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 plank flooring for commercial traffic with pre-applied adhesive.
3. Resilient sheet flooring for commercial traffic.
4. Resilient sheet flooring for commercial traffic with pre-applied adhesive.
5. Resilient tile flooring for special fire requirements.
6. Resilient tile flooring for extra heavy traffic, ice skate, and golf spike resistant.
7. Resilient tile flooring for pre-installed raised access flooring, or releasable application.
8. Resilient tile flooring for electrostatic dissipative protection.
9. Resilient sheet flooring for electrostatic dissipative protection.
10. Resilient stair treads (one-piece nosing, tread and riser).
11. Resilient stair accessories.
12. Resilient wall base, sanitary base, and accessories.

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.
4. Section 096900 ACCESS FLOORING for resilient floor covering for access panels.

C. References (Industry Standards):
1. American Association of Textile Chemists and Colorists (AATCC):
   a. AATCC 134 Electrostatic Propensity of Carpets
   a. ANSI ESD S97.2 Floor Materials and Footwear – Voltage Measurement on a Person
3. ASTM International (ASTM):
   b. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
   c. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
   d. ASTM D2240 Standard Test Method for Rubber Property – Durometer Hardness
e. ASTM D3389 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform, Double Head Abrader)
f. ASTM D6499 Standard Test Method for the Immunological Measurement of Antigenic Protein in Natural Rubber and its Products
g. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
i. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
j. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
k. ASTM E2179 Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
l. ASTM E2180 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
m. ASTM F150 Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
n. ASTM F155 Method of Test for Temper of Strip and Sheet Metals for Electronic Devices
o. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
p. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
q. ASTM F925 Standard Test Method for Resistance to Chemicals of Resilient Flooring
r. ASTM F970 Standard Test Method for Static Load Limit
s. ASTM F1344 Standard Specification for Rubber Floor Tile
t. ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
w. ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing
x. ASTM F1860 Standard Specification for Rubber Sheet Floor Covering With Backing
y. ASTM F1861 Standard Specification for Resilient Wall Base
z. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
aa. ASTM F2169 Standard Specification for Resilient Stair Treads
bb. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
cc. ASTM F2199 Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
dd. ASTM F3010 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings
e. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

4. European Norm (FTM):
   a. FTM 101 C 4046 Static Decay

5. International Organization for Standardization (ISO):
   a. ISO 140 Measurement of sound insulation in buildings and of building elements

   b. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials
1.3 SUBMITTALS
A. Product Data: Submit manufacturer’s product data, installation guide and maintenance guide 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 9001:2000 approval.
   2. Provide resilient flooring products, including wall base, accessories and subfloor preparation products from one manufacturer to ensure color matching and compatibility.
   3. Manufacturer shall be capable of providing technical training and technical field service representation.
B. Installer Qualifications: Acceptable to manufacturer of resilient flooring or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project.
C. Sustainable Design Requirements:
   2. Construction waste take back program for the purpose of reducing jobsite waste by taking back uninstalled waste flooring. Details of the nora® program are available at www.nora.com/us.
   3. Flooring surfaces that are easily cleaned and do not require coatings and stripping, or use chemicals that may be hazardous to human health.
   4. Supply all required products that are CA 01350 compliant.
   5. Flooring that is free of materials known to be teratogenic, mutagenic or carcinogenic.
   6. Flooring that contains no polyvinyl chloride or plasticizers.
   7. Flooring that contains no halogens.
   8. Flooring that contains no asbestos.

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, bond 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 or 603-894-1021; fax 603-894-6615.
2.2 RESILIENT TILE FLOORING FOR COMMERCIAL TRAFFIC

A. Rubber Floor Tile:

1. Product Name: noraplan® stone, Articles 0249 & 2600
2. ASTM Specification: Type I and Grade 1
   - ASTM F1344 Standard Specification for Rubber Floor Tile
3. Limited Wear Warranty: 5 years
4. Material: nora® vulcanized rubber compound 913 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium or mercury
5. Composition: Homogeneous rubber compound with a non-directional scattered granulate design
6. Color: 20 standard colors (Article 0249); 8 standard colors (Article 2600)
7. Surface: Slightly textured (Article 0249); smooth (Article 2600)
8. Back of Tile: Double-sanded smooth
9. Material Size (ASTM F2055): ± 0.018 (± 0.45mm) is required
   - 24.015 inches by 24.015 inches (610mm by 610mm)
10. Squareness (ASTM F2055): Meets requirements
11. Thickness (ASTM F386): ± 0.005 inches (± 0.127mm) is required
   - 0.08 inches (2mm)
12. Dimensional Stability (ASTM F2199): Meets requirements
   - ≤ 0.15% in both directions is required
13. Flammability (E648/NFPA 253): NBSIR 75 950, 0.97
14. Smoke Density (ASTM E662/NFPA 258): NBS, 196 (flaming) and 207 (non-flaming)
15. CAN/ULC-S102.2: Surface Burning, FSC1 of 125 and SD of 370
16. Burn Resistance: Resistant to cigarette and solder burns
17. Slip Resistance (ASTM D2047): Static coefficient of friction, Neolite dry 0.93, Neolite wet 0.90
   - Not recommended for ramps
19. VOC’s: This flooring is GREENGUARD Gold Certified for Low VOC Emissions, Blue Angel Certified and CA 01350 compliant
20. Latex Allergies (ASTM D6499): Inhibition Elisa, results are below detection level
21. Sound Absorption (ASTM E2179/ISO 140): ∆ IIC 11, ∆ Lw 8 dB (compare only ∆ values)
22. Sound Generation: 67.9 dBA, 69.9 dBC and 22 Sones, Independently tested
24. Static Load (ASTM F970): Residual compression of 0.003 inches with 800 lbs.
   - ≤ 0.005 inches with 250 lbs. is required
25. Rolling Load Limit: ≤ 450 lbs. / sq. inch, with no forklift traffic
26. Abrasion Resistance (ASTM D3389): 1.1 lbs. (500g) load on H-18 wheel with 1000 cycles, 0.008 oz. (0.24g) weight loss
   - ≤ 0.035 oz. (1.0g) is required
27. Elongation (ASTM D412): Modulus @ 10% is 913.1 lbs. per sq. inch
≥ 300 lbs. per sq. inch is required

28. Oil & Grease Resistance: No

29. Heat Resistance (ASTM F1514): Easily achieved with all batches and regular maintenance
   Avg. ΔE ≤ 8.0 is required

30. Light Resistance: Easily achieved with all batches and regular maintenance
   Avg. ΔE ≤ 8.0 is required

31. Static Generation (AATCC 134): < 2000 Volts at 20% RH

32. Thermal Transmission (ASTM C518): R-value of 0.04

33. 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 guides for product specific details.

34. Shine: Higher shine achieved by buffing without any artificial topical applied coatings.

35. Stain Removal: Samples of the product shall be provided for stain removal testing by the owner. Sample size shall be 24 inches by 24 inches, pre-cleaned by manufacture per published recommendations. Samples shall have no coatings, sealers, floor finish or other manually or mechanically applied finish on the surface of the product. Stain testing shall 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 shall be no less than one week. Removal of chemicals shall be in accordance with manufacturers published cleaning and maintenance recommendations.

36. Substrate Preparation: Per ASTM F710 and the nora® Installation Guide

2.3 RESILIENT SHEET FLOORING FOR COMMERCIAL TRAFFIC

A. Rubber Sheet Floor Covering:
   1. Product Name: noraplan® stone, Article 0149 & 1600
   2. ASTM Specification:
      ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing
   3. Limited Wear Warranty: 5 years
   4. Material: nora® vulcanized rubber compound 913 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium or mercury
   5. Composition: Homogeneous rubber compound with a random scattered design
   6. Color: 20 standard colors (Article 0149); 8 standard colors (Article 1600)
   7. Surface: Slightly textured (Article 0149); Smooth (Article 1600)
   8. Back of Sheet: Double-sanded smooth
   9. Material Dimensions (ASTM F1859): 49.21 feet by 48 inches (15m by 1.22m), ≥ amount specified
10. Thickness (ASTM F386): ± 0.006 inches (± 0.15mm) is required  
   0.08 inches (2mm)
11. Dimensional Stability (ASTM F2199): ≤ 0.15% in both directions is required  
   Meets requirements
12. Flammability (E648/NFPA 253): ≥ 0.45 watts/sq. cm for Class 1 is required  
   NBSIR 75 950, 0.97
13. Smoke Density (ASTM E662/NFPA 258): < 450 is required  
   NBS, 196 (flaming) and 207 (non-flaming)
14. CAN/ULC-S102.2: Surface Burning, FSC1 of 125 and SD of 370
15. Burn Resistance: Resistant to cigarette and solder burns
16. Slip Resistance (ASTM D2047): ≥ 0.5 is required  
   Static coefficient of friction, Neolite dry 0.93, Neolite wet 0.90  
   (not recommended for ramps)
18. VOC’s: This flooring is GREENGUARD Gold Certified for Low VOC Emissions, Blue Angel Certified and CA 01350 compliant
19. Latex Allergies (ASTM D6499): Inhibition Elisa, results are below detection level
20. Sound Absorption (ASTM E2179/ISO 140): Δ IIC 11, Δ Lw 8dB (compare only Δ values)  
   67.9 dBA, 69.9 dBC and 22 Sones, Independently tested
21. Hardness (ASTM D2240): ≥ 85 is required  
   Shore type “A”, 92
22. Static Load (ASTM F970): ≤ 0.005 inches with 250 lbs. is required  
   Residual compression of 0.003 inches with 800 lbs.
23. Rolling Load Limit: ≤ 450 lbs. / sq. inch, with no forklift traffic
24. Abrasion Resistance (ASTM D3389): ≤ 0.035 oz. (1.0g) is required  
   1.1 lbs. (500g) load on H-18 wheel with 1000 cycles, 0.008 oz. (0.24g) weight loss
25. Elongation (ASTM D412): ≥ 300 lbs. per sq. inch is required  
   Modulus @ 10% is 913.1 lbs. per sq. inch
26. Oil & Grease Resistance: No
27. Heat Resistance (ASTM F1514): Avg. ∆E ≤ 8.0 is required  
   Easily achieved with all batches and regular maintenance
28. Light Resistance: Avg. ∆E ≤ 8.0 is required  
   Easily achieved with all batches and regular maintenance
29. Static Generation (AATCC 134): < 2000 Volts at 20% RH  
   R-value of 0.04
30. Thermal Transmission (ASTM C518): 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 guides for product specific details.
31. Cleaning:  
   R-value of 0.04
32. Shine: Higher shine achieved by buffing without any artificial topical applied coatings.
33. Stain Removal: Samples of the product must be provided for stain removal testing by the owner. Sample size must be 24 inches by 24 inches, pre-cleaned by manufacture per published recommendations. Samples must have no coatings, sealers,
35. Substrate Preparation: Per ASTM F710 and the nora® Installation Guide

PART 3 - GENERAL

3.1 GENERAL CONTRACTOR RESPONSIBILITIES

A. Supply a safe, climate controlled building and subfloor as detailed in the nora Installation Guide (available at www.nora.com/us)

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 Guide or nora® nTx Installation Guide 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.

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 750, 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 750 or nora nTx. Refer to the appropriate nora® Maintenance Guide for product specific details.

3.2 FLOORING CONTRACTOR RESPONSIBILITIES

A. Provide trained installers that have at least one of the following:
   1. Approved by nora systems, Inc. or INSTALL (International Standards & Training Alliance) certified for the requirements of the project.
   2. An effective installation manager to manage the project, installers, and ensure that all of the required procedures are followed as detailed in the nora Installation Guide (available at www.nora.com/us).

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

END OF SECTION