber Cement Underlayment**
- Floor Warming Systems UI (US) 1693; UL (CAN/CSA) C22.2 #217;  
NEC Article 424**
- C. Sub floor – 19/32” exterior-glue plywood on joists at 16” o.c. Gaps between plywood sheets to be treated per setting material manufacturer's recommendations.
  - D. Electrician or qualified contractor to wire floor warming system to power source
  - E. Apply coat of acrylic or latex modified thinset using ¼ inch square notched trowel to sub-floor. Roll the mat into the thinset material, using a grout float, smooth out all air bubbles or folds. Ensure bond between Nuheat mat and thinset conforms to at least 80% coverage.
  - F. Perform second resistance and insulation test on mat prior to installation of tile, or other hard surface flooring material.
  - G. Lay out lead wires and install the thermostat sensor probe wire
  - H. Install ceramic tile and/or marble according to section 09300

#### **3.04 PROTECTION**

- A. Protect finished installation. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal Portland cement thick bed mortar installations for at least seventy-two (72) hours at 70°F/21°C.
- B. Replace or restore work of other trades damaged or soiled by work under this section.

**This form document is intended as a general guideline only. It is the responsibility of the design professional to revise this form to suit specific requirements of the project. NUHEAT INC. makes no representation or warranties that the general information contained within this document is suitable for the specific requirements of the project. The design professional should refer to the current edition of the TCA Handbook and other reference standards for additional information. The design professional should coordinate this section with the drawings and with the General Provisions of the Contract Documents, including the General and Supplementary Conditions and Division I General Requirements.**

**END OF SECTION 09300**