SECTION 03053 - CONCRETE MOISTURE VAPOR REDUCTION ADMIXTURE

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

* + 1. As specified in Section 01001 - GENERAL REQUIREMENTS.
	1. SECTION INCLUDES
		1. Moisture vapor reduction admixture (MVRA) for new concrete footings, foundations, slabs on grade, elevated slabs, roof deck, stair treads and landings, and exterior balconies.
	2. RELATED SECTIONS
		1. Division 01: Administrative, procedural, and temporary work requirements.
		2. Section [033000 - Cast-in-place Concrete:] [072600 - Vapor Retarders:] [\_\_\_\_\_\_ - \_\_\_\_:] Underslab vapor retarder.
		3. Division 09 sections which require MVER testing prior to installation.
	3. DEFINITIONS
		1. Cementitious Materials: Portland cement alone or in combination with one or more of following:
			1. Blended hydraulic cement
			2. Fly ash and other pozzolans.
			3. Ground granulated blast-furnace slag.
			4. Silica fume.
	4. REFERENCES
		1. American Concrete Institute (ACI) [(www.concrete.org)](http://www.concrete.org):
			1. 302.2R-06 - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring.
			2. 305R-10 - Guide to Hot Weather Concreting.
			3. 306R-10 - Guide to Cold Weather Concreting.
		2. ASTM International (ASTM):
			1. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
			2. ASTM D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.
			3. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Barriers Used in Contact with Earth or Granular Fill Under Concrete Slabs.
			4. ASTM E1745 - Standard Specification for Plastic Water Vapor-Barriers Used in Contact with Soil or Granular Fill under Concrete Slabs.
			5. F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
	5. SUBMITTALS
		1. Submit under provisions of Section 01330.
		2. Product Data: Manufacturer’s descriptive data for admixture.
		3. Warranties:
			1. Sample lifetime warranty against flooring/coating failure due to concrete moisture vapor emission (MVE).
			2. Sample adhesion warranty
		4. Certificate of Compliance: Manufacturer’s statement certifying admixture provided meets or exceeds specified requirements.
		5. Test Reports: Test results performed by qualified independent testing agency evidencing compliance of products with specified requirements of hydraulic conductivity/coefficient of permeability based on ASTM D5084.Include the following for submission of sustainable design submittals.
		6. Sustainable Design Submittals:
			1. Material must have a published Health Product Declaration (HPD).
	6. QUALITY ASSURANCE
		1. Manufacturer Qualifications: A firm with not less than 2 years’ experience in manufacturing concrete moisture vapor reduction admixture of the type specified, capable of providing test reports indicating compliance with specified performance requirements, and able to provide onsite technical representation. Selected product must have ASTM C494 Type S Concrete Admixture approval from and independent AASHTO approved laboratory.
		2. Preinstallation Conference: Conduct conference at project site with Contractor, concrete moisture vapor reduction admixture manufacturer or authorized representative, concrete supplier, and concrete finisher to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements. Concrete suppliers and finishers must be certified.
		3. Slab Moisture Testing and Evaluation:
			1. Determination of whether concrete slab is prepared to receive flooring, coatings, or roofing rests with MVRA 900 manufacturer.

* + 1. Source Limitations: Obtain each type of concrete moisture vapor reduction admixture from same manufacturer.
		2. Slabs to Receive Moisture Sensitive Coatings or Material: Comply with ACI 302.2R-06.
	1. DELIVERY, STORAGE AND HANDLING
		1. Deliver materials in manufacturer's original, undamaged containers with identification labels intact.
		2. Comply with manufacturer 's written instructions for handling prior to adding to concrete batch.
		3. Comply with manufacturer's written instructions for storage of MVRA.
	2. WARRANTY
		1. Provide manufacturer’s lifetime warranty against concrete induced moisture vapor failure, providing coverage for:
			1. Repair or removal of failed flooring or roofing.
			2. Placement of topically applied moisture remediation system.
			3. Replacement of flooring or roofing materials to match original including material and labor.
		2. Provide manufacturer’s adhesion warranty, matching terms of adhesive or primer manufacturer's material adhesion warranty.

PART 2 - PRODUCTS

* 1. MANUFACTURERS
		1. Contract Documents are based on MVRA 900 by ISE Logik Industries, Inc. ([www.iselogik.com](http://www.iselogik.com)). Please contact ISE Logik Industries at 877-549-5159 for all bid pricing or any questions. Edit the following to indicate whether or not substitutions will be permitted for the products in this section.
		2. Substitutions: [Under provisions of Division 01.] [Not permitted.]
	2. MATERIALS
		1. Concrete Moisture Vapor Reduction Admixture (MVRA), by ISE Logik Industries: Non-toxic, volatile organic compound (VOC) free, liquid admixture formulated to react with hydroxide ions produced by cement hydration process, creating additional hydration products within capillary pores, blocking moisture vapor movement through concrete.
		2. Physical characteristics:
			1. Hydraulic conductivity: Maximum flow of 6.0 E-8 cm/s per ASTM D5084.
			2. Toxicity: None.
			3. Odor: None.
			4. Flammability: None.
			5. Volatile Organic Compound (VOC) content: 0 grams per liter.
			6. Freeze temperature: 32 degrees F (0 degrees C).
			7. pH: 11.3
			8. Acid Resistance: Excellent.
			9. Hazardous Vapors: None.
			10. Capillary Break: Calcium Silicate Hydrate.
			11. Inhibit mold and bacteria growth by eliminating moisture vapor emission.
	3. RELATED MATERIALS SPECIFIED ON OTHER SECTIONS
		1. Sheet Vapor-Barrier: Permanent below-slab vapor retarder meeting the minimum performance requirements of ASTM E1745. Installed per ASTM E1643, ASTM F710, and in accordance with vapor retarder manufacturer’s installation instructions.
	4. MIXES
		1. Moisture Vapor Reducing Admixture (MVRA) for new concrete, slabs below grade, slabs on grade, elevated slabs, roof deck, stair treads and landings, and exterior balconies.
		2. Add MVRA 900 to concrete mix in accordance with manufacturer’s instructions.Mix designs outside of 0.40 to 0.54 w/cm may require adjustment and consultation with MVRA manufacturer prior to their use.
		3. Add MVRA 900 at rate of 12 ounces per 100 pounds (355ml/45kg) of total cementitious materials.
		4. Replace mix water on one-for-one basis in amount equal to amount of MVRA 900 added.
		5. Add MRVA 900 directly to freshly mixed concrete at end of the batch process with tail water.
		6. Ready-Mixed Concrete:
			1. Measure, batch, mix, and deliver concrete with MVRA 900 in accordance with ASTM C94/C94M.
			2. Furnish batch ticket information showing dosage of MVRA 900.
		7. Site Mixing:
			1. Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M.
			2. Add MVRA 900 to where it makes direct contact with ready mix, then rotate drum of batch truck on high for at least seven minutes prior to discharge.
		8. Freshening onsite with held back mix water is acceptable if in accordance with ACI guidelines and if amount does not exceed original water to cementitious material ratio or instructions of [Architect.] [Design/Builder.] [Structural Engineer.Use of fibers is acceptable but may compromise the lifetime MVE warranty; fibers can create their own unique routes of moisture vapor emission that the MVRA cannot control if the fibers are improperly incorporated into the mix.].
		9. Use water reducing admixtures to achieve desired slump.
		10. Use of other admixtures in same batch as MVRA 900 is acceptable if each admixture is added separately.
		11. Do not use shrink reducing admixtures.

PART 3 – EXECUTION

* 1. INSTALLATION.
		1. Comply with requirements of Section [033000] [\_\_\_\_\_\_] for admixture dosing, concrete mixing, placing, finishing and curing.
		2. Install, protect, and repair sheet vapor retarder in accordance with to ASTM E1643, ASTM F710, ACI 302.2R-06, and manufacturer's instructions.
		3. Cold Weather Placement: Comply with most current version of ACI 306R Guide to Cold Weather Concreting.
		4. Hot Weather Placement: Comply with most current version of ACI 305R Guide to Hot Weather Concreting.
	2. CURING
		1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306R-10 for cold-weather protection and ACI 305R-10 for hot-weather protection during curing.Curing compound may require mechanical removal prior to installation of flooring in accordance with ASTM F710. Do not chemically remove. Cure and Seal products are not normally recommended by the flooring industry.
		2. Cure concrete slabs to receive moisture sensitive coatings according to ACI 302.2R-06 by one or more of following methods:
			1. Moisture-retaining cover curing.
			2. Self-dissipating curing compound.
	3. FIELD QUALITY CONTROLTest slab surface pH in accordance with ASTM F710 prior to any manufacturer’s recommended bond testing.
		1. Project specific quality control process required by MVRA manufacturer necessary to convey concrete moisture vapor emission flooring failure warranty and stand-alone adhesion warranty.
		2. Project team: Upon request, provide batch tickets indicating presence and dosage of MVRA in mix.

3.04 REPAIRS

* 1. Repair concrete slabs in accordance with other Division 3 sections and as recommended in manufacturer's written instructions.

END OF SECTION