

BuildingName  
The Description of the Project  
P00000000 0000

**SPECIFICATION DIVISION 3**

NUMBER            SECTION DESCRIPTION

**DIVISION 03 CONCRETE**

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

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**DIVISION 03 CONCRETE**  
**SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, Standard General and Supplementary General Conditions, Division 01 Specification Sections, and other applicable Specification Sections apply to this Section.

**1.2 SUMMARY**

- A. Section includes the following underlayments for application below interior floor coverings:
  - 1. Poured, self-leveling underlayment.
  - 2. Trowel-on underlayment for sloped applications.
- B. Where uneven floor levels or holes occur, fill, patch, and provide underlayment as required to level surface to indicated standard prior to installation of finished floor material.

***REQUIREMENT BELOW IS INTENDED TO LIMIT CLAIMS FOR EXTRAS.***

- 1. Required for the following percentage of the gross floor area of the Project:

***MODIFY PERCENTAGES BELOW BASED ON YOUR JUDGMENT.***

- a. Approximately 20 percent.
- b. Approximately 50 percent.
- c. Approximately 75 percent.
- d. Full area.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.

***INCLUDE BELOW FOR LEED PROJECTS***

- B. LEED Submittals:

***"PRODUCT DATA FOR CREDIT IEQ 4.2" SUBPARAGRAPH BELOW APPLIES TO LEED-NC, LEED-CI, AND LEED-CS; COORDINATE WITH REQUIREMENTS SELECTED IN PART 2 FOR PAINTS AND COATINGS.***

- 1. Product Data for Credit IEQ 4.2: For priming and sealing coatings, documentation including printed statement of VOC content.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: Signed by manufacturers of underlayment and floor-covering systems certifying that products are compatible.

**1.5 QUALITY ASSURANCE**

- A. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

**1.7 PROJECT CONDITIONS**

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
  - 1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F.

**1.8 COORDINATION**

- A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.

**PART 2 - PRODUCTS**

**2.1 SELF-LEVELING UNDERLAYMENTS**

- A. Underlayment: Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied at a minimum thickness of 1/4 inch up to 1-1/2 inch over large areas neat, and up to 4 inches with the addition of proper aggregate and can be featheredged to match existing floor elevations.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Ardex Engineered Cements; Ardex K-15.
    - b. Dayton Superior; LeveLayer.
    - c. Euclid Chemical Company; Super Flo-Top.
    - d. Maxxon Corporation; Level-Right.
  - 2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
  - 3. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C 109.
- B. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Ardex Engineered Cements; Ardex P 51 Primer, Ardex P 82 Ultra Prime.
    - b. Dayton Superior; J42, J42RTU.

- c. Euclid Chemical Company; Tammsweld.
  - d. Maxxon Corporation; Maxxon Floor Primer.
2. Primer shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D.

**2.2 SLOPED-FLOOR TROWELABLE UNDERLAYMENTS**

- A. Sloped-Floor Underlayment: Trowelable, cement-based, polymer-modified, repair mortar that can be applied in minimum uniform thickness of 1/2 inch.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Ardex Engineered Cements; Ardex TRM.
    - b. Dayton Superior; Polyfast FS.
    - c. Euclid Chemical Company; Concrete-Top Supreme.
  - 2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
  - 3. Compressive Strength: Not less than 9000 psi at 28 days when tested according to ASTM C 109.
- B. Primer: Product of sloped-floor underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Ardex Engineered Cements; Ardex BACA, Ardex P 71.
    - b. Euclid Chemical Company; Duralprep AC.
    - c. Saturated Surface Dry (SSD) existing concrete surface with a scrub coat of sloped-floor underlayment.
  - 2. Primer shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D.

**2.3 MISCELLANEOUS MATERIALS**

- A. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch; or coarse sand as recommended by underlayment manufacturer.
  - 1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.
- B. Water: Potable and at a temperature of not more than 70 deg F.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine substrates, with Installer present, for conditions affecting performance.
  - 1. Proceed with application only after unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent self-leveling underlayment from leaking.

**DELETE SUBSTRATE MATERIALS THAT DO NOT APPLY TO PROJECT.**

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

**INCLUDE BELOW FOR NEW SLABS.**

1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
- 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 Substrates: Mechanically remove, according to manufacturer's written instructions, rust, foreign matter, and other contaminants that might impair underlayment bond. 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, and prepare surfaces according to manufacturer's written instructions.
- F. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

**3.3 APPLICATION**

- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
  2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
  3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
1. For Sloped-Floor Underlayments, provide either a Saturated Surface Dry (SSD) concrete face or primer as recommended in writing by the Sloped-Floor Underlayment Manufacturer.

- C. Apply underlayment to produce uniform, level surface.
  - 1. Apply a final layer without aggregate to product surface.
  - 2. Feather edges to match adjacent floor elevations.
- D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.
- E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

**3.4 PROTECTION**

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

**3.5 CONCRETE WASHOUT**

- A. Perform washout using proper disposal and washout practices. Perform washing of concrete trucks in designated areas or off site. Do not discharge concrete washout into storm drains, catch basins or to the sanitary sewer system.

**END OF SECTION 035416**