**SECTION 03542**

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**CEMENT-BASED SELF-LEVELING UNDERLAYMENT**

**PART 1 - GENERAL**

**1.01 SUMMARY OF WORK**

A. The Work of this Section shall include, but not be limited to, installation of hydraulic cement-based self-leveling underlayment (SLU) on slabs to the elevation required to place finish material at the contract elevation. Prepare substrate to receive the SLU and install as per this Section and per manufacturer’s recommendations.

B. Provide on all slabs to provide a uniform surface to receive finish.

C. Moisture content of the concrete slabs shall be checked and documented in writing by the Contractor to ensure the moisture content is acceptable for all materials to be placed on the slab (SLU, finish flooring).

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1. Slabs shall be tested utilizing the calcium chloride moisture test and, if required by the floor finish manufacturer, using in-situ test probe method for relative humidity.

2. New concrete slabs shall be cured a minimum of twenty-eight (28) days for normal weight concrete and 56 days for lightweight concrete prior to testing.

**1.02 RELATED SECTIONS**

A. Asbestos Abatement. . . . . . . . . . . . Section 02081

B. Concrete Work. . . . . . . . . . . . . . .Section 03005

C. Cast-in-Place Concrete. . . . . . . . . . Section 03300

D. Wood Flooring. . . . . . . . . . . . . . .Section 09590

E. Resilient Athletic Flooring. . . . . . . .Section 09626

F. Resilient Flooring. . . . . . . . . . . . Section 09650

G. Carpet. . . . . . . . . . . . . . . . . . Section 09680

H. Resinous Flooring. . . . . . . . . . . . .Section 09705

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM), latest editions.

C31 Standard Testing Method How to Cast the In-Field   and  Test Cubes

C94 Standard Specification for Ready-Mixed Concrete

C109 Standard Test Method for Compressive Strength of Hydraulic Mortars Using 2-inch or [50mm] Cube Specimens

C157 Standard Test Method for Length Change of Change of Hardened Hydraulic-Cement Mortar and Concrete

C191 Test Using Vicat Needle to Determine Final Setting Time of (SLU) Mix

C596 Standard Test Method to Determine Amount of Water Content in Concrete and Concrete Coatings of Hydraulic Cement Grout (Non-Shrink)

C1583 Test Method Standard for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Surfaces

F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

**1.04 SUBMITTALS**

A. Product Data

 Submit manufacturer’s technical data for all materials, including repair material, primer, self-leveling underlayment, epoxy, and moisture mitigation membrane.

B. Shop Drawings

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Plans indicating substrates, locations, and average depths of cement-based underlayment based on survey of substrate conditions.

C. Quality Control Submittals

1. Test Reports:

 a. Submit independent laboratory test reports for the performance criteria specified in Part 2 for the SLU (For products not listed).

 b. Moisture testing:

 1) Calcium chloride moisture test indicating substrate moisture content is within acceptable limits to receive SLU and finish flooring.

 2) Relative Humidity moisture test indicating substrate moisture content is within acceptable limits to receive SLU and finish flooring.

2. Certificates

Furnish single-source Manufacturer's certification that materials meet or exceed Specification requirements.

3. Manufacturer's Instructions: Furnish manufacturer's printed material, specifications, and application instructions for installation of all component materials to complete the Work of this Section.

4. Written Repair Procedure

 Submit written copies of procedures of actual process to be utilized to install self-leveling underlayment, including surface preparation and mixing procedures. Procedure is to be signed by manufacturer’s representative for locations where drawings require manufacturer’s representative to inspect and certify compatibility of manufacturer’s product with substrate.

5. Manufacturer's Field Reports

 Manufacturer’s representative of single-source cement-based self-leveling underlayment shall submit field reports of surface preparation inspection and underlayment placement.

 6. Qualifications

 Provide proof of Manufacturer and Installer qualifications and experience specified under “Quality Assurance”.

 7. Installer’s Field Schedules

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a. Appendix A Schedule completed, dated and signed by individual certified Installer-Applicator.

b. Appendix B Schedule completed, dated and signed by individual certified Installer-Applicator.

D. Guarantee

Installer's installation guarantee and manufacturer’s material warranty.

E. Mock-up

Provide mock-up of SLU installation.

**1.05 QUALITY ASSURANCE**

A. Qualifications

1. Installer/Applicator: An experienced installer/ applicator, trained by the manufacturer to install their system, who has completed cement-based underlayment applications similar in material and extent to that required for this Project, and whose work has resulted in construction with a record of successful continuous in-service performance for a minimum of three (3) years.

2. Manufacturer: A minimum of four (4) years successful continuous experience in the manufacturer of hydraulic cement-based self-leveling underlayments capable of being applied over the varied substrates of existing buildings.

B. Mockups

1. Before installing self-levelingunderlayment, apply mockups to demonstrate quantities of materials and execution. Comply with the following requirements, using materials indicated for the completed Work.

 a. Architect will select one area or surface to represent surfaces and conditions for application on each substrate required.

1) Mock-up of installed underlayment shall be no less than 3’-0” X 3’-0” and preferably shall be 6’-0” X 6’-0”.

2) Mock-up of installed underlayment shall be prepared *in-situ* and shall be retained in-situ as example of quality of installation as well as underlayment mix.

 3) Mock-up of installed underlayment will be inspected no less than 7 days old.

 b. Notify Authority seven days (7) in advance of dates and times when mockups will be applied.

 c. Obtain Authority's approval of mockups before starting underlayment application.

 d. Maintain mockups, during underlayment application and until installation of finish flooring, in an undisturbed condition as a standard for judging the complete work.

 e. Approved mockups may become part of the completed work if undisturbed when finish flooring is installed.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage, mixing with other components, and application. Do not break open manufacturer’s factory seals of any component packaging until installation.

B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental conditions.

C. Keep all self-leveling underlayment components on a clean dry pallet raised up from the floor the pallet is sitting on in a temperature-controlled and humidity-controlled, secured and locked room until actual incorporation into the Work of this Section.

**1.07 ENVIRONMENTAL REQUIREMENTS**

1. Do not install self-leveling underlayment until floor penetrations and peripheral work is completed. Where placed on new concrete, concrete slab shall have cured a minimum of 28 days for normal weight concrete and 56 days for lightweight concrete and is dependant on results of moisture testing for both SLU and finish flooring. Testing shall be done under the conditions described in B below.

B. Maintain ambient conditions to which the floor will be maintained under in-situ conditions. Buildings that are or will be air conditioned shall have conditions maintained at a temperature of 78oF together with 50% relative humidity for seventy-two (72) hours continuously prior to installation of underlayment and for the same period after in the space below as well as the space in which the material is being placed. Provide temporary equipment to provide such conditions. Do not utilize forced cooling or heating that produces rapid air movement, which will result in premature wicking of moisture affecting setting and surface of the SLU setting for the first 24 hours after placement. Do not install in temperatures below 50oF or over 90oF. Comply with manufacturer's written recommendations for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting self-leveling underlayment material’s performance.

C. Close areas to traffic during underlayment application and for a minimum twenty-four (24) hour period after installation-application (longer if needed due to actual installation conditions or material type as recommended in writing by manufacturer).

**1.08 COORDINATION**

A. Coordinate cement-based underlayment with requirements of finish flooring products, including adhesives, specified in Division 9 Sections.

1. Before installing surface sealers recommended by underlayment manufacturer, if any, verify compatibility with finish installation adhesives.

2. For existing construction, coordinate use of ACM materials encapsulant used under requirements of section 02081 with SLU manufacturer’s requirements for substrate preparation and use of primer/bonding agent.

**1.09** **GUARANTEE**

A. Provide Manufacturer’s five-year warranty covering defects in materials.

 B. Provide Contractor’s two-year guarantee covering materials and workmanship that self-leveling material will not fail or cause failure of finish material.

 C. For surfaces receiving moisture mitigation membrane, manufacturer’s ten-year material and labor warranty against failure of those materials placed on the material due to the affects of moisture migration or bond.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

A. Self-leveling underlayment and repair material

1. Ardex Inc.

400 Ardex Park Dr, Aliquippa, Pennsylvania 15001

2. Dayton Superior Chemical Division

4226 Kansas Avenue, Kansas City, KS 66108.

3. Silpro LLC

2 New England Way, Ayer, MA 01432

4. Dramatic Surface Products/ H.B. Fuller Company

1200 Willow Lake Boulevard, St. Paul, MN 55164

 5. CMP Specialty Products, Inc

601 South 10th Street, Allentown, PA 18103

 B. Moisture Mitigation Membrane

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 1. Koester American Corp.

2585 Aviator Drive, Virginia Beach, VA 23453

 2. Sinak

1949 W. Walnut Ave, San Diego, CA 92101

 3. Ardex

 400 Ardex Park Dr, Aliquippa, Pennsylvania 15001

 4. CMP

 1200 Willow Lake Boulevard, St. Paul, MN 55164

 C. Material Coordination

Contractor shall provide systems and materials compatible with and acceptable to the SLU manufacturer. Where moisture mitigation membrane is placed, the Contractor shall test the installation of the SLU on the moisture mitigation membrane with the moisture mitigation membrane manufacturer to ensure proper bond is achieved and ensure the warranty against failure will be received.

**2.02 MATERIALS**

A. General: All self-leveling underlayments are to be hydraulic cement based capable of being installed in spaces subject to moisture without degradation underwet conditions and able to receive floor covering in 16 hours under climate controlled conditions (“self-drying”). The products listed have been tested by the Authority’s testing laboratory consultant by laboratory mock-ups and ASTM testing or through successful field testing. No other products will be accepted without going through the testing procedure, which is to be at the manufacturer’s cost. Use of materials specified is also dependant on manufacturer’s requirements, in which they may not permit the installation on certain substrates due to their material properties. Moisture mitigation membranes, installed prior to application of the SLU, must be acceptable to the SLU manufacturer.

B. Material/Performance Testing to be performed for product not listed – Authority will compare the following against accepted materials

 1. Sulfate testing per ASTM C114

2. Compression strength test as per ASTM C109- For both specified amount of water and with additional 1 quart listing testing at 7 days and 28 days.

3. Shrinkage testing per ASTM C596 - For both specified amount of water and with additional 1 quart listing testing at 7 days, 14 days, 21 days, and 28 days.

4. Bond tensile pull in accordance with ASTM C1583.

5. Mixing and placement - For both specified amount of water and with additional 1 quart – Petrographic analysis in accordance with ASTM C1324

 a. Material Segregation during mixing

b. Material segregation after placement and hardening. Sections taken shall clearly show the bond line and the aggregate within matrix.

6. In-situ testing - For both specified amount of water and with additional 1 quart:

 Placement on a 4x4 slab of lightweight structural concrete, with photographs. If deemed appropriate by the Authority, photographic evidence from other projects may be acceptable.

B. Self-Leveling Underlayment for placement on Hard Concrete Surface (Minimum ƒ’c = 4,000 psi)

 1. Primers:

a. Ardex Primer P-51

b. Dayton Superior J-42 Primer

c. Silpro C-21, Silflo Primer

d. Dramatic Surface DSP 500 Primer

 Products

e. CMP AS-100 Primer

 2. Flash Patch:

a. Ardex SD-F Feather Finish

b. Dayton Superior Sure Finish

c. Silpro Skim Pro

d. Dramatic Surface DSP 502 Skim Coat

 Products

e. CMP Ultra Finish

3. Self-Leveling Underlayment (depending on Build up Thickness):

a. Ardex K-15

b. Dayton Superior Levelayer I & II

 c. Silpro Silflo 230

d. Dramatic Surface DSP 520

Products

 e. CMP Level Finish

C. Strengthening Underlayment for placement on Soft Cementitious Material – Installation of strengthening membrane to reinforce substrate

1. Strengthening Membrane (normal setting):

a. Dayton Superior Conspec Special Patch/ Special Bond Acrylic with fiberglass mesh

b. Silpro Masco/C-21 with fiberglass

mesh

c. Dramatic Surface DSP 504/DSP 501 with

 Products fiberglass mesh

 2. Strengthening Membrane (fast setting):

a. Dayton Superior Conspec Special Patch/ Special Bond Acrylic with fiberglass mesh

b. Silpro Fasco/C-21 with fiberglass

mesh

c. Dramatic Surface DSP 506/DSP 501 with

Products fiberglass mesh

 d. CMP SR-P/Polybond with

fiberglass mesh

D. Aggregates:

 1. Provide aggregates when recommended in writing by underlayment manufacturer for underlayment thickness required.

 2. Mixed with self-leveling material: Well-graded, washed 1/8” to 1/4" stone or coarse sand as recommended by underlayment manufacturer.

 3. Preplaced Stone: 3/8” or 3/4" clean, crushed, washed stone of a single gradation as recommended by manufacturer.

E. Water: Shall be clean New York City (potable) water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94 at a temperature of not less than 50˚F nor more than 70˚F.

F. Reinforcement: For underlayment applied to wood substrates, in stair tread and platform pans provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.

G. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

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H. Moisture Mitigation Membrane: Material that when placed will prevent moisture and alkalydes from affecting adhesives and materials and shall be placed at a rate to mitigate up to 25 pounds per 1,000 square feet in 24 hours.

 1. Sinak HLQ- V-Poxy -Relay system

2. Koester Vap 2000

3. ARDEX MC Rapid or ARDEX MC Plus

4. CMP V-20 Plus or V-25

I. Moisture Test Kits:

1. Vinyl Plastics, Inc. Sheboygan, WI 53082

2. Sealflex Industries Costa Mesa, CA

3. Floor Seal Technology, Inc. San Jose, CA 95112

4. Wagner RH

5. Tramex RH

**2.03 PRE-INSTALLATION MEETING**

1. Conduct a pre-installation meeting with the manufacturer’s representative to review the methods and procedures, including surface preparation, for a satisfactory self-leveling underlayment installation.

B. Meeting shall occur with sufficient time to have submittal, procedures, and test panels completed prior to work progressing.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

A. Examine substrates, with Installer present for conditions affecting performance of underlayment including substrate moisture content. Begin underlayment application only after unsatisfactory conditions have been corrected and substrate condition inspected and approved by the manufacturer’s representative and by Architect/Engineer. SLU installer shall not proceed until above required environmental conditions can be verified and recorded on provided Schedules for a minimum of seventy-two (72) hours prior to SLU application in respective space.

B. Perform moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry by the two following test methods. The values indicated shall be verified with the manufacturer of the actual floor finish material:

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1. Tests in accordance with ASTM F1869**:** Moisture vapor transmission shall not exceed 3 pounds per 1,000 square feet in 24 hours.

2. Tests in accordance with ASTM F2170**:** Relative Humidity shall not exceed 75%.

**3.02 PROTECTION**

 A. Protect substrate and materials from freezing before and after installation.

 B. Protect adjacent finish materials and previously poured concrete slabs and SLU against spatter during SLU placement.

**3.03 REMOVAL/DEMOLITION**

A. The pattern and extent of the demolition and removal of the deteriorated materials shall be per engineer’s recommendations. The following shall be followed:

1. Overcut: The removal of the deteriorated material shall extend laterally at least 6” into sound material. A pattern outlines the extent of removal shall be established so when removal is complete, there will be no loose material left. The new substrate will be built on and around sound materials.

2. Undercut: When metal, rebar or reinforcing mesh are encountered, at least ¾” of the substrate material under the reinforcing shall be removed to allow proper bond between the reinforcing bars and the new material.

3. Cutback: Residual mastic on old surface shall be removed.

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**3.04 SURFACE PREPARATION**

A. General: The surface of the existing substrate where the new self-leveling underlayment is to be applied shall be thoroughly shot-blasted and cleaned to an ICRI CSP3-5 minimum surface preparation, or greater if required by SLU manufacturer. Machine grinders with HEPA attachments such as the Hilti DG150 are acceptable for those substrates that are subject to asbestos abatement or where shot blasting equipment use is not feasible, such as cinder fill concrete, and will be able to produce the profile required by the SLU manufacturer. Use of a scarifier or scabbler is prohibited. The surfaces that are to receive new substrate material shall be free of laitance, asphalt, old paint, mastic, etc. that may inhibit bond between the old and the new material. Chemical treatment of the substrate (acid etching, citrus cleaner) is prohibited. After shot blasting/grinding the surface, notify the engineer for inspection.

1. Prepare and clean substrate according to manufacturer's written instructions for substrate indicated. Provide clean, dry, neutral-pH substrate for underlayment application.

2. Treat nonmoving substrate cracks to prevent cracks from telegraphing (reflecting) through underlayment. Rout any cracks and fill the cracks with the epoxy, scraping smooth and level with the substrate while broadcasting sand to allow for bonding of the SLU. After set, remove all loose sand.

a. Sikadur 52 epoxy by Sika

b. Sure-inject J-56 by Dayton Superior

c. Ardex ArdiSeal 2C Semi-Rigid Epoxy

d. CM-10 by CMP Specialty Products, Inc.

3. Fill substrate voids, holes and patch the low spots with the following products to prevent underlayment from leaking:

a. Sika top 122 plus patching grout by Sika

b. Ardex SD-P by Ardex

c. HD-50 or Conspec Special Patch/Special Bond Acrylic by Dayton Superior

d. Fastcrete, Mascrete, or Patchco by Silpro

e. DSP 506 by Dramatic Surface Products

f. CMP SR-P by CMP

B. New Concrete Substrates: Mechanically remove laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond according to manufacturer's written instructions.

C. Wood Substrates: Mechanically fasten loose boards and panels to eliminate substrate movement and squeaks. Sand to remove coatings that might impair underlayment bond and remove sanding dust.

1. Install underlayment reinforcement recommended in writing by manufacturer.

D. Metal stair pan Substrates: Mechanically remove rust, foreign matter, and other contaminants that might impair underlayment bond according to manufacturer's written instructions. Apply corrosion resistant coating compatible with underlayment if recommended in writing by underlayment manufacturer.

E. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond according to manufacturer's written instructions.

F. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

**3.05 APPLICATION**

A. General: Mix and apply underlayment components according to manufacturer's written instructions.

 1. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.

 2. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

 B. Mixing and installation of moisture mitigation membrane. Choice of material must be based on compatability to self-leveling material selected to provide the proper bond.

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 1. Mix material in accordance with manufacturer’s instructions.

 2. Provide mix and applications to provide resistance up to 25 pounds per 1,000 square feet in 24 hours, including application of materials to provide bond to the SLU.

 C. Mixing of SLU

 1. Provide water of exact quantity as required by manufacturer.

 2. Provide mechanical mixer for mixing SLU material with water at project site. Equip mixer with a suitable water-measuring device.

 3. Use only mixers that are capable of mixing the dry SLU mix and water (and aggregate where required) into a uniform self-leveling mix.

D. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

E. Installation

1. Apply self-leveling underlayment, in accordance with the manufacturer’s instructions, to a minimum thickness of 1/8" over high points. Utilize a gage rake to provide a uniform average thicknes and finish with a smoother to provide a level, smooth plane finish, free of score marks, grooves, depressions and ripples. Finish tolerance shall be as required for finish flooring:

a. Wood floors: Finish tolerance no greater than +1/8" in ten feet.

b. Carpeting: Finish tolerance no greater than +1/4" in ten feet.

c. All Other finishes (tile, poured floors, etc): Finish tolerance no greater than +3/16" in ten feet.

 2. Where joints are required, construct to match and coincide with joints in base slab. Provide other joints as shown.

 3. Where depth of material will be over 3/4” deep(or less depending on manufacturer’s printed literature for that product), place in two lifts by providing aggregate in the mix to extend the material of the first lift, followed by a finish pour of 1/4" without aggregate. The proportion of aggregate to SLU shall be as recommended by the manufacturer in writing. If acceptable and recommended in writing by the manufacturer, place uniform stone loose (after priming of substrate) and place self-leveling on stone. As an alternative, place non-extended mix in 3/4” maximum lifts (or less depending on manufacturer’s recommendations for that product). Allow time between lifts as recommended by manufacturer to allow for curing and shrinkage. Prepare surface of each lift as recommended by manufacturer.

4. Provide for transition between adjacent area not scheduled to receive underlayment.

**3.06 PROTECTION**

A**.** Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes. Protect all freshly deposited underlayment from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the underlayment.

B. Protect underlayment against damage by covering with suitable protective materials such as kraft building paper, plywood, masonite or similar or in accordance with manufacturer’s recommendations until installation of finish material.

C. Protect underlayment from concentrated and rolling loads for remainder of construction period.

D. Do not walk on or install finish flooring over underlayment for a minimum of 24 hours after placement, or longer if required by the SLU manufacturer due to material type or environmental conditions.

**3.07 FIELD QUALITY CONTROL**

A. Field Samples

Periodically throughout placement as recommended by manufacturer, conduct “Patty” or “Flow Ring” test to confirm proper water/cement ratio. If requested, cast three brass-molded cubes in the presence of manufacturer’s representative for compressive strength documentation.

 B. Inspection

 Notify the Authority of the beginning of each phase of work so the Engineer or Architect-of-Record and other Authority Representatives can make inspections. Do not proceed with installation of materials until substrates have been prepared and approved by the Engineer/Architect-of-Record and the manufacturer’s representative. The Authority may also elect to engage a licensed laboratory to take samples of the material and witness the mixing.

 D. Manufacturer's Field Service

 Obtain services of self-leveling underlayment manufacturer's representative to inspect and supervise substrate preparation and placement of the material. The manufacturer’s representative is to inspect the substrate to ensure their material is appropriate for the application, that jobsite environmental conditions for placement are met, and to ensure the substrate preparation is adequate and shall provide a written report of such inspection.

**3.08 ACCEPTANCE OF SELF-LEVELING UNDERLAYMENT WORK**

 A. General

 1. Completed underlayment work that meets all applicable requirements will be accepted without qualification.

 2. Completed underlayment work that fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.

 3. Failure of self-leveling underlayment to bond to substrate (as indicated by a hollow sound when tapped), or disintegration or other failure of underlayment to perform in accordance with product data, will be considered failure of materials and workmanship. Repair or replace underlayments in areas of such failures. Underlayment work judged inadequate or deemed unacceptable due to appearance shall be replaced if so directed by the Engineer at the Contractor's expense.

 4. Pay all costs incurred by the Authority in providing additional testing and/or analysis required by this Section.

 5. The Authority will pay all costs of additional testing and analysis made at its own request that is not required by this Section or which shows concrete is in compliance with the Contract Documents.

 B. Dimensional Tolerances

Finished underlayment exceeding the tolerances may be repaired provided that strength, durability, or appearance is not adversely affected. High spots may be removed with a terrazzo grinder, low spots filled with a cement-based patching compound, or other remedial measures performed as permitted and as acceptable to the self-leveling underlayment manufacturer.

**END OF SECTION**

Notes to Specification Writer (Delete from specification)

1. In new building construction, SLU will typically be required for spaces with tight tolerances such as wood floor installations and thus should be included in all projects and indicate the locations. Use of material on existing substrates is to be used based on engineering analysis, typically with cores. Specification is to be edited for the substrate conditions. There are various applications listed for various substrates, but these must be tailored to the project. While installation on several types of existing substrates are indicated in Article 3.03, placement on wood and other floor finish material is not generally recommended.

2. For installation of SLU on new slabs only, such as in new construction, delete references to existing substrates throughout the specs. For installation in existing building on existing substrates only, remove references to new concrete.

3. For existing buildings, provide for a moisture mitigation membrane to be placed prior to installation of the SLU on existing slabs on grade, new slabs/toppings, and other conditions where moisture reading will likely be above that required, such as spaces over boiler rooms and other rooms producing moisture, and those with sensitive floor finishes such as wood, athletic, and resinous flooring. In new buildings, slabs should be installed in sufficient advance of requiring the material and can be limited to areas above moisture producing equipment. Indicate in specification which locations are to receive the material.

4. Moisture vapor in slabs is a complicated subject. For new constructions, slabs must be tested under the conditions they will be subject too and thus must be conditioned to what they will be subject to in service. In framed slabs of existing buildings that have not been subject to moisture intrusion, testing will likely result in false readings and conditioning the spaces will be extreme in cost and is not warranted. Appendix A and B will typically apply for new construction.

5. If amount of material to be placed is limited and not likely subject to a great deal of variation in substrate types, shop drawing requirement may be deleted.

**LIST OF SUBMITTALS**

**SUBMITTAL DATE SUBMITTED DATE APPROVED**

Product Data: \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Self-leveling underlayment

2. Repair mortar

3. Primer

4. Epoxy

5. Moisture Mitigation Membrane

Shop Drawings: \_\_\_\_\_\_\_\_\_\_\_\_\_

Test Reports: \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Product Properties

2. Moisture Tests

Certificates: \_\_\_\_\_\_\_\_\_\_\_\_\_

Manufacturer’s Instructions: \_\_\_\_\_\_\_\_\_\_\_\_\_

Written Repair Procedure: \_\_\_\_\_\_\_\_\_\_\_\_\_

Manufacturer’s Field Reports: \_\_\_\_\_\_\_\_\_\_\_\_\_

Qualifications: \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Installer

2. Manufacturer

Appendix A Schedule: \_\_\_\_\_\_\_\_\_\_\_\_\_

Appendix B Schedule: \_\_\_\_\_\_\_\_\_\_\_\_\_

Guarantee: \_\_\_\_\_\_\_\_\_\_\_\_\_

Mock-up: \_\_\_\_\_\_\_\_\_\_\_\_\_

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**APPENDIX A SCHEDULE**

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| --- | --- | --- | --- | --- |
| **Beginning Time/ Ambient Air Temperature**  | **Ending Time/Ambient Air Relative Humidity**  | **Physical Conditions of Application:** **Were the Windows in the outside wall? Y/N** | **HVAC Pre-Conditioning****Was the HVAC on continuously for a minimum of 72 hours prior to your Application?**  | **How old is the cast concrete upon which you are applying the SLU Material Slurry?****At least 28/56 Days, or longer:**  |
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**Signed by Individual Installer-Applicator:**

**Date Signed**

 **APPENDIX B SCHEDULE**

**Project Number: Project Name: Project Location:**

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| --- | --- | --- | --- |
| **Individual Floor/Location**  | **Day/date** **Test Taken**  | **Individual Floor/Location**  | **Day/Date** **Test Taken**  |
| **Moisture Test per ASTM F1869 To Be Taken Prior to SLU Installation**  |  | **Temperature Test on** **by In-field SLU Installer** **at time of SLU application** |  |
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**Signed by Individual Installer-Applicator:**

**Date of Signature:**