

GUIDE SPECIFICATIONS FOR
norament® luxor
BY nora systems, Inc.

This document is coordinated with the resilient tile and resilient sheet products in the
nora systems, Inc. product literature, including the Product Catalog,
and is available from nora systems, Inc. on www.nora.com/us.

SECTION 09650
RESILIENT FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 – Specification sections, apply to work of this section.

1.02 SUMMARY

- A. The work of this Section includes:
1. Rubber tile flooring
 2. Rubber sheet flooring
 3. Rubber wall base
 4. Rubber stairtreads and accessories
 5. Responsibilities, preparation/installation
- B. Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:
1. Section 03300 - Cast-In-Place Concrete; concrete substrate; slab surface tolerances; vapor retarder for applications on or below grade; 83/90 degree riser and tread edge angle for stairtread and nosings
 2. Section 06100 - Rough Carpentry; plywood substrate; surface tolerances
 3. Section 10270 - Access Flooring; resilient floor covering for access panels
- C. References (Industry Standards)
1. American Society for Testing and Materials (ASTM)
 - a. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
 - b. ASTM D2240 Standard Test Method for Rubber Property - Durometer Hardness
 - c. ASTM D3389 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform, Double-Head Abrader)
 - d. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
 - e. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
 - f. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
 - g. ASTM E2180 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
 - h. ASTM F150 Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
 - i. ASTM F511 Standard Test Method for Quality of Cut (Joint Tightness) of Resilient Floor Tile
 - j. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 - k. ASTM F970 Standard Test Method for Static Load Limit
 - l. ASTM F1344 Standard Specification for Rubber Floor Tile
 - m. ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
 - n. ASTM F1514 Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color
 - o. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
 - p. ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing
 - q. ASTM F1860 Standard Specification for Rubber Sheet Floor Covering With Backing
 - r. ASTM F1861 Standard Specification for Resilient Wall Base

- s. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
 - t. ASTM F2169 Standard Specification for Resilient Stair Treads
 - u. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using *in situ* Probes
 - v. ASTM F2420 Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floor Slabs Using Relative Humidity Probe Measurement and Insulated Hood
 - w. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- 2. European Norm (EN)
 - a. EN 1815 Resilient and textile floor coverings. Assessment of static electrical propensity.
 - b. FTM 4046 101 Static Decay
 - 3. Electro Static Discharge (ESD)
 - a. ESD S7.1 100 Resistive Characterization of Flooring Materials
 - b. ESD STM 97.2 Floor Materials and Footwear – Voltage Measurement on a Person
 - 4. Static Generation
 - a. AATCC Test Method 134 Electrostatic Propensity of Carpets
 - 5. National Fire Protection Association (NFPA)
 - a. NFPA 253 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
 - b. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data sheets, installation guide, and maintenance guide for each material proposed for use (available on www.nora.com/us).
- B. Samples: Submit two 3 inch by 3 inch samples of each product (except norament® serra, noraplan® degree and stairtreads), in color specified, for verification. The degree product requires two 6 inch by 6 inch samples; serra requires two 3 inch by 6 inch samples, and stairtreads require two 2 inch wide samples.
- C. MSDS (Material Safety Data Sheets) should be submitted for all adhesives used: nora® membrane, primer, patch, leveler, heat weld rod, cold weld, liquid wax and cleaning agents. These are available at www.nora.com/us.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of types equivalent to those specified. Manufacturers proposed for use, which are not named in this section, shall submit evidence of ability to meet performance requirements specified not less than 10 days prior to bid date.
 - 1. Color Matching: Provide resilient flooring products, including wall base and accessories, from one manufacturer to ensure color matching.
 - 2. Manufacturer capable of providing technical training and field service representation.
- B. Installer Qualifications: Installer shall be nora approved for the requirements of the project or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project.

1.05 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 prior to installation.

1.06 PROJECT CONDITIONS

- A. Maintain temperature and humidity at service levels or 68° F (20° C), ± 5° F (3° C), and 50% RH ± 10% in areas to receive resilient flooring. Specified temperature shall be maintained at least 48 hours before, during, and 72 hours after installation.

1.07 WARRANTY

- A. Provide manufacturer's standard one-year warranty against defects in manufacturing and workmanship of all flooring products. Provide manufacturer's warranty as specified under each product as applicable, including limited wear, defect and conductivity.

1.08 EXTRA MATERIALS

- A. Furnish full size units equal to 2 percent of quantity of resilient flooring installed as extra materials. Properly label and package extra materials. Deliver to owners designated storage area.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Provide resilient flooring by nora systems, Inc., 9 Northeastern Blvd., Salem, NH 03079; telephone 800-332-NORA, or 603-894-1021; fax 603-894-6615.
- B. The manufacturer shall have the Quality Management System approved by Lloyd's Register Quality Assurance to the Quality Management System Standard ISO 9001:2000.
- C. The manufacturer shall be validated according to the Eco-Management and Audit System (EMAS).
- D. The manufacturer shall offer a construction waste take back program for the purpose of reducing jobsite waste by taking back their uninstalled waste flooring. Details of the nora program are available on www.nora.com/us.

Note: For specific product application recommendations please refer to your local nora sales representative, or www.nora.com/us.

2.02 RESILIENT TILE FLOORING FOR COMMERCIAL TRAFFIC

- A.
- | | | |
|-----|------------------------|---|
| 1. | Product Name: | norament* luxor, Article 256 |
| 2. | Material: | nora vulcanized rubber compound 986 with abundant natural fillers and environmentally compatible color pigments |
| 3. | Surface: | Mat-silk, smooth |
| 4. | Color: | As selected |
| 5. | Tile Size: | 0.14 inches (3.5mm) overall thickness, 19.8 inches by 19.8 inches (503mm by 503mm) |
| 6. | Back of Tile: | Smooth, double-sanded back |
| 7. | Composition: | Homogeneous rubber compound 986 with mottled design |
| 8. | Limited Wear Warranty: | 10 years |
| 9. | Hardness: | ASTM D2240, Shore type A, required ≥ 85 |
| 10. | Static Load: | Per ASTM F970 Standard Test Method for Static Load Limit, residual compression, when tested with 800 lbs. $\leq 0.005"$ |
| 11. | Quality of Cut: | ASTM F511 $\leq 0.005"$ |
| 12. | Squareness: | ASTM F2055 $\leq 0.010"$ |
| 13. | ISO 14001: | Manufacturer shall be ISO 14001 Environmental Management Systems Certified |
| 14. | PVC Free: | Product shall contain no polyvinyl chloride |
| 15. | Abrasion Resistance: | Taber abrasion test, ASTM D3389, H-18 wheel, 500 gram load, 1000 cycles, gram weight loss ≤ 0.4 |
| 16. | Slip Resistance: | Static coefficient of friction (James Test): ASTM D2047, ≥ 0.8 |
| 17. | Bacteria Resistance: | Product shall be resistant to bacteria, fungi, and micro-organism activity, according to ASTM E2180 and ASTM G21 |
| 18. | Halogen Free: | Product shall contain no halogens |
| 19. | Sound Absorption: | 8 dB per ISO 140-8 |
| 20. | Burn Resistance: | Cigarette and solder burn resistance |
| 21. | Heat Resistance: | Avg. Delta E < 8.0 per ASTM F1514 |
| 22. | Flammability: | ASTM E648; NFPA 253; NBSIR 75 950, ≥ 0.45 watts per square centimeter, Class 1 |
| 23. | Smoke Density: | ASTM E662, NFPA 258, NBS smoke density, < 450 |
| 24. | Asbestos Free: | Product shall contain no asbestos |
| 25. | Non Hazardous: | Flooring shall be made without any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic |

RESILIENT FLOORING

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26. Cleaning: Flooring surface shall have the ability to be cleaned and maintained without the use of any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic. Flooring shall be cleanable using Green Seal certified products.
27. Installation System: Use only nora[®] pro install system products following the current nora Installation Guide that may consist of part or all of the following steps depending upon the substrate conditions and requirements of the specific project.
Step 1 – nora[®] membrane (see Installation Guide for requirements).
Step 2 – nora[®] primer (see Installation Guide for requirements).
Step 3 – nora[®] leveler (see Installation Guide for requirements).
Step 4 – nora[®] patch (see Installation Guide for requirements).
Step 5 – nora[®] adhesives, the flooring usage and substrate conditions will determine the appropriate adhesive. Contact your nora representative for specific recommendations.

PART 3 – RESPONSIBILITIES

3.01 GENERAL CONTRACTOR RESPONSIBILITIES

NOTE: In the absence of a general contractor, these responsibilities defer to the end user.

- A. A building or flooring area that is water tight and fully enclosed from the elements, including roof, windows or facades and doors, that is ready for the flooring installation is required.
- B. 1. A concrete substrate that fully conforms to 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.
2. A wooden substrate that is not directly in contact with concrete or soil subfloors on or below grade, even if built on sleepers is required. All suspended wood floors shall have an adequate underfloor ventilation system, and a permanently effective vapor retarder shall be placed on the ground beneath the air space.
- C. A concrete substrate that shall be structurally sound, that is finished shrinking, cracking, curling or moving in any way is required.
- D. For all concrete substrates on or below grade, a permanent effective vapor retarder with a low permeance (less than 0.1) having a minimum thickness of 10 mils, or meets the requirements of the latest edition of ASTM E1745 (Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs) shall be placed directly underneath the concrete above the granular fill, and shall be installed as per the manufacturer's written instructions. A letter shall be provided to the end user confirming the correct products have been used and that it is fully warranted, alternatively the nora membrane shall be used as described in 3.01 H.
- E. A clean non-burnished concrete surface free from any paint, wax, oil, grease, and film forming curing compounds, silicate penetrating curing compounds, sealing, hardening or parting compounds is required. The surface should not have any alkaline salts, laitance, mold, mildew, residual adhesive, chemical adhesive removers or anything that may prevent the appropriate pro install products bonding to it. If not then the general contractor should provide the mechanical means to remove them. This could be dustless diamond grinding, bead-blast or similar with a suitable vacuum attachment.

Warning:

Do not sand, dry sweep, dry scrape, drill, saw, bead-blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalt "cutback" adhesive, or other adhesive. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

Various local, state and federal government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable local, state and federal regulations.

The RFCI (Resilient Floor Covering Institute) "Recommended Work Practices for Removal of Resilient Floor Coverings" are a defined set of instructions addressed to the task of removing all resilient floor-covering structures including adhesive and adhesive residues. For more information contact RFCI directly at www.rfci.com or 706-882-3833.

- F. Valid tests and acceptable test results shall be provided to the end user and flooring contractor, including documenting with photographs, the location of all tests, recorded moisture content and temperature of the concrete subfloor prior to flooring installation. Testing shall be confirmed to have been performed at the correct, controlled ambient service temperature and humidity following the protocol of ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes, using a Wagner Rapid RH probes only. When tested at the correct service temperature and ambient humidity the maximum allowable shall be 85%RH for the correct nora[®] 385, 485, 585 or 685 adhesive or 75%RH for nora[®] dryfix, stepfix or Quickfix systems.
- G. If it is not possible to drill into the concrete for any reason as detailed in ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes, please contact the nora Technical Department for other recommendations.
- H. Only if it is not possible to provide a concrete substrate with acceptable moisture levels, or that (when appropriate) have a confirmed effective vapor retarder, then nora membrane shall be used as described in 3.02 G. Please note that all additional costs associated with this concrete condition are the responsibility of the general contractor / end user, including any additional requirements for concrete preparation, priming, leveler, patching or labor.
- I. A secure storage area that is maintained permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% ± 10% relative humidity, for at least 48 hours prior to and during the application of the flooring, so the flooring contractor can acclimate the flooring materials is required.
- J. An installation area that is weather tight and maintained permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% ± 10% relative humidity, for at least 48 hours prior to, during and 72 hours after the application of the flooring is required.
- K. Areas with direct prolonged exposure to sunlight shall be protected with the use of Low E glass doors and windows or facades.
- L. Areas of the flooring that are subject to direct sunlight through doors or windows shall have them covered using blinds, curtains, cardboard or similar for the time of the installation and 72 hours after the installation to allow the adhesive to cure. Note these areas shall be installed using wet adhesives only.
- M. Prevent all traffic for a minimum of 12 hours and heavy rolling loads for 72 hours to allow the adhesive to set up. If required, after 12 hours protect the flooring from damage during construction operations using Masonite, plywood or a similar product, ensuring first that the flooring surface is free of all debris. Lay panels so that the edges form a butt joint and tape the joint to prevent both movement and debris entrapment underneath them. Inspect immediately before covering and after removal for final acceptance.
- N. If required, clean the flooring no sooner than 72 hours after the installation, unless pre-agreed with a nora representative. Clean the flooring only using the method detailed in the appropriate nora Maintenance Guide.

3.02 FLOORING CONTRACTOR RESPONSIBILITIES

- A. Installer shall be trained and have at least one of the following:
Approved by nora systems, Inc. for all of the requirements of the project.
INSTALL (International Standards & Training Alliance) certified for the requirements of the project.
- B. An effective project manager, to manage the installers, and ensure that all of the required procedures are followed, documented and that the nora Installation Guide is followed.
- C. Acclimate the flooring in the secure storage area provided by the general contractor that is maintained permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% relative humidity, for at least 48 hours prior to application.
- D. For wooden subfloors American Plywood Association (APA) underlayment grade plywood shall be double sheeted at a suitable thickness (minimum total wood thickness of 1 1/4 inch) to overlay the wooden substrate and installed as detailed in ASTM F1482 - Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring. Please note as plywood will expand and contract due to changes in moisture content and temperature, nora systems, Inc. cannot accept any liability of the plywood joints telegraphing through the finished floor.

- E. Perform mat bond tests in each major area (1 per ~1,000 sq. ft.) This shall consist of the proposed subfloor preparation, mitigation and leveling or smoothing products. A detailed method statement is available in the nora Installation Guide available on www.nora.com/us. Do not proceed with the installation until all the results of the bond test are acceptable.
- Warning:
Do not sand, dry sweep, dry scrape, drill, saw, bead-blast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalt "cutback" adhesive, or other adhesive. These products may contain asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.
- Various local, state and federal government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable local, state and federal regulations.
- The RFCI (Resilient Floor Covering Institute) "Recommended Work Practices for Removal of Resilient Floor Coverings" are a defined set of instructions addressed to the task of removing all resilient floor-covering structures including adhesive and adhesive residues. For more information contact RFCI directly at www.rfci.com or 706-882-3833.
- F. Clean out and fill or repair any dormant saw cuts and cracks following the appropriate directions of the membrane, leveler or patch sections within the installation guide. For any expansion (moving) joints, use an industry standard expansion joint assembly.
- G. When required, use the nora membrane following the directions and requirements detailed within the nora Installation Guide. Provide written confirmation and photographs to the general contractor or end user that the subfloor was prepared correctly prior to the application of the membrane, and that the membrane was applied correctly (without pin-holes) including confirmation of the gallons used and total square feet installed.
- H. If required, use nora leveler following the Installation Guide. They shall be free of dust, solvents, paint, wax, varnish, oil, grease, asphalt, old adhesives, and other extraneous materials that may interfere with the bond. These shall be completely removed by mechanical means only. Dustless diamond grinding is the preferred method to remove contaminants and bond breakers as it also helps to level the concrete.
- I. Prime the subfloor prior to using the leveler. Note: an 1/8th inch minimum thickness is required for the leveler to be considered porous as required when using nora 485 or 685 acrylic adhesives.
- J. If nora leveler or patch is used, provide written confirmation and a workmanship warranty that (if required) the area was primed correctly, the leveler had been mixed and applied correctly to the required smoothness and or thickness of the general contractor / end user, or nora Installation Guide.
- K. Vacuum floors immediately prior to installing the flooring to remove all loose particles. If required, only use water based sweeping compounds. Do not use any wax or oil based compounds that leave behind a residue that may interfere with the adhesive bond.
- L. Install resilient flooring, including but not limited to the following, in accordance with the nora Installation Guide.
1. Do not mix manufacturing batches of a color within the same area.
 2. Do not install resilient flooring over building expansion joints.
 3. Do not install defective or damaged resilient flooring.
 4. Layout resilient flooring to provide ~equal size at perimeter. Adjust layout as necessary to reduce the amount of resilient flooring which is cut to less than half full width.
 5. Lay resilient flooring with arrows in the same direction (excluding borders).
 6. Install resilient flooring without voids at seams. Lay seams together without stress.
 7. Cut/scribe resilient flooring neatly at perimeter and obstructions.
 8. Extend resilient flooring into reveals, closets, and similar openings.
 9. Remove excess adhesive immediately.
 10. Install reducer strips at exposed edges.
- M. Install nora wall base in accordance with manufacturer's installation guide. Install in longest practical lengths.
- N. Install resilient stairtreads and accessories in accordance with the nora Installation Guide.

- O. noraplan SEAMLESS FLOORING INSTALLATION (when required). Rout seams and weld together with coordinated colored heat welding rod or with coordinated colored cold weld compound in accordance with the nora Installation Guide.
- P. norament SEAMLESS FLOORING INSTALLATION (when required). Rout seams and weld together with coordinated colored cold weld compound in accordance with the nora Installation Guide.
- Q. FLASH COVING OF SHEET GOOD (when required). Extend flooring up the wall using the boot flash coving method, to a height as required. Provide cove stick and suitable capping strip. All internal and external vertical seams, or as specified shall be cold welded with coordinated colored cold weld. Note: Do not heat weld the vertical seams.
- R. SANITARY BASE (when required). Shall be installed using nora® basefix and all following the nora Installation Guide. All vertical external corners shall be cold welded. If specified, all other seams between the sanitary base, and between the sanitary base and flooring shall be cold welded together with coordinated colored cold weld compound in accordance with the nora Installation Guide. Note: Do not heat weld these seams.
- S. Touch-up and repair any minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

3.03 MANUFACTURER RESPONSIBILITIES

- A. Provide a one-year warranty against defects in manufacturing of all products supplied. Provide limited wear warranty for the flooring supplied, as detailed per product. Provide a nora pro install System warranty upon receipt of the required test results and documentation. Contact the nora Technical Department for details.
- B. Adherence to the Quality Management System approved by Lloyd's Register Quality Assurance to the Quality Management System Standard ISO 9001:2000.
- C. Provide flooring that shall contain no polyvinyl chloride or plasticizers.
- D. ISO 14001 Environmental Management Systems certification.
- E. Provide training for the installers, at a nora Technical Academy, contact the nora Technical Department for details and availability.
- F. Provide an effective surface moisture mitigation membrane that has three (3) levels of protection (depending on %RH moisture content of the concrete), and that is in compliance (46 grams/liter) with SCAQMD Rule 1113, < 100 grams/liter.
- G. Provide a water based primer, that is suitable for both porous and non-porous substrates including nora membrane, and that is in compliance (92 grams/liter) with SCAQMD Rule 1113, < 100 grams/liter.
- H. Provide a self-smoothing Portland cement based leveler, that can pumped or barrel mixed with water and be used at a minimum of 1/8th inch that is in compliance (0 grams/liter) with SCAQMD Rule 1168, < 50 grams/liter.
- I. Provide a Portland cement based patching compound that can be used from a feather edge to 1 inch in one application and is in compliance (0 grams/liter) with SCAQMD Rule 1168, < 50 grams/liter.
- J. Provide flooring that shall contain no halogens.
- K. Provide flooring surfaces that shall be easily cleaned and not require coatings and stripping, or use chemicals that may be hazardous to human health.
- L. Provide flooring that shall be free of anything known to be teratogenic, mutagenic or carcinogenic.
- M. Provide adhesives that are in compliance (0 grams/liter) with SCAQMD Rule 1168, < 60 grams/liter Standard for Rubber Floor Adhesives.

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