

**MANUFACTURER’S GUIDE SPECIFICATION**

SECTION 09 05 61.13 MOISTURE VAPOR EMISSION CONTROL

**NOTES TO SPECIFICATION EDITOR:**

**Specifier Notes** are in red font. Delete from final document.

Revise this Section by deleting and inserting text to meet Project’s specific requirements.

1. This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.
2. Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

PART 1 - GENERAL

1. SUMMARY
   1. Work includes Moisture Vapor Emission (MVE) Control System to prepare surface of concrete to receive moisture sensitive adhesives and floor coverings. MVE Control System will protect finish flooring from moisture and pH Alkalinity.
      1. Exterior rated, no moisture limit, trowel grade mortars to repair concrete prior to application of MVE Control coating.
      2. Static and dynamic concrete crack repair materials.
      3. Fluid-applied, resin-based, membrane-forming coating to control the moisture vapor emission rate (MVER) of interior [suspended concrete slabs][slab on grade][light weight slabs].
      4. Bond promoting primer for non-absorbent substrate to receive cementitious underlayments.
      5. Self-leveling floor underlayment \*\* NOTE TO SPECIFIER \*\* Call Manufacturer for recommendation when leaving self-leveler exposed as a topping.
2. UNIT PRICE ALTERNATE \*\* NOTE TO SPECIFIER \*\* Require contractors to submit separate line item on bids to include “square foot unit price alternate” for work of this section. Definition: An alternate to the base bid that provides for a change in the level of quality, or scope of work specified in the base bid. This provides the owner an option to modify the project by accepting or rejecting the alternate. The advantage of this alternate is that unforeseen site conditions can be anticipated and managed through a competitive bid versus a negotiated change order. Important to specify exact threshold of moisture test results when this Alternate will be accepted or rejected. See Article 3.2 PREPARATION TESTING paragraphs B and C.
3. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete specification sections from the list below that are not specified on this project.

* 1. 03 30 00 Cast-In-Place Concrete
  2. 03 39 23 Membrane Concrete Curing
  3. 03 54 16 Hydraulic Cement Underlayment
  4. 07 16 00 Cementitious and Reactive Waterproofing
  5. 07 26 00 Vapor Retarder
  6. 09 60 00 Flooring
  7. 09 62 00 Specialty Flooring
  8. 09 64 00 Wood Flooring
  9. 09 65 00 Resilient Flooring
  10. 09 66 00 Terrazzo Flooring
  11. 09 67 00 Fluid Applied Flooring
  12. 09 68 00 Carpeting
  13. 09 97 00 Special Coatings

1. REFERENCES – Current versions at Bid Date

\*\* NOTE TO SPECIFIER \*\* Delete reference standards from the list below that are not required.

* 1. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
  2. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
  3. ASTM 1907 – Standard Practices for Determining the Moisture-Related Acceptability of Concrete Floors to Receive Moisture- Sensitive Finishes
  4. ASTM E 96 - Standard Test Method for Water Vapor Transmission of Materials
  5. ASTM 4541B – Pull-Off Strength of Coatings
  6. ASTM C109 – Standard Test Method for the Compressive Strength of Hydraulic Cement Mortars.
  7. ASTM C1708 – Standard Test Method for Self-Leveling Mortars Containing Hydraulic Cement
  8. ASTM F2873 – Standard Practice for the Installation of Self-Leveling Underlayment and the Preparation of Surface to Receive Resilient Flooring.
  9. ASTM D5125 - Standard Test Method for Viscosity of Paints and Related Materials by ISO Flow Cups.
  10. ASTM E1155 – Standard Test Method for Determining FF (Floor Flatness) and FL (Floor Levelness)
  11. ASTM F3010 – Standard practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation System for use Under Resilient Floor Covering
  12. ACI 503.1R, ASTM C1583 – Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)
  13. ASTM D7234 – Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Tester.
  14. ASTM C1583/ACI 503.1R - Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)
  15. ASTM 710 – Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
  16. ICRI (International Concrete Repair Institute) Guide 310.2R- Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays and Concrete Repair
  17. RFCI - Recommended Work Practices for Removal of Resilient Floor Coverings, Resilient Floor Covering Institute
  18. ACI 504 R-90 – Guide to Sealing Joints in Concrete Structures
  19. ACI 302.1 – Guide for Concrete Floor Slab Construction
  20. ACI 302.2 – Guide for Concrete Slabs that Receive Moisture- Sensitive Flooring Materials.
  21. ASTM D1308 – Chemical Resistance of Finishes
  22. United States Green Building Council (USGBC) LEED certification or other sustainability certification.
  23. South Coast Air Quality Management District (SCAQMD) 1168
  24. ASTM C856 Standard Practice for Petrographic Examination of Hardened Concrete

1. DEFINITIONS
   1. MVE: Moisture Vapor Emission
   2. MVER: Moisture Vapor Emission Rate (measured in lbs/1000 sf / 24 hours)
   3. RH: Relative Humidity (measured in percentage)
   4. VOC: Volatile Organic Compound (measured in g/L)
   5. CSP: Concrete Surface Profile defined by ICRI
2. ACTION SUBMITTALS
   1. Comply with provisions of Section 01300.
   2. Product Data: Manufacturer's data sheets on each product to be used, including:
      1. Preparation instructions and recommendations.
      2. Storage and handling requirements and recommendations.
      3. Installation methods.
   3. Shop Drawings: Details of construction and relationship with adjacent construction. Indicate location of building movement joints.
   4. LEED Design Submittals:
      1. Product Data indicating VOC content of coatings.
      2. Laboratory Test Results indicating compliance with low-emitting materials
      3. Manufacturer’s product data indicating no urea-formaldehyde content.
      4. Documentation showing test results measuring VOC content according to SQAQMD Rule No 1113.
   5. Warranty:
      1. MVE Control System Manufacturers [10 year] [ Lifetime] Warranty
      2. Underwriters Insurance Coverage with A rating in the amount of [$5,000,000] [ x ] per occurrence

\*\* NOTE TO SPECIFIER \*\* There are many silica or silicate ready mix additives and also topically spray applied densifiers that could possibly impact the warranty of the moisture vapor emission control coating’s warranty. Coordination of Division 3 and Division 9 is critical. A pre-construction, coordination of trades meeting to discuss compatibility of MVE control coatings to concrete chemicals should be required.

1. INFORMATIONAL SUBMITTALS
   1. Qualification Data: Dates that Contractor’s on-site personnel received training by the moisture vapor control system manufacturer.
   2. Submit list of at least three similar projects performed by the Contractor within the previous three years that used the same products and similar moisture vapor control system and self-leveling underlayment.
   3. Pre-Installation Moisture Vapor Test Reports
   4. Field Quality Control Reports including Moisture Vapor Tests and Bond Strength Pull Tests on coatings and repair mortars.
2. DELIVERY, STORAGE, AND HANDLING
   1. Store products in manufacturer's unopened original packaging until ready for installation. Record product codes and batch numbers and shelf life.
   2. Store products in a dry area with temperature maintained between 50 deg F (10 deg C) and 85 deg F (29 deg C) and protect from direct sunlight.
   3. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
3. QUALITY ASSURANCE
   1. Manufacturer Qualifications: Minimum 5 years manufacturing concrete resurfacing and rehabilitation products. Employs factory trained personnel who are available for product knowledge training.
   2. Installer Qualifications: Minimum 5 years installing moisture vapor emission control systems.
   3. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
4. \*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.
   * 1. Finish areas designated by Architect.
     2. Do not proceed with remaining work until mockup is approved by Architect.
     3. Refinish mock-up area as required to produce acceptable work.
     4. Mockup will be basis for quality control evaluation on remainder of Work.
5. FIELD CONDITIONS
   1. Environmental Limitations: Comply with MVE control systems manufacturer’s written instructions for substrate and ambient temperature, but not less than 50 deg F (10 deg C) and not more than 90 deg F (32 deg C) at least 48 hours before use.
   2. Maintain ambient air temperature and relative humidity in installation areas within range recommended in writing by MVE control systems manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C) and not less than 40 or more than 60 percent air relative humidity for 48 hours before, during installation, and for 48 hours after installation, unless longer period is recommended in writing by manufacturer.
   3. Install MVE control systems where concrete surface temperature will remain a minimum of 5 deg F (3 deg C) higher than the dew point for ambient temperature and relative humidity conditions in installation areas for 48 hours before installation, during installation, and for 48 hours after installation unless longer period is recommended in writing by manufacturer.

1. PRE-INSTALLATION CONFERENCE: Conduct conference at [Project site] [Off site address]
   1. Discuss Contract Document Requirements, moisture tests, manufacturer recommendations, installer’s recommendations, scheduling, and protection of work from damage by other trades.
   2. Attendance required by: Contractor, Floor Installer, Manufacturer’s Representative, Independent testing agency, Concrete Subcontractor, Ready Mix supplier.
   3. Objective of conference is:
      1. Review methods and procedures
      2. Tour job site representative areas to inspect and discuss condition of substrate
      3. Review concrete finishing requirements
      4. Review and finalize construction schedule
      5. Review required inspections, testing, certifications, material usage procedures
      6. Review environmental restrictions and forecasts
      7. Record content of conference including attendance and topics.
   4. Furnish record of pre-installation conference to all parties who are affected by MVE control systems work.

PART 2 – PRODUCTS

1. MANUFACTURER
   1. Approved:
      1. MAPEI Americas U.S.A., 1144 E. Newport Center Rd., Deerfield Beach, FL 33442; ASD. Toll Free Tel: 800-42-MAPEI; Tel: 954-246-8888; Fax: 954-246-8801; Email: [TechServiceRequests@mapei.com](mailto:TechServiceRequests@mapei.com); Web: [www.mapei.us](http://www.mapei.us)
      2. MAPEI, Inc. Canada, 2900 Francis-Hughes, Laval, PQ, Canada H7L3J5; ASD. Tel: 450-662-1212; Fax: 450-662-0444; Email: tservicesCA@mapei.com; Web: [www.mapei.ca](http://www.mapei.ca).
      3. Substitutions: [Not permitted.][ Requests for substitutions will be considered in accordance with provisions of Section 01600]
2. MVE SYSTEM
   1. Components of MVE Control System from single source manufacturer. Do not mix products from different manufacturers. Subject to compliance with requirements, provide the following:
      1. Concrete Repair Mortar: Minimum compressive strength after 24 hours > 2700 psi and after 28 days > 4000psi when tested in accordance with ASTM C109 / C109M. Repair mortar to be exterior rated with no moisture limitations for use to repair concrete prior to application of MVE control system. Basis of Design: MAPEI *Mapecem*® *Quickpatch* with *Planicrete*® *UA* additive.
      2. Crack Repair Resin for static non-moving joints: Basis of Design: MAPEI *Epojet*™ *LV* or MAPEI *Planibond*® *EBA*. Thickening with sand is acceptable.
      3. Crack Repair for dynamic movement joints: Basis of Design: MAPEI *Mapeflex*™ *P1 SL* one-Component, Self-Leveling Elastomeric Polyurethane Sealant

\*\*NOTE TO SPECIFIER\*\* \*\* Ask your CADD technician to create drawing section showing MVE Control System and Floor Covering NOT spanning concrete movement joints. Substrate movement joints should be honored up through floor assembly\*\*

* + 1. MVE Control Epoxy Coating component of the MVE Control System: ASTM F3010 qualified, fluid-applied, two component, 100% solids epoxy resin, low viscosity, penetrating, one-coat membrane forming system; formulated for application on concrete substrates to reduce MVER to level required for installation of floor covering indicated, including adhesives. Basis of Design: MAPEI *Planiseal*® *VS*.
       1. Performance for MVER ASTM F1869: up to 25 lbs per 1000 square feet (9.07 kg per 92.9 m²) per 24 hours.
       2. Performance for Relative Humidity ASTM F2170: up to 100% RH
       3. VOC Content SCAQMD Rule No 1113: < 50 g/L
       4. Viscosity: < 250 cps
       5. Pull Off / Bond Strength / Concrete Adhesion ASTM D7234: > 1000 psi (6.90 mPa) at 28 days with failure in concrete substrate
       6. Permeability ASTM E96: < 0.1 perm at > 10 mil Dry Film Thickness
       7. Reduction of Moisture Vapor Transmission ASTM E96: > 96% at 10 mil DFT
       8. Alkali Resistance ASTM D1308: No affect up to pH 14 at 14 days
       9. Relative Humidity Resistance ASTM 2170: Resists up to 100% RH.
    2. Bond Promoting Primer over non-absorbent MVE Control Epoxy Coating to receive up to 3/8 inch thickness of Self-Leveling Underlayment: Basis of Design: MAPEI *Primer T*™
    3. Bond Promoting Primer over non-absorbent MVE Control Epoxy Coating to receive over 3/8 inch thickness of Self-Leveling Underlayment: Basis of Design: MAPEI *Primer E*™ with sand broadcast. Consult Manufacturer.
    4. Self-Leveling Underlayment to be shrinkage compensated to smooth and flatten floors while creating a blotter layer. Blotter layer, an absorptive layer required for water-based floor covering adhesives used to install finish floors. Minimum compressive strength after 24 hours > 2000 psi, and after 28 days > 4100 psi when tested in accordance with ASTM C109 / C109M. Basis of Design: MAPEI *Ultraplan*® *1 Plus*.
    5. Final skim coat as needed prior to installing floor finish: MAPEI *Planiprep*™ *SC*.

PART 3 – EXECUTION

1. EXAMINATION
   1. Allow at least 7 days after placement of concrete to begin this Work.
   2. Examine substrates and conditions for compliance with requirements for maximum moisture RH content ASTM F2170, and/or MVE ASTM F1869 per the floor covering manufacturer.
   3. Verify slab has not been contaminated.
   4. Perform water bead test and photographically record contact angle of water bead meniscus to the floor to ensure concrete is hydrophilic.
   5. Record alkalinity testing per ASTM F710.
   6. Record ambient air RH, dew point and temperature.
   7. Record slab temperature.
   8. Concrete substrates must be structurally sound, solid, and meet industry standards as defined in ACI Committee 201 Report “Guide to Durable Concrete”.
   9. Notify Architect of out of tolerance conditions that will affect Work. Proceed with installation only after unsatisfactory conditions have been corrected. Installation of moisture control system indicates acceptance of surfaces and conditions.
2. PREPARATION TESTING
   1. Pre-installation Testing by independent Testing Agency: [Owner will engage] [Engage] a qualified testing agency to perform tests. Testing performed by an ICRI Concrete Moisture Testing Technician – Grade 1.
   2. Alkalinity Testing: Perform pH testing according to ASTM F710. Install MVE control system in areas where pH readings are less than [7.0][x] and in areas where pH readings are greater than [9.0][x].
   3. Moisture testing: Conform to ICRI test standards for three tests in the first 1000 sq ft and one test per 1000 sq ft after that. Perform no fewer than three tests in each installation area and with tests evenly spaced in installation to best represent the widest range of conditions.
      1. Perform Anhydrous Calcium Chloride Test: ASTM F1869. Install MVE Control system in locations where concrete substrate MVER exceeds [three] [ x ] lbs of water / 1000 sq ft / 24 hours (1.36 kg water / 92.9 sq m / 24 hours). \*\*NOTE TO SPECIFIER\*\* select based on moisture limits of floor covering and floor covering adhesive\*\*
      2. Perform Internal Relative Humidity Testing: ASTM D2170. Install MVE Control System in locations where concrete substrate RH exceeds [80%] [85%][90%][95%][100%]. \*\*NOTE TO SPECIFIER\*\* select based on moisture limits of floor covering and floor covering adhesive\*\*
   4. Bond Testing: Install minimum 100 sq ft (9.29 sq m) test area of complete assembly of MVE Control System bonded to prepared concrete substrate. Proceed with installation if tensile bond strength on MVE Control System is greater than 200 psi (1.38MPa) in heavy commercial traffic and 150 psi for normal foot traffic when tested in accordance with ASTM C1583.
   5. Concrete Core Test \*\*NOTE TO SPECIFIER\*\* This test not normally required on new construction but highly recommended. On existing slabs that you suspect may have unknown contaminants, this test is required for warranty\*\*
      1. X Ray Diffraction (XRD) analysis which includes the evaluation of the concrete solids via energy dispersive x-ray analysis (EDXA) 0-4 mm BTC Profile – (Below Top of Core Surface)
      2. Infra-red (IR) spectroscopy which is the organic chemical analysis, 0-4 mm BTC profile
      3. Ion Chromatography (IC) analysis which is the analysis of water-soluble CL, SO4, K & Na 0-4 mm BTC Profile.
3. SURFACE PREPARATION
   1. Clean and prepare concrete substrate according to MVE control system manufacturer’s written instructions to ensure adhesion of systems to concrete.
   2. For direct application of epoxy MVE control coating without mechanical profiling, concrete must be porous, have a CSP of #2 to #3, and be in pristine condition with no contamination present.
   3. Mechanically remove coatings and other substances that are incompatible with MVE control systems and that contain soap, wax, oil, or silicone, using mechanical methods recommended in writing by MVE control systems Manufacturer. Do not use solvents. Do not acid etch. Mechanically remove troweled CSP 1 finish. Concrete surface must be mechanically profiled using dustless, engineer-approved methods to obtain a CSP of #2 to #3.
      1. [Method One: Achieve ICRI 310.2R Minimum CSP 3 by shot blasting using apparatus that abrades the concrete surface with shot, contains the dispensed shot within the apparatus and recirculates the shot by vacuum pickup. Shot-blast with spherical steel shot SAE size range 230 – 300 as necessary to produce the required profile. Remove all residual shot with a magnet. Use a handheld grinder to CSP 2 only in areas that cannot be reached with bead blasting.]
      2. [Method Two: Achieve ICRI 310.2R Minimum CSP 2 by diamond grinding that abrades the concrete surface. Remove all dust by vacuuming with high-efficiency particulate arrestance (HEPA) filter.]
   4. Excessively weak, soft, dusty, cracked, or uneven surfaces may not be suitable substrates and may require additional concrete removal techniques such as scarification and then patching prior to application of the MVE Control System.
   5. Asbestos abated slabs may have hydrophobic organic compounds in the capillaries of the concrete which will be a bond break for coatings. Microscopic petrographic examination according to ASTM C856 to evaluate the concrete condition, potential deleterious substances and suitability for shot-blasting and coating adhesion.
   6. Reinforcing fibers that become visible after shot blasting must be removed and vacuumed leaving no fibers exposed above the concrete surfaces.
   7. Do not install MVE Control System if substrate testing reveals unacceptable conditions.
   8. Ensure that all old adhesives, contaminants, curing compounds, oils, silicates, dust and other bond breakers are completely removed.
   9. Remove dust and debris by broom sweeping and then vacuuming with high-efficiency particulate arrestance (HEPA) filter. Do not use sweeping compound as they contain oils and wax that would contaminate the concrete surface and inhibit bond of MVE Control System.
   10. After shot blasting, repair damaged and deteriorated concrete according to MVE control system manufacturer’s written instructions.
   11. Prior to application of MVE Control Epoxy Coating, fill substrate surface depressions, ruts, spalls and other irregularities with exterior grade patch: MAPEI *Mapecem*® *Quickpatch* with *Planicrete*® *UA* additive.
   12. Do not skimcoat entire concrete slab prior to application of epoxy MVE control system.
   13. Allow concrete to off-gas after bead blasting for a minimum of 24 hours but no more than 48 hours to avoid contamination by other trades. Failure to wait may result in the epoxy coatings ability to perform as a MVE control due to pin-holing, blisters and fish-eyes.
4. CRACK PREPARATION
   1. Consult with an experienced engineer to determine the appropriate substrate repair procedures and joint treatment methods. Engineer to address contraction as well as potential expansion, movement and isolation joints. Cracks or de-bonding in the MVE control system that results from substrate movement are not required to be warranted.
   2. Record location of cracks, both static and dynamic, on shop drawings.
   3. Do not apply MVE control system across substrate expansion, isolation, and other dynamic moving joints.
   4. Mechanically prepare non-moving control and construction joints with a diamond crack-chasing/concrete-cutting blade. Overcut joint width to obtain a sound, clean edge. Clean cracks or joints with oil-free compressed air and dustless high-efficiency particulate arrestance (HEPA) filter vacuum to completely remove contaminants (follow ACI RAP Bulletin 2, “Crack Repair by Gravity Feed with Resin”).
   5. Pre-filling static thin random drying shrinkage cracks (less than 0.01 inch (0.25 mm) width and not vertically displaced) is not required. Apply MAPEI *Planiseal*® *VS* normally over areas of thin shrinkage cracked concrete.
   6. Fill static cracks (narrower than 1/8 inch (3 mm) and not vertically displaced) with MVE Crack Repair Resin. Prefill cracks with 20 to 30 sieve size clean washed kiln dried sand and apply *Epojet*™ *LV*.
   7. Fill static cracks (wider than 1/8 inch (3 mm) and not vertically displaced) with high-modulus epoxy MAPEI’s *Planibond*® *EBA*; thickened with sand to create an epoxy mortar.
   8. Should contraction, control or saw-cut joint dormant joints appear not filled flush to top of surface after installation of MVE Crack Repair Resin, fill static non-moving joints with high-modulus MAPEI *Planibond*® *EBA* epoxy. Fill joints full-depth and flush to surface.
   9. Fill dynamic joints with self-leveling polyurethane sealant MAPEI *Mapeflex*™ *P1 SL*. Do not span movement joint with self-leveling underlayment nor flooring.
   10. Reinforcing fibers that become visible after crack preparation must be removed and vacuumed leaving no fibers exposed above the concrete surface.
5. PROTECTION - OTHER SURFACES
   1. Protect walls, floor openings, electrical openings, door frames, and other obstructions during the installation.
6. INSTALLATION MVE CONTROL SYSTEM - EPOXY
   1. General: Install MVE control system according to ASTM F3010 and manufacturer’s written instructions to product a uniform, monolithic surface free of surface deficiencies such as pin holes, fish eyes and voids.
   2. Adjust application methods per manufacturer’s written instruction as determined by site conditions, presence of sub-slab vapor barrier, concrete mix design, lightweight aggregates, suspended slab vs slab on grade, and age of concrete.
   3. Refer to the Safety Data Sheet (SDS) for details on handling and safety equipment.
   4. Mixing: Mix in accordance with Manufacturer’s instructions. Mix only full units. Strictly follow minimum mixing time.
   5. In a single coat application, apply MVE control system epoxy to manufacturer’s recommended rate with no less than dry film thickness of 10 mils minimum to achieve design perm rating. Apply with notched squeegee or notched trowel and back roll with 3/8 nap roller. Adjust application rate depending on job site concrete conditions including porosity and profile.
   6. Cure MVE Control System components according to the manufacturer’s written instruction. Prevent contamination or other damage during curing processes.
   7. After curing, examine MVE control system for surface deficiencies. Repair surface deficiencies according to manufacturer’s written instructions.
7. FIELD QUALITY CONTROL
   1. Inspect MVE Control System to ensure that all voids and pinholes are filled/sealed before moving on to the next flooring phase. Do so by filling any voids and/or shaving off the tops of any bubbles and reapplying a thin coating of MVE Control System over the surface. Verify no bond break present.
8. INSTALLATION OF PRIMER FOR SELF-LEVELER
   1. Self-Leveling Underlayment up to 3/8 inch thickness: Apply *Primer T*™ to epoxy MVE control system and allow primer to dry completely.
   2. Self-Leveling Underlayment over 3/8 inch thickness: Apply *Primer E*™ to epoxy MVE control system and broadcast 20/30 sieve clean washed kiln dried sand to rejection. After 24 hours, vacuum non-bonded sand.
9. INSTALLATION OF SELF-LEVELING UNDERLAYMENT
   1. Read all installation instructions thoroughly before installation.
   2. Before installation, close doors and windows, and turn off HVAC systems to prevent drafts during application and until the floor cures. Protect areas from direct sunlight.
   3. Make sure concrete substrate and ambient room temperatures are between 50°F and 95°F (10°C and 35°C) before application. In large applications, allow for indirect air circulation to dissipate humidity created by leveler application. Temperatures must be maintained within this range for at least 72 hours after the installation of self-leveler. In cooler conditions, use indirect auxiliary heaters to maintain ambient and substrate temperatures within the required range. For temperatures above 85°F (29°C), follow ACI hot-weather application guidelines to ensure a successful installation.
   4. Water to be clean, potable, and cool, not warmer than 70 deg F.
   5. Conventional piston, rotor-stator or underlayment-type pumps may be used for application of self-leveling over large areas.
   6. Strictly follow manufacturer’s mixing instructions for exact water cement ratios, mixing times, speed and type of mixing blade.  Mix full unit quantities, if working from bulk containers (ie super sacks), mixer must be able to accommodate entire unit of unmixed product. Self-leveler is a calcium aluminate quick setting, fast drying shrinkage compensated product when mixed correctly. Overwatering will cause shrinkage and potential delamination.
   7. Maintain continuous flow of wet material to avoid trapping air or creating a cold joint.
   8. Maintaining a wet edge throughout placement. Quickly pour or pump self-leveler onto properly prepared and primed surface in ribbon pattern.
   9. Spread self-leveler with gauge rake to desired depth. Break surface tension of material with smoother or needle roller to allow self-leveler to flow. Apply at 3/16 inch minimum thickness.
   10. Apply self-leveler to flatness of 1/8 inch in 10 feet.
   11. Verify with Manufacturer regarding minimum time to install ceramic tile, or non-breathable floor coverings on self-leveler.
10. CLEANUP
    1. Use soap with water or use denatured alcohol to clean equipment before MVE Control Systemcures to a hardened state. Cured material can only be removed mechanically.
11. PROTECTION - MVE CONTROL SYSTEM
    1. Protect the surface of the cured MVE control system from traffic and damage until covered by floor finish. Protection may include plywood, or other suitable protection board.

END OF SECTION 09 05 61.13