SECTION 096536

STATIC CONTROL RESILIENT FLOORING

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 2 Specification with primarily editable text; therefore, most of the text can be edited, but there is some required text which is noted within the Section with a “Note to Specifier.” Do not revise these paragraphs without an approved Deviation from USPS Headquarters, Facilities Program Management, through the USPS Project Manager.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
	1. SUMMARY
		1. Section Includes:
			1. Electro-Static Dissipative Rubber tile flooring.
		2. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.
		3. Related Sections: Related work specified elsewhere includes but may not be limited to
			1. Section 017704 - Closeout Procedures and Training.
			2. Section 033000 - Cast-In-Place Concrete.
			3. Section 123504 - Postal Casework.
			4. Section 096500 - Resilient tile for base.
			5. Section 271100 - Communications Equipment Room Fittings
	2. REFERENCES
		1. References (Industry Standards)
			1. American National Standards Institute
2. ANSI ESD S97.2 Floor Materials and Footwear – Voltage Measurement on a Person
3. ANSI ESD S7.1 Resistive characterization of materials – Floor materials
4. ANSI ESD S97.1-1 Floor materials and footwear resistance in combination with a person
	* + 1. American Society for Testing and Materials
5. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
6. ASTM D2240 Standard Test Method for Rubber Property – Durometer Hardness
7. ASTM D2047 Slip Resistance – Static Coefficient of Friction
8. ASTM D3389 Abrasion Resistance – Taber Abrasion Test
9. ASTM D6499 Standard Test Method for The Immunological Measurement of Antigenic Protein in Natural Rubber and its Products
10. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
11. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
12. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
13. ASTM E2180 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
14. ASTM F150 Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
15. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
16. ASTM F925 Standard Test Method for Resistance to Chemicals of Resilient Flooring
17. ASTM F970 Standard Test Method for Static Load Limit
18. ASTM F1344 Standard Specification for Rubber Floor Tile
19. ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing
20. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
21. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using in situ Probes
22. ASTM F2199 Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
	* + 1. National Fire Protection Association
23. NFPA 253 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
24. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials
	* 1. Manufacturer’s Guides:
			1. Staticworx Rubber and Vinyl Products – Installation Instructions
			2. Staticworx Reference – Grounding ESD Static Control Flooring
	1. SUBMITTALS
		1. Section 013300 - Submittal Procedures: Procedures for submittals.
		2. Product Data: Data describing physical and performance characteristics; including sizes, patterns and colors including manufacturer's product sheet.
		3. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors, patterns and textures.
		4. Samples: Submit selection and verification samples for finishes, colors, and textures.
		5. Quality Assurance Submittals: Submit the following:
			1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
			2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
			3. Manufacturer's Instructions: Manufacturer's installation instructions.
		6. Closeout Submittals: Submit the following:
			1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
			2. Warranty: Warranty documents specified herein.
	2. QUALITY ASSURANCE
		1. Suppliers: Provide resilient flooring manufactured by a firm with a minimum of 10 years’ experience with rubber flooring of types equivalent to those specified.
			1. Supplier capable of providing field service representation.
		2. Installer Qualifications: Company specializing in performing work of this Section with minimum 5 years documented experience.
			1. Engage installer acceptable to the product manufacturer.
			2. Certificate: When requested, submit certificate indicating qualification.
		3. Regulatory Requirements:
			1. Critical Radiant Flux in Accordance with ASTM E 684: More than 0.45 Watts per square centimeter.
			2. Specific Optical Smoke Density in Accordance with ASTM E 662: Less than 450.
	3. DELIVERY, STORAGE, AND HANDLING
		1. Section 016000 - Product Requirements: Transport, Handle, Store, and Protect Products.
		2. Ordering: Comply with manufacturer’s ordering instructions and lead time requirements to avoid construction delays.
		3. Deliver tiles and installation accessories to site in original manufacturer's unopened cartons and containers each bearing names of product and manufacturer, project identification, and shipping and handling instructions.
		4. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
			1. Material should be stored in areas that are fully enclosed, weathertight with the permanent HVAC system set at a uniform temperature of at least 68 degrees F (20 degrees C) for 48 hrs. prior to, during, and after installation.
			2. Store tiles on flat surfaces.
	4. SEQUENCING AND SCHEDULING
		1. Finishing Operations: Install tile flooring after finishing operations, including painting and ceiling operations, have been completed.
		2. Concrete Curing: Do not install tile flooring over concrete substrates until substrates have cured and are dry to bond with adhesive as determined by resilient flooring manufacturer's recommended bond, moisture test, and pH test.
	5. WARRANTY
		1. Manufacturer's Warranty: Submit, for USPS acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights USPS may have under Contract Documents.
			1. Warranty Period: One (1) year limited warranty against defects in manufacturing and workmanship commencing on Date of Substantial Completion.
			2. Provide manufacturers standard limited wear warranty/conductivity warranty as specified under each product as applicable.
	6. MAINTENANCE
		1. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
		2. Maintenance Stock:
			1. Provide 1 box of extra floor tiles for each tile type, panel, and color.
			2. Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.
25. PRODUCTS

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**NOTE TO SPECIFIER**

\*\*Required: Do not revise the Basis of Design manufacturer and product without a written Deviation from USPS Headquarters, Facilities Program Management, through the USPS Project Manager.”

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* 1. BASIS OF DESIGN PRODUCT
		1. Static control rubber flooring by Staticworx, Inc. – Staticworx Eclipse Rubber Tile Flooring, PO Box 590069, Newton, MA 02472, Phone: (617)923-2000, FAX: (617)923-2009.
		2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
	2. RESILIENT TILE FLOORING
		1. Rubber Tile for ESD Protection Control:
			1. Basis of Design Product: Staticworx Eclipse EC Rubber, static conductive per ANSI/ESD S7.1-2005, smooth surface, vulcanized two-layer construction, 2.0 mm overall thickness, 24 inches by 24 inches tile size.
			2. Composition: Homogeneous rubber compound with a random scattered design.
			3. Surface: Smooth
			4. Conductivity Warranty: Lifetime conductivity.
			5. Standard: ASTM F1344, for through-mottled tiles as applicable.
			6. Abrasion Resistance: Taber abrasion test, ASTM D3389, H-18-wheel, 500-gram load, 1000 cycles, gram weight loss not greater .50.
			7. Hardness ASTM D2240, Shore A, greater than 81.
			8. Slip Resistance: Static coefficient of friction (James Test): ASTM D2047, equal to or greater than 0.6, ADA guidelines compliance.
			9. Flammability: ASTM E648; NFPA 253; NBSIR 75 950 result to be not less than 0.45 watts per square centimeter, Class 1.
			10. Smoke Density: ASTM E662, NFPA 258, NBS smoke density, less than 450.
			11. Conductivity: <1.0x10E6 resistance to ground when tested according to ASTM F 150/ESD.S7.1-2005 under >30% relative humidity at room temperature.
			12. Static Generation: <20 volts when tested according to ESD STM 97.2.
			13. System resistance: <35x10E6 ohms when tested according to ANSI/ESD S97.1-12006. Floor Materials and Footwear Resistance in Combination with a Person. Meets recommended range of ANSI/ESD S20.20-2007
			14. Color: Presto
			15. Dimensional Stability: ASTM F2199, < 0.15% in both directions
			16. Static Load: ASTM F970, Residual compression of 0.003” with 800 lbs. achieved, < 0.005” with 250 lbs. required
			17. Elongation: ASTM D412 Modulus @ 10% is 1196.7 lbs. per sq. inch achieved, > 300 lbs. per sq. inch is required
			18. Cleaning: Cleaned and maintained effectively using water, cleaning pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings or without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic.
			19. Shine: Higher shine achieved by buffing without any artificial topical applied coatings
	3. ACCESSORIES
		1. Subfloor Filler or Leveling Compound: Portland Cement based underlayment, providing a minimum 3500 PSI compressive strength and sufficient bond to existing subfloor.
			1. Underlayment and Patching Compound: Equivalent to Ardex, Laticrete, or Mapei and shall be installed per manufacturer’s instructions.
		2. Primers and Adhesives: Conductive type as provided by resilient flooring manufacturer for specific material and substrates encountered.
		3. Expansion Joint Covers: Refer to other specification section for expansion joint covers to be used with resilient flooring.
		4. Copper Grounding Strip: 2 inches wide
1. EXECUTION
	1. EXAMINATION
		1. Section 017300 - Execution: Verification of existing conditions before starting work.
		2. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work and are acceptable for product installation in accordance with manufacturer’s instructions.
		3. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
		4. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.
		5. Material Inspection: In accordance with manufacturer's installation requirements, visually inspect materials prior to installation. Material with visual defects shall not be installed and shall not be considered as a legitimate claim.
	2. PREPARATION
		1. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
		2. Surface Preparation:
			1. General: Prepare floor substrate in accordance with manufacturer's instructions.
			2. Floor Substrate: Prepare floor substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as dust, paint, grease, oils, solvent, curing and hardening compounds, sealers, asphalt and old adhesive residue.
			3. Concrete Floor Substrate: Concrete floor substrate shall have a minimum compressive strength of 3500 psi. Refer to Division 3 Concrete sections for patching and repairing crack materials, and leveling compounds with Portland cement-based compounds. Do not use or install flooring over gypsum based leveling or patching materials
			4. Reference Standard: Comply with ASTM F 710 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.
2. Concrete floors with steel troweled (slick) finish shall be properly roughened up (sanded) to ensure suitable adhesion.
3. Concrete floors with curing, hardening, and breaking compounds shall be abraded with mechanical methods only to remove compounds. Use Blastrac or similar equipment.
	* 1. Concrete Moisture Test:
			1. ASTM F1869-98 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Sub Floor Using Anhydrous Calcium Chloride: The moisture emission from the concrete shall not exceed 3.0 lbs. per 1000 sq. ft. in 24 hrs (verify using the calcium chloride test as per ASTM F 1869-98). A diagram of the area showing the location and results of each test shall be submitted to the Contracting Officer. If the test results exceed the limitations, the installation shall not proceed until the problem has been corrected. Perform minimum 1 test per 1,000 S.F.
			2. ASTM F2170-02 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. The relative humidity measured from the center of the concrete slab should not exceed 75%. If the test results exceed the limitations, the installation must not proceed until the problem has been corrected.
			3. The test area shall be conditioned with the permanent HVAC system set at a uniform temperature of at least 68 degrees F (20 degrees C) for 72 hrs prior to and during testing.
		2. Concrete pH Test: Perform pH tests on concrete floors regardless of the age or grade level. If the pH is greater than 10, it must be neutralized prior to beginning the installation.
		3. Perform adhesive bond test in each major area, minimum 1 per 1,000 square feet, prior to installation. Examine after 72 hours to determine whether bond is solid, and no moisture is present. Do not proceed with work until results of bond test are acceptable.
		4. Attach one copper ground connection as follows: minimum one copper ground strap per 2,000 square feet. Refer to paragraph 3.4.
		5. Prohibit traffic until filler is cured.
		6. Vacuum clean substrate.
	1. INSTALLATION - TILE FLOORING
		1. Install resilient tile flooring and grounding in accordance with manufacturer's published instructions referenced above.
			1. Installation environment should be conditioned to a constant temperature and humidity conditions. Site should have permanent windows and doors, fully enclosed, weather tight with permanent HVAC system (not temporary) set at a uniform temperature of at least 68 degrees F (20 degrees C) for 48 hours prior to, during, and 72 hours after installation.
		2. Open number of floor tile cartons to provide quantity of flooring material required to cover each area; mix tile pieces to ensure shade variations do not occur within any one area.
		3. Spread only enough adhesive to permit installation of floor materials before initial set.
		4. Set flooring in place, press with a 100-pound resilient flooring roller to attain full adhesion.
		5. Lay flooring from center marks established parallel to building walls.
			1. Allow minimum 1/2 full size tile width at room or area perimeter.
			2. Adjust tile layout as required to avoid use of units less than 1/2 tile.
		6. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar. Where flooring continues through door opening, continue established pattern with no interruption.
		7. Install edge strips at unprotected or exposed edges where flooring terminates.
		8. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
		9. Extend flooring into toe spaces, door reveals, closets, and similar openings.
		10. Do not install resilient flooring over expansion joints. Use expansion joint covers manufactured for use with resilient flooring. Refer to other specifications sections for expansion joint covers.
		11. Adhere resilient flooring to flooring substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed flooring installation.
			1. Use adhesive applied to substrate in compliance with flooring manufacturer’s recommendations, including those for trowel notching, adhesive mixing, and adhesive open and working times.
		12. The specified resilient tiles are factory finished; no finishing is required after installation. Refer to manufacturer’s instructions referenced above for detailed recommendations for initial and restorative maintenance.
	2. GROUNDING
		1. In order to properly dissipate static electricity, the flooring system must be grounded with copper grounding straps installed per the flooring manufacturer’s guidelines and the following standards:
			1. Motorolla R56 and ATIS-0600321 (2010) Grounding Standards
			2. ANSI/ESD-S7.1 (2006) Test Parameters
		2. Copper grounding straps shall be placed every 2,000 s.f. of room size; at least one strap per room within the consolidated computer room (CCR) and telecommunications rooms (TRs).
			1. Copper strap shall be at least 18 inches in length with a least 9 inches embedded into the floor adhesive. Provide copper strap to meet the flooring manufacturers’ guidelines and recommendations.
			2. All cracks, joints and voids within the floor shall be bridged with a copper strap. Center strap over crack, joint or void and embed copper strap inside adhesive to anchor in place. Ensure copper strap will make contact with each side of crack, joint or void.
			3. Extend copper strap up wall, behind wall base and bond to the “primary bonding busbar” (PBB) typically within the consolidated computer room (CRR) using a #10/THWN/CU grounding conductor.
				1. Telecommunication rooms (TRs) shall have their grounding straps bonded to the “secondary bonding busbars” (SBB’s) using #10/THWN/CU grounding conductors.
		3. The floor grounding system shall be installed and tested by a qualified Electrical Contractor. The resistance to ground measured using the test method of ANSI/ESD-S7.1 (2006) shall not be less than 1,000 megaohms or more than 1,000,000 megaohms.

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**NOTE TO SPECIFIER**

\*\*Required: Do not revise SITE ENVIRONMENTAL PROCEDURES without a written Deviation from USPS Headquarters, Facilities Program Management, through the USPS Project Manager.”

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* 1. SITE ENVIRONMENTAL PROCEDURES
		1. Indoor Air Quality:
			1. Temporary ventilation: As specified in Section 013543 - Environmental Procedures.
				1. Ventilate products prior to installation. Remove from packaging and ventilate in a secure, dry, well-ventilated space free from strong contaminant sources and residues. Provide a temperature range of minimum 60 degrees F to maximum 90-degree F continuously for minimum 72 hours. Do not ventilate within limits of Work unless otherwise approved by USPS Project Manager.
	2. FIELD QUALITY CONTROL
		1. Section 014000 - Quality Requirements: Field inspection.
			1. Manufacturer's Field Services: Upon USPS request and with at least 2-3-week notice, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.
		2. Inspect resilient flooring and base installation, pattern, layout, and attachment to substrate.
	3. CLEANING
		1. Section 017300 - Execution: Cleaning installed Work.
		2. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to USPS acceptance. Remove construction debris from project site and legally dispose of debris.
			1. Remove visible adhesive and other surface blemishes using cleaning methods recommended by tile floor manufacturer.
			2. Sweep and vacuum floor after installation.
			3. Clean surfaces only after adhesive has fully cured, no sooner than 72 hours after installation. Clean surfaces using non-abrasive materials and methods recommended by manufacturer. Remove and replace work that cannot be successfully cleaned.
	4. PROTECTION
		1. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of Substantial Completion.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022