DIVISION 09 - FINISHES
SECTION 096500 RESILIENT FLOORING

norament pado™
norament pado™ ed

This document is provided to assist in the preparation of a Project or Master Specification and has been formatted in accordance with the Construction Specifications Institute (CSI)'s MasterFormat®.

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Resilient tile flooring for commercial traffic.
2. Resilient tile flooring for electrostatic dissipative protection.
3. Substrate preparation.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1.	Section 033000	CAST-IN-PLACE CONCRETE for concrete substrate; slab surface tolerances; vapor retarder for applications on or below grade; requirement for 83/90-degree riser and tread edge angle for stair tread and nosings.
2.	Section 055100	METAL STAIRS AND RAILINGS; requirement for 83/90-degree riser and tread edge angle for stair tread and nosings.
3.	Section 061000	ROUGH CARPENTRY for plywood substrate and surface tolerances.

C. References (Industry Standards):

1. American Association of Textile Chemists and Colorists (AATCC):
   a. AATCC 134 — Electrostatic Propensity of Carpets
2. American National Standards Institute (ANSI):
   a. ANSI ESD STM97.2 — Floor Materials and Footwear – Voltage Measurement on a Person
3. ASTM International (ASTM):
   a. ASTM C33/C33M — Standard Specification for Concrete Aggregates
   b. ASTM C109/C109M — Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

c.	ASTM C472	Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete
d.	ASTM C518	Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
e.	ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
f.	ASTM D2047	Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
g.	ASTM D2240	Standard Test Method for Rubber Property—Durometer Hardness
h.	ASTM D3389	Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader)
i.	ASTM D6499	Standard Test Method for the Immunological Measurement of Antigenic Protein in Hevea Natural Rubber (HNR) and its Products
j.	ASTM E648	Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
k.	ASTM E662	Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
l.	ASTM E1745	Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
m.	ASTM E2179	Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
n.	ASTM E2180	Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
o.	ASTM F150	Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
p.	ASTM F386	Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
q.	ASTM F710	Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
r.	ASTM F925	Standard Test Method for Resistance to Chemicals of Resilient Flooring
s.	ASTM F970	Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading
t.	ASTM F1344	Standard Specification for Rubber Floor Tile
u.	ASTM F1482	Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
v.	ASTM F1514	Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color
w.	ASTM F2055	Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
x.	ASTM F2169	Standard Specification for Resilient Stair Treads
y.	ASTM F2170	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
z.	ASTM F2199	Standard Test Method for Determining Dimensional Stability and Curling Properties of Resilient Flooring after Exposure to Heat

aa. ASTM F2753 Standard Practice to Evaluate the Effect of Dynamic Rolling Load over Resilient Floor Covering System

bb. ASTM F3010 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings

cc. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

4. Federal Test Method Standard (FTMS):
   a. FTMS 101C 4046 Electrostatic Decay
5. International Organization for Standardization (ISO):
   a. ISO 10140-3 Laboratory measurement of sound insulation of building elements—Part 3: Measurement of impact sound insulation
   b. ISO 26987 Determination of staining and resistance to chemicals
6. National Fire Protection Association (NFPA):
   a. NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
7. Standards Council of Canada (SCC):
   a. CAN/ULC-S102.2 Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions and maintenance guidelines for each material and accessory proposed for use.

B. Samples: Submit three representative samples of each product specified for verification.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of type equivalent to those specified.

1. Manufacturer's quality management system must have ISO 9001 approval.
2. Provide resilient flooring products and accessories from one manufacturer to ensure compatibility.
3. Manufacturer shall be capable of providing technical training and technical field service representation.

B. Installer Qualifications: A minimum of 4 years' experience with resilient flooring of those specified.

1. Shall obtain and understand most current installation instructions from the manufacturer.
2. Installers shall be able to exhibit proficient skills with flash cove detailing, both hot and cold-welding techniques, adhesive systems, and seam cutting.
3. The installing parties shall provide a submittal of their skills in the form of mock-ups of the specified material. These mock-ups will be accepted as proof of their skills and benchmarking for the proposed project.

C. Sustainable Design Requirements:

1. ISO 14001 Environmental Management Systems certification.
2. ISO 50001 Energy Management System certification.

3. Construction waste take back program for the purpose of reducing jobsite waste by taking back uninstalled waste flooring.
4. Flooring surfaces that are easily cleaned and do not require coatings, stripping, or use of chemicals that may be hazardous to human health.
5. Supply all required products that are CA 01350 compliant.
6. Flooring that contains no polyvinyl chloride or phthalate plasticizers.
7. Flooring that contains no halogenated polymers.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

B. Deliver materials sufficiently in advance of installation to condition materials to the required temperature for 48 hours prior to installation.

1.6 PROJECT CONDITIONS

A. The installation area must be fully enclosed, weather tight, and climate controlled between 63°F and 75°F and 40% to 60% ambient relative humidity (RH) for at least 48 hours prior, during and 72 hours after installation (do not use gas fueled blowers). Dew point must be avoided. The substrate must be at least 5°F above dew point to be considered acceptable.

1.7 WARRANTY

A. Provide manufacturer’s standard limited warranty for wear, defect, and conductivity.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Basis-of-Design: nora systems, Inc., 9 Northeastern Blvd., Salem, NH 03079; telephone 800-332-NORA.

2.2 RESILIENT TILE FLOORING FOR COMMERCIAL TRAFFIC

A. Rubber Floor Tile:

Rubber tile meets the following product construction specifications:

1.	Product Name:	**norament pado™, Article 3167**
2.	ASTM Specification: ASTM F1344 Standard Specification for Rubber Floor Tile	Type IB and Grade 2
3.	Material Composition:	nora vulcanized rubber compound 926 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium, or mercury
4.	Construction:	Homogeneous rubber compound with a vivid granular design
5.	Limited Wear Warranty:	15 years

6.	Color:	16 standard colors
7.	Surface:	Two-tone
8.	Back of Tile:	Double-sanded smooth
9.	Material Size (ASTM F2055): ± 0.5 mm (± 0.02 in) is required	1004 mm x 1004 mm (~39.53 in by 39.53 in)
10.	Squareness (ASTM F2055): ± 0.254 mm (± 0.010 in) is required	Meets requirements
11.	Thickness (ASTM F386): + 0.381/- 0.127 mm (+ 0.015/-0.005 in) is required	3.5 mm (~0.14 in)
12.	Substrate Preparation:	Per ASTM F710 and the nora Installation Instructions
13.	Installation Method:	Directional installation
14.	Cleaning:	Cleaned and maintained effectively using water, nora® pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also, without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic. Refer to nora Maintenance Guidelines for product specific details.
15.	Stain Removal:	Samples of the product must be provided for stain removal testing by the owner. Sample size must be 1004 mm x 1004 mm, pre-cleaned by manufacturer per published recommendations. Samples must have no coatings, sealers, floor finish or other manually or mechanically applied finish on the surface of the product. Stain testing must consist of application of common healthcare related disinfectants and chemicals to include, but not limited to, Betadine, Methylene Blue, Silver Nitrate, and alcohol-based hand sanitizer. Duration of test period must be no less than one week. Removal of chemicals must be in accordance with manufacturers' published cleaning and maintenance recommendations.

Rubber tile meets the following performance standards:

1.	Dimensional Stability (ASTM F2199): ≤ 0.15% in both directions is required	Passes
2.	Flammability (E648/NFPA 253): ≥ 0.45 watts/sq cm for Class 1 is required	Class 1
3.	Smoke Density (ASTM E662): < 450 is required	< 450
4.	Surface Burning (CAN/ULC-S102.2):	FSR of 70 and SDC of 470
5.	Slip Resistance (ASTM D2047): ≥ 0.5 is required	>0.5 dry/wet required, ADA Compliant

6.	Bacteria Resistance (ASTM E2180/ASTM G21):	Resistant to bacteria, fungi, and micro-organism activity
7.	Latex Allergies (ASTM D6499):	Inhibition ELISA, results are below detection level
8.	Sound Absorption (ASTM E2179/ISO 10140-3):	Δ IIC 18, Δ Lw 10 dB (compare only Δ values)
9.	Sound Generation:	66.3 dBA, 68.5 dBC and 19.6 Sones, independently tested
10.	Hardness (ASTM D2240): ≥ 85 is required	Shore type A
11.	Static Load (ASTM F970): ≤ 0.005 in with 250 lbs is required	≤ 0.005 in with 250 lbs required, Passes @ 800 psi
12.	Rolling Load Limit (ASTM F2753):	≤ 850 lbs/sq in; for forklift traffic nora polyurethane adhesive is required
13.	Abrasion Resistance (ASTM D3389): ≤ 0.035 oz (1.0 g) is required	≤ 0.035 oz (1.0 g) required, Passes
14.	Resistance to Chemicals (ASTM F925):	Passes
15.	Resistance to Oil & Grease (ISO 26987):	Passes
16.	Resistance to Heat (ASTM F1514): Avg. ΔE ≤ 8.0 is required	Easily achieved with all batches and regular maintenance
17.	Static Generation (AATCC 134):	< 1000 Volts at 20% RH
18.	Thermal Transmission (ASTM C518):	R-value of -0.90
19.	Embodied Carbon (Cradle to Gate):	14.1 kg CO_2e/m^2
20.	Indoor Air Quality:	• GREENGUARD Gold Certified • CDPH 01350 compliant
21.	Disclosure of Environmental Impacts:	Environmental Product Declaration (EPD)
22.	Disclosure of Product Ingredients:	Health Product Declaration (HPD)
23.	Additional Certification and Transparency Documentation:	• Cradle to Cradle Certified® Silver • Greenhealth Approved
24.	LEED:	Contributes to multiple IEQ and MR credits

2.3 RESILIENT TILE FLOORING FOR ELECTROSTATIC DISSIPATIVE PROTECTION

A. Rubber Floor Tile:

Rubber tile meets the following product construction specifications:

1.	Product Name:	**norament pado™ ed, Article 3167**
2.	ASTM Specification: ASTM F1344 Standard Specification for Rubber Floor Tile	Type IB and Grade 2
3.	Material Composition:	nora vulcanized rubber compound 928 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium, or mercury

4.	Construction:	Homogeneous rubber compound with a vivid granular design
5.	Limited Wear Warranty:	15 years
	Conductivity Warranty:	10 years
6.	Color:	3 standard colors
7.	Surface:	Two-tone
8.	Back of Tile:	Double-sanded smooth
9.	Material Size (ASTM F2055): ± 0.5 mm (± 0.02 in) is required	1002 mm x 1002 mm (~39.45 in by 39.45 in)
10.	Squareness (ASTM F2055): ± 0.254 mm (± 0.010 in) is required	Meets requirements
11.	Thickness (ASTM F386): + 0.381/- 0.127 mm (+ 0.015/-0.005 in) is required	3.5 mm (~0.14 in)
12.	Substrate Preparation:	Per ASTM F710 and the nora Installation Instructions
13.	Installation Method:	Directional installation
14.	Cleaning:	Cleaned and maintained effectively using water, nora® pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also, without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic. Refer to nora Maintenance Guidelines for product specific details.
15.	Stain Removal:	Samples of the product must be provided for stain removal testing by the owner. Sample size must be 1002 mm x 1002 mm, pre-cleaned by manufacturer per published recommendations. Samples must have no coatings, sealers, floor finish or other manually or mechanically applied finish on the surface of the product. Stain testing must consist of application of common healthcare related disinfectants and chemicals to include, but not limited to, Betadine, Methylene Blue, Silver Nitrate, and alcohol-based hand sanitizer. Duration of test period must be no less than one week. Removal of chemicals must be in accordance with manufacturers' published cleaning and maintenance recommendations.

Rubber tile meets the following performance standards:

1.	Dimensional Stability (ASTM F2199): ≤ 0.15% in both directions is required	Passes
2.	Radiant Flux (E648/NFPA 253): ≥ 0.45 watts/sq cm for Class 1 is required	Class 1
3.	Smoke Density (ASTM E662): < 450 is required	< 450

4.	Slip Resistance (ASTM D2047): ≥ 0.5 is required	>0.5 dry/wet required, ADA Compliant
5.	Bacteria Resistance (ASTM E2180/ASTM G21):	Resistant to bacteria, fungi, and micro-organism activity
6.	Latex Allergies (ASTM D6499):	Inhibition ELISA, results are below detection level
7.	Sound Absorption (ASTM E2179/ISO 10140-3):	Δ IIC 15, Δ Lw 10 dB (compare only Δ values)
8.	Hardness (ASTM D2240): ≥ 70 is required	Shore type A
9.	Static Load (ASTM F970): ≤ 0.005 in with 250 lbs is required	≤ 0.005 in with 250 lbs required, Passes @ 800 psi
10.	Rolling Load Limit (ASTM F2753):	≤ 850 lbs/sq in
11.	Abrasion Resistance (ASTM D3389): ≤ 0.035 oz (1.0 g) is required	≤ 0.035 oz (1.0 g) required, Passes
12.	Resistance to Chemicals (ASTM F925):	Passes
13.	Resistance to Oil & Grease (ISO 26987):	Passes
14.	Resistance to Heat (ASTM F1514): Avg. $\Delta E \leq 8.0$ is required	Easily achieved with all batches and regular maintenance
15.	Static Generation (ANSI ESD S97.2):	< 20 Volts
16.	Decay Time (FTM 101 C 4046):	< 0.25 (sec)
17.	Conductivity (ASTM F150):	$10^6 < 10^9$ (ohms)
18.	Embodied Carbon (Cradle to Gate):	21.0 kg CO_2e/m^2
19.	Indoor Air Quality:	• GREENGUARD Gold Certified • CDPH 01350 compliant
20.	Disclosure of Environmental Impacts:	Environmental Product Declaration (EPD)
21.	Disclosure of Product Ingredients:	Health Product Declaration (HPD)
22.	LEED:	Contributes to multiple IEQ and MR credits

PART 3 - GENERAL

3.1 GENERAL CONTRACTOR RESPONSIBILITIES

A. Supply a safe, climate-controlled building and subfloor as detailed in the nora Installation Instructions (available at interface.com)

B. A subfloor that meets the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required, or as detailed in the nora Installation Instructions or nora nTx Installation Instructions as appropriate.

C. A secure storage area that is fully enclosed, weather tight, and climate controlled between 63°F and 75°F and 40% to 60% ambient relative humidity (RH) for at least 48 hours prior and during the installation, so the flooring contractor can acclimate all materials.

D. An installation area that is fully enclosed, weather tight, and climate controlled between 63°F and 75° and 40% to 60% ambient relative humidity (RH) for at least 48 hours prior, during, and 72 hours after installation (do not use gas fueled blowers). If this is not possible, contact the nora Technical Department at 833-951-1643.

E. Areas with direct prolonged exposure to sunlight should be protected with the use of Low E glass doors, windows or facades that reduce the UV transmissions to less than 1%.

F. Areas of the flooring subjected to direct sunlight, for example through doors or windows, must be covered using blind, curtains, cardboard, or similar materials for 24 hours before, during, and for a period of 72 hours after the installation to allow nora “wet” adhesives to cure. Do not allow traffic when using wet set adhesives for a minimum of 12 hours and prohibit rolling loads for 72 hours. When using nora® nTx™ or nora dryfix™, the flooring can be trafficked immediately with no restrictions. All flooring must be protected from damage during construction operations using Masonite, plywood, or a similar product. Before laying the panels, the flooring surface must be free of all debris. Lay panels so that they are edge to edge and tape the joints to prevent movement and debris entrapment. Inspect the flooring before covering and after removal for final acceptance.

G. Conduct post-installation cleaning after 72 hours for wet set adhesives. Conduct post-installation cleaning immediately for installations using nora dryfix or nora nTx. Refer to the appropriate nora Maintenance Guidelines for product specific details.

3.2 FLOORING CONTRACTOR RESPONSIBILITIES

A. Provide trained installers that have the following:

1. A minimum of 4 years’ experience with resilient flooring types specified for the requirements of the project.
2. An effective installation manager to manage the project, installers, and ensure that all the required procedures are followed as detailed in the nora Installation Instructions (available at interface.com).

B. Follow all requirements in the appropriate nora Installation Instructions or nora nTx Installation Instructions.

END OF SECTION

nora®, norament®, noraplan®, and noravant™ are trademarks owned by nora systems GmbH and registered in the United States, Canada, and other countries. Cradle to Cradle Certified® is a registered trademark of the Cradle to Cradle Products Innovation Institute. Other labels used here are trademarks of their respective owners.