**DIVISION 09 – FINISHES**

**SECTION 09 65 33 CONDUCTIVE RESILIENT FLOORING**

**SECTION 09 65 36.13 STATIC-DISSIPATIVE FLOORING**

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**PART 1 – GENERAL**

1. GENERAL PROVISIONS
	1. 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.
2. DESCRIPTION OF WORK
	1. **Work Included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
		1. Vinyl Tile Flooring
		2. Substrate Preparation
	2. **Related Work:** The following items are not included in this Section and are specified under the designated Sections:
		1. Section 03 30 00 CAST-IN-PLACE CONCRETE for concrete substrate; slab surface tolerances
		2. Section 06 10 00 ROUGH CARPENTRY for plywood substrate and surface tolerances
		3. Section 09 69 00 ACCESS FLOORING for resilient floor covering for access panels
	3. **References (Industry Standards):**
		1. ASTM International (ASTM):
			1. ASTM F1700, Standard Specification for Solid Vinyl Tile Floor Covering
			2. ASTM E648 (NFPA 253), Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
			3. ASTM E662 (NFPA 258), Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
			4. ASTM F970, Standard Test Method for Static Load Limit
			5. ASTM F970 (Modified), Test Method for Maximum Load Limit
			6. ASTM F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring
			7. ASTM D2047, Standard Test Method for Static Coefficient of Friction as Measured by the James Machine
			8. ASTM F150, Standard Test Method for Electrical Resistance; 0.25 MΩ - 1 MΩ (Conductive) & 1 MΩ - 1000 MΩ (Dissipative)
			9. ANSI/ESD S7.0, Standard Test Method for Static Protective Flooring Materials
			10. ANSI/ESD S20.20, Electrostatic Discharge Control Program Standard
			11. AATCC-134, Static Generation Propensity (Conductive)
			12. AATCC-134, Static Generation Propensity (Dissipative)
3. SUBMITTALS
	1. **General:** Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.
	2. **Product Data:** Submit manufacturer's technical data sheet, care & maintenance document, submittal and/or warranty for each material and accessory proposed for use.
	3. **Samples:** Submit representative samples of each product specified for verification, in manufacturer’s standard size samples of each resilient product color, texture and patter required.
4. QUALITY ASSURANCE
	1. **Manufacturer Qualifications:** Provide resilient flooring materials manufactured in the United States of America by a firm with a minimum of 10 years’ experience with resilient flooring materials of type equivalent to those specified.
		1. Provide resilient flooring products, including wall base, accessories and subfloor preparation products from one manufacturer to ensure color matching and compatibility.
		2. Manufacturer shall be capable of providing technical training and technical field service representation.
	2. **Installer Qualifications:** Installer must be professional, licensed, insured and familiar with the resilient flooring material to be installed. Project Managers or Field Supervisors must be INSTALL (International Standards & Training Alliance) certified CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager) for the requirements of the project.
	3. **Sustainable Design Requirements:**
		1. ESD Vinyl Tile that contains or comes complete with conductive material.
		2. ESD Vinyl Tile that is resistant to Fungi.
		3. ESD Vinyl Tile that has proven good chemical resistant qualities.
		4. ESD Vinyl Tile has proven slip resistance qualities.
		5. ESD Vinyl Tile that contributes to credits in a LEED Project.
		6. ESD Vinyl Tile that is 100% Recyclable.
		7. ESD Vinyl Tile and accessories that are easily cleaned and do not require coatings and stripping, or use chemicals that may be hazardous to human health.
		8. ESD Vinyl Tile that is SCS FloorScore® Certified and meets California Specifications Section 01350.
		9. ESD Vinyl Tile is manufactured in a Facility that is ISO 14001 Certified.
5. DELIVERY, STORAGE, AND HANDLING
	1. 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.
	2. Deliver materials sufficiently in advance of installation to condition materials to the required temperature for 48-hours prior to installation.
6. PROJECT CONDITIONS
	1. Install ESD Vinyl Tile after other finishing operations, including painting, have been completed.
	2. Maintain temperature at service levels and/or the ambient temperature must remain steady (± 10° F) between 65° F and 85° F for at least 48-hours prior to, during and until substantial completion.
	3. Maintain relative humidity at service levels, or between 40% and 65% RH.
	4. Avoid conditions in which dew point causes condensation on the installation surface.
7. WARRANTY
	1. Provide manufacturer’s standard limited commercial warranty to cover manufacturing defects.

**PART 2 - PRODUCTS**

*Note To specifier: remove and amend sections as necessary.*

1. MANUFACTURER
	1. Basis-of-Design: Roppe Corporation | 1602 N Union St. | Fostoria, OH 44830 | P: (800) 537-9527
	2. Substitutions: No substitutions permitted.
2. PRODUCTS
	1. Roppe ESD VINYL TILE FLOORING
		1. Specify Color by Number and Name *(remove all but the color selecting):*  [750 cumulus white] [751 haze gray] [753 stratus blue] [754 storm beige] [701 neutron] [702 electron] [760 safety yellow] [756 thunder black] [757 tornado gray]
		2. ESD Vinyl Tile Dimensions *(remove all but the color selecting):*  **[12” x 12” x 1/8”] [24” x 24” x 1/8”] [36” x 36” x 1/8”]**
		3. ESD Vinyl Tile Finish: **Smooth**
		4. Specify *(remove all but the type of tile selecting):* **[Static Dissipative Vinyl Tile (1 x 10⁶ - 1 x 10⁹)]**

**[Conductive Vinyl Tile (2.5 x 10⁴ - 1 x 10⁶)]**

* + 1. ASTM F1700, Solid Vinyl Tile Floor Covering: **Class I, Type A**
		2. ASTM E648 (NFPA 253), Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source: **Class I, > 0.45 W/cm2**
		3. ASTM E662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials: **Passes < 450**
		4. ASTM F970, Static Load Limit: **Passes, 250 PSI**
		5. ASTM F970 (Modified), Maximum Load Limit: **2500 PSI**
		6. ASTM F925, Resistance to Chemicals: **Passes** (see list)
		7. ASTM D2047, Static Coefficient of Friction: **> 0.6**
		8. ASTM F150, Electrical Resistance, 0.25 MΩ - 1 MΩ (Conductive): **2.5 x 10⁴ - 1 x 10⁶**

 1 MΩ - 1000 MΩ (Dissipative): **1 x 10⁶ - 1 x 10⁹**

* + 1. AATCC-134, Static Generation Propensity (Conductive): **< 5 v with ESD Shoes**
		2. AATCC-134, Static Generation Propensity (Dissipative): **< 20 v with ESD Shoes**
		3. Roppe offers our IMPACT Program for returning jobsite scrap.
		4. Roppe ESD Vinyl Tile comes complete with conductive material.
		5. Roppe ESD Vinyl Tile is resistant to Fungi.
		6. Roppe ESD Vinyl Tile is proven to have excellent chemical resistant qualities.
		7. Roppe ESD Vinyl Tile is proven to have excellent slip resistance qualities.
		8. Roppe ESD Vinyl Tile qualifies as a contributor to credits in LEED Projects.
		9. Roppe ESD Vinyl Tile is Recyclable.
		10. Roppe ESD Vinyl Tile and accessories are easily cleaned and do not require coatings and stripping, or use of chemicals that may be hazardous to human health.
		11. Roppe ESD Vinyl Tile is SCS FloorScore® Certified and meets California Specifications Section 01350.
		12. Roppe ESD Vinyl Tile is manufactured in a Facility that is ISO 14001 Certified.
		13. Roppe ESD Vinyl Tile is NSF 332 Gold certified.
		14. Roppe ESD Vinyl Tile has an HPD (Health Product Declaration).
		15. Roppe ESD Vinyl Tile is free of materials known to be teratogenic, mutagenic or carcinogenic including halogens, asbestos and chlorines.
	1. Roppe ESD APPROVED ADHESIVES
	2. Excelsior ASD-800 Acrylic Wet-Set ESD Adhesive provided by Roppe
	3. Excelsior USD-810 Two Part Urethane Wet-Set ESD Adhesive provided by Roppe

C. Roppe ESD ACCESSORIES

1. Roppe COPPER GROUNDING STRAPS

Roppe ESD Vinyl Tile orders must include **1” x 0.004” Copper Grounding Straps**.

1. Roppe ESD Vinyl Tile may be heat-welded with available VINYL WELDING BEADS to ensure proper fit, finish and appearance. Vinyl Welding Beads should be used in areas that require ongoing and comprehensive wet cleaning such as operating rooms or laboratories, and clean rooms where particulate entrapment may occur.

2.3 INSTALLATION AND MAINTENANCE MATERIALS

* 1. **Moisture Mitigation:** Moisture testing is required for all ESD Vinyl Tile installations. Mitigation should be performed if results indicate high levels of moisture. Recommended Moisture Mitigation Product:
		1. Excelsior MM-100, Moisture Mitigation provided by Roppe
			1. Unit Size: 2.5 Gallons
			2. Coverage: 1000 square feet per unit with one coat
			3. MM-100 is a water, solvent and VOC free, polyurethane-based moisture mitigation product used to treat concrete slabs with excessive moisture levels beyond what flooring adhesives allow.
			4. MM-100 can block moisture up to 20 lbs. MVER or 99% RH.
			5. MM-100 is a single component product, eliminating extensive mix times and concerns regarding pot life.
			6. MM-100 does not require aggressive concrete preparation, such as shotblasting or diamond grinding.
			7. MM-100 is a two coat system that is incredibly easy to apply and does not require any specialized equipment, its excellent coverage rates also make it incredibly cost effective.
			8. MM-100 is not recommended as a moisture mitigation system over a non-porous substrate. The substrate should be porous as per ASTM F3191 with 90% of the original substrate exposed.
			9. Despite being a two coat system, MM-100 is incredibly fast drying.
			10. Flooring or subsequent coatings can be installed in less than two hours.
			11. Backed by a 10 year material and labor warranty, MM-100 is a fast and easy solution for the moisture issues that commonly plague flooring installations.
	2. **Substrate Preparation Products:** Substrates should be prepared to properly receive the resilient flooring products being specified. Trowelable leveling and patching compounds that are latex-modified, Portland cement based or blended hydraulic cement based formulation. Recommended Substrate Preparation Products:
		1. Excelsior NP-230, Non-Porous Substrate Primer provided by Roppe
			1. Unit Size: 2.5 Gallons
			2. Coverage: 1000 Square Feet per unit with one coat
			3. Used over MM-100 to promote adhesion of cementitious materials
			4. Single component and fast drying to allow for quick and easy installation
			5. Contains an aggregate to provide mechanical bond for cementitious materials
		2. Excelsior CP-300, Cementitious Patch provided by Roppe
			1. Unit Size: 10 lb. Pail
			2. Coverage: 33 Square Feet per unit @ 1/8”
			3. Doesn’t require primer over porous substrates
			4. Install flooring in as little as 30 minutes
		3. Excelsior SU-310, Self-Leveling Underlayment provided by Roppe
			1. Unit Size: 50 lb. Bag
			2. 5500 PSI Compressive Strength after 28 days
			3. Install flooring within 12 hours
			4. Pumpable
		4. Excelsior Fibermat, Fiber Reinforcement Mat provided by Roppe
			1. Unit Size: 41.3” x 249’ Roll
			2. Coverage: 857 Square Feet per unit
			3. Increases flexural strength of underlayments
			4. Increases tensile strength of underlayments
			5. For wood substrates only
	3. **Adhesives:** Adhesives should be selected based on the site conditions and use of the space being installed. Recommended Adhesive Products:
		1. Excelsior ASD-800, Acrylic Wet-Set ESD Adhesive provided by Roppe
			1. Unit Size: 1 Gallon
			2. Coverage: 160 Square Feet per Gallon
			3. Standard installations over porous substrates only
			4. FloorScore Certified
			5. Solvent Free
			6. Improves Conductivity of ESD Flooring
			7. Freeze-Thaw Stable
			8. Extremely Low VOC
			9. Installation Limits
				1. 90% RH, ASTM F2170
				2. 6 lbs. MVER, ASTM F1869
				3. 7-10 pH
		2. Excelsior USD-810, Two Part Urethane Wet-Set ESD Adhesive provided by Roppe
			1. Unit Size: 1 Gallon
			2. Coverage: 135 Square Feet per Unit on ‘Brushed & Rough Porous’ substrates

 150 Square Feet per Unit on ‘Smooth Porous’ & ‘Non-Porous’ substrates

* + - 1. Improves Conductivity of ESD Flooring
			2. Ideal for Installations Under Heavy Equipment
			3. Standard installations over porous and non-porous substrates
			4. Superior Bond Strength
			5. Excellent Sheer Strength
			6. Can be Installed Directly Over the Excelsior MM-100
			7. Installation Limits
				1. 90% RH, ASTM F2170
				2. 6 lbs. MVER, ASTM F1869
				3. 7-10 pH
	1. **Maintenance Materials:** Proper maintenance of the installation is critical to the long term performance of the flooring products being specified. Using the appropriate chemicals to maintain the product according to the environment in which it is specified is critical. Recommend maintenance products:
		1. Excelsior NC-900, All-Purpose Neutral pH Cleaner provided by Roppe
			1. For initial maintenance
			2. For daily and routine maintenance
		2. Excelsior FR-920, Finish Remover provided by Roppe

 **DO NOT APPLY AN ‘ON-SITE’ FINISH TO ESD VINYL TILE FLOORING**

**PART 3 – EXECUTION**

1. GENERAL
	1. **General Contractor Responsibilities:**
		1. Supply a safe, climate controlled building and subfloor as detailed in Roppe Technical Data Sheets.
		2. Ensure substrate meets the requirements of ASTM F710, Roppe Technical Data Sheets and Excelsior Technical Data Sheets.
		3. Provide a secure storage area that is maintained permanently or temporarily at normal operating temperature and humidity conditions between 65° F and 85° F and between 40% and 65% 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 per manufacturer’s instructions.
		4. Provide an installation area that is weather tight and maintained either permanently or temporarily at ambient service temperature and humidity. Normal operating temperature and humidity conditions are between 65° F and 85° F and between 40% and 65% relative humidity, for at least 48-hours prior to, during and 48 hours after the application of the flooring per the manufacturer’s instructions.
		5. Ensure areas with direct prolonged exposure to sunlight are protected with protective UVA/UVB restrictive coatings or films.
		6. Areas of the flooring that are subject to direct sunlight through doors or windows should have them covered using blinds, curtains, cardboard or similar for the time of the installation and 48-hours after the installation to allow the adhesive to cure. Note: These areas should be installed using wet adhesives only.
		7. Conduct initial maintenance prior to final usage per the Roppe Care & Maintenance Documents. Do not conduct initial maintenance until adhesive has cured per the adhesive technical data.
	2. **Flooring Contractor Responsibilities**:
		1. Provide trained installers that are professional, licensed, insured and familiar with the resilient flooring material to be installed. Ensure installers or installation teams meet one of the following requirements:
		2. Have completed INSTALL (International Standards & Training Alliance) or CFI (Certified Floorcovering Installers) training programs and/or are certified by INSTALL or CFI.
		3. Are being supervised by Project Managers or Field Supervisors that are INSTALL (International Standards & Training Alliance) certified, CFI (Certified Floorcovering Installers) Certified and/or an FCICA (The Flooring Contractors Association) CIM (Certified Installation Manager).
		4. Follow all requirements in the appropriate Roppe and/or Excelsior Technical Data Sheets, Care & Maintenance Documents, Warranties and other technical documents or instructions.
2. EXAMINATION
	1. **General**: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and Preparation, as well as Section 01 43 00 – Quality Assurance.
	2. **Verification of Conditions:** Inspect all substrates to ensure they are clean, smooth, permanently dry, flat, and structurally sound. Confirm all areas are properly sealed and acclimated per manufacturer’s requirements.
	3. **Verification of Products:** In accordance with manufacturer’s installation requirements, visually inspect material for size, color or visual defects prior to installing. Any material that is incorrect or visually defective shall not be installed.
	4. **Product Limitations:** Do not install over LVT, cushioned vinyl, hardwood flooring, cork, rubber, or asphaltic materials. Do not install ESD Vinyl Tile in outdoor areas, residences, in or around commercial kitchens or areas that may be exposed to animal or vegetable fats and oils, grease and petroleum-based hydrocarbons. Do not install in areas that may be exposed to sharp, pointy objects, such as stiletto heels, cleats or spikes.
3. SUBSTRATE PREPARATION
	1. **General**: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and preparation. All work required ensuring substrate or subfloor meets manufacturers’ guidelines are the responsibility of the general contractor.
	2. **Preparation**: Ensure substrate meets the requirements of ASTM F710 for concrete substrates and ASTM F1482 for wood substrates and/or Roppe Technical Data Sheets and Excelsior Technical Data Sheets.
		1. Substrates must be free of visible water or moisture, dust, sealers, paint, sweeping compounds, curing compounds, residual adhesives and adhesive removers, concrete hardeners or densifiers, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material or foreign matter.
		2. It is recommended that all substrates have a floor flatness of FF32 and/or flatness tolerance of 1/8” in 6’ or 3/16” in 10’.
		3. Acclimate all products to be used during the installation in the installation environment prior to installation according to the manufacturers written instructions.
	3. **Concrete Substrates:**
		1. **Moisture Testing:** Perform moisture testing per the manufacturer’s recommendations to determine conditions, it is recommended to treat new and existing slabs a little bit different to ensure adequate conditions exist for installation.
			1. New Slabs on all grade levels: it is recommended to perform ASTM F2170 Relative Humidity testing no more than a week prior to installation too determine the levels present and when to proceed with the installation.
			2. Existing Slabs on all grade levels: in addition to ASTM F2170 testing, existing slabs that have previously had floor covering installed, must be tested to ASTM F1869 Calcium Chloride test kits to determine the MVER of the concrete.
		2. Mechanically remove contamination on the substrate that may cause damage to the flooring material, this includes paint, permanent and non-permanent markers, pens, crayons, etc. Leaving these on the substrate or marking with them on the back of the material could cause bleed through and damage the flooring.
		3. Fill cracks, holes, depressions and irregularities in the substrate to prevent transferring through to the surface of the resilient flooring. Use a high-quality Portland cement based product such as Excelsior installation products provided by Roppe.
		4. Do not install material over expansion joints.
	4. **Wood Substrates:** wood substrates must have a minimum 18” (45.7 cm) of cross ventilated space beneath the joist.
		1. Wood substrates must be a minimum 1” thick with a double layer construction.
		2. Wood substrates must be rigid and free of movement.
		3. Wood substrates must not be OSB (Oriented Strand Board), particle board, chipboard, lauan or composite type underlayments.
		4. Wood substrates that are Single Wood or Tongue & Groove subfloors must be covered with the appropriate APA approved underlayment plywood:
			1. Boards with a face width of 3” (7.62 cm) or less and is tongue-and-groove and with a smooth surface, use minimum 1/4” (6.4 mm) underlayment panels
			2. Boards with a face width greater than 3” (7.62 cm) or not tongue-and-groove, or with a rough surface, use minimum 1/2” (12.7 mm) underlayment panels
4. INSTALLATION
	1. **General**: Follow all relevant guidelines detailed in Division 01, as well as flooring and adhesive manufacturer’s technical data sheets.
	2. **Resilient ESD Vinyl Tile:** Install material in accordance with manufacturer’s recommendations:
		1. Select the **appropriate adhesive** for the application and job site conditions.
		2. Confirm material installation pattern and direction per design specifications or work order.
		3. Dry-lay several pieces of material in order to determine ideal room layout.
		4. Prior to installation, consult project electrician or electrical engineer regarding the placement of copper straps in order to synchronize copper strap placement with electrical grounding system location.
		5. Prior to installing flooring materials, install copper straps directly into fresh adhesive and trowel adhesive over strap to fully embed strap in adhesive. Copper strap must be at least 18” in length, with at least 9” embedded into adhesive.
		6. Copper grounding straps must be placed every 2000 sq. ft., at least one per room.
		7. **Flash Cove Installation**: Recommend tiles layout so seams are not half way up vertical surfaces. Full tiles shall be installed a minimum of 4” on the floor until contact with the cove cap.
		8. Fit flooring into the appropriate Roppe Cove Cap for flash coving on site.
		9. Roppe fillet strip must be used to transition flooring material from floor to wall.
		10. Cut all difficult fill pieces prior to spreading adhesive.
		11. Hand roll Cove material onto wall and floor surface and remove excess adhesive.
		12. Finish all seams of Cove according to floor covering manufacturer’s recommendations.
		13. **Heat Weld** seams if required by the area in which the material is being installed.
			1. **Heat Welding (Seamless Floors)**: Material shall be grooved to accept Roppe vinyl weld bead. Roppe vinyl weld bead shall be installed according to manufacturer’s recommended installation documents.
			2. Do not heat weld for 24 hours to allow adhesive to fully cure.
	3. **Interface with Other Work:** If caulking or sealing is required after installation, please contact the manufacturer for a suitable, color matching caulk.
5. CLEANING & MAINTENANCE
	1. **General**: Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.
	2. **Initial Maintenance**: Conduct initial maintenance per the manufacturer’s recommended procedures stated in the Maintenance Documents. All documentation is available upon request or from the Roppe website. Excelsior Cleaning products are the recommended products for use. All can be found linked to the product on the Roppe website [www.roppe.com](http://www.roppe.com) or at [www.excelsiorproducts.net](http://www.excelsiorproducts.net).
	3. **Regular Maintenance**: Conduct maintenance on regular intervals as needed. Insufficient cleaning will reduce the wear life of the flooring and alter the dissipative properties of the tiles. The amount of maintenance depends directly upon the amount of dirt and particulates the floor is subjected to.
	4. ESD vinyl flooring products DO NOT require a protective wax or floor finish.
	5. In areas where rolling chairs will be used, a resilient flooring chair pad must be installed over the finished floor to protect floor covering.
	6. Always use untreated, new or thoroughly cleaned mops and pads when conducting daily or routine maintenance.
	7. Do not use Kerosene, Gasoline, Naphtha and/or other solvents to clean vinyl tile.
6. CLOSEOUT ACTIVITIES
	1. **General**: Follow all federal, state and local requirements and Division 01 Section 01 76 00 – Protecting Installed Construction and Section 01 78 00 – Closeout Submittal requirements for these activities.
	2. **Protection**: Protect newly installed material with construction grade paper or protective boards, such as Masonite or Ram Board, to protect material from damage by other trades. Be sure all construction debris is swept up and removed prior to the protective material being installed and does not get trapped underneath. Limit usage and foot traffic according to the adhesive's requirements. When moving appliances or heavy furniture, protect flooring and wall base from scuffing and tearing using temporary floor protection as well.

END OF SECTION 09 65 36

END OF SECTION 09 65 36.13