



CEMENTITIOUS SELF LEVELING TOPPING

PART I GENERAL

1.1 SUMMARY

- A. This is the recommended specification for self leveling concrete over radiant floor heating.
- B. Cementitious toppings for traffic bearing surface with applied surface treatment as scheduled.
- C. Integral coloring with oxide pigments
- D. Clear top coats / sealers

1.2 RELATED SECTIONS

- A. Section 03 35 00 – CONCRETE TOPPING
- B. Section 03 01 30.61 – RESURFACING OF CAST-PLACE-CONCRETE
- C. Section 03 01 50.61 – RESURFACING OF CAST DECKS AND UNDERLAYMENT
- D. Section 03 01 50.71 - REHABILITATION OF CAST DECKS AND UNDERLAYMENT
- E. Section 09660 – High Performance coatings

[NOTE TO SPECIFIER: Delete unnecessary section)

1.3 REFERENCES

- A. ACI 201.1R Guide for Making a Conditions Survey of Concrete in Service.
- B. ACI 224.1 R93 Causes and repair of Cracks in Concrete Structure.
- C. ASTM C78 – Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
- D. ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch Cube Specimens).
- E. ASTM C190 – Method of Test for Tensile Strength of Hydraulic Cement Mortars.
- F. ASTM C580 – Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes
- G. ICRI 03372 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - i. Preparation instructions and recommendations.
 - ii. Storage and handling requirements and recommendations.
 - iii. Manufacturer's printed installation instructions for each product.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm specializing in manufacture of cementitious underlayments and toppings, resinous flooring and coloring systems for concrete and resins.
- B. Installer Qualifications: Firm specializing in installation of cementitious underlayments and decorative concrete and resinous flooring, with minimum 5 years documented experience with projects of similar scope, design and materials.
- C. Mock-up: Provide a mock-up of each type of installation for approval of quality of workmanship.

- D. Pre-Installation Meeting: At least three weeks prior to commencing underlayments and toppings work conduct a meeting at the project site to discuss contract requirements and job conditions; require the attendance of installers, representative of installation manufacturer, and installers of related materials; notify Architect in advance of meeting.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.
- B. Store materials subjects to manager by freezing or overheating.
- C. Deliver and store materials n site at least 24hours before work begins.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation o comply with referenced standards and manufacturer’s printed recommendations.
- B. Proceed with underlayments and toppings work after surface defects have been repaired and projections through substrate have been completed.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Acceptable Manufacturer & Distributor: Düraamen Engineered Products Inc. with its corporate office located at 457 Frelinghuysen Avenue, Newark, NJ 07114. Tel: 973.230.1301 | F: 973.241.7830 | Email: info@duraamen.com website: www.duraamen.com
- B. Substitutions: Not permitted
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Obtain products from a single supplier.

2.2 SELF LEVELING CONCRETE, MICRO-TOPPING, COLORANT AND CLEAR PROTECTIVE COATS

- A. SELF LEVELING CONCRETE PRODUCT: *Päram 6000* – Portland cement based self leveling concrete for topping and resurfacing manufactured by Düraamen Engineered Products Inc. that can accept traffic in 3-4 hours and can be sealed in 12-14 hours.
 - i. Application: Feather edge to 1.5inch. For placements greater than 2.0inch first apply a coat of pre-blended *Päram 6000* with 20lb (9kg) of 3/8inch clean, dry coarse aggregate to each 50lb (22.7kg) bag of *Päram 6000* and then apply a neat coat of 0.25inch thick *Päram 6000*.
 - ii. Working Time at 70°F: 20 minutes
 - iii. Set Time – ASTM C 191 at 70°F: Initial Set – 1 to 1.5hr / Final Set: 2 to 3hr
 - iv. Compressive Strength (ASTM C109):
 - 4hr – 1500psi
 - 24hr – 3500psi
 - 7 days - 5000psi
 - 28 days – 6100psi
 - v. Flexural Strength (ASTM C348): 28 days – 1280psi
 - vi. Tensile Strength (ASTM C190): 570psi
 - vii. Installed weight (per sq. ft.): 2.30lb @ 1/4”
 - viii. Modulus of Elasticity (ASTM C 469): 28 days – 1.8×10^{-6}
- B. COLORING SYSTEMS – Choose from any one of the following (TBD by the Architect / Property Manager)
 - i. Loft Series / Colorfast – Integral colorants
 - ii. DESO Dyes (water/acetone based dyes)
 - iii. Pellucid Dyes (acetone based dyes – UV resistant)
 - iv. Patinaetch – Chemical reactive stains (acid stains)

- C. PROTECTIVE TOP COATS: Manufactured by Düraamen Engineered Products Inc.
 - i. Primer - Perdüre E32 – Water based epoxy primer
 - ii. Top coat – Perdüre U50 (HS) – 90% solids – moisture cured polyurethane, available in gloss/satin finishes

2.3 ACCESSORIES

- A. Primer – Päräm Super Primer and Cp1000
- B. Moisture vapor control – Perdüre MVT/Perdüre MVT+
- C. Crack repair – Perdüre ECF
- D. Joint filler – Perdüre EJJ

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive underlayments and toppings and conditions under which they will be installed.
- B. Installation shall not begin until the building is enclosed, including roof, windows, doors and any other apertures.
- C. Wood substrate shall be structurally sound, preferably fastened, and dry. Contractor shall clean subfloor to remove mud, oil, grease, and other contaminating factors before arrival of the authorized applicator.
- D. Wood substrate: The wood subfloor must be adequate to withstand live and dead loads with a deflection limitation of L/360.

3.2 PREPARATION

- A. Concrete Substrates:
 - i. Clean area and remove unsound concrete grease, oil, paint and any other foreign materials that will inhibit performance.
 - ii. Substrate shall be stable, solid and structurally sound.
 - iii. Moisture Testing: Perform anhydrous calcium chloride test ASTM F 1869-98.
 - a. Perform three tests for the first 1,000ft² and then one test per 1000ft² after that.
 - b. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 3lb/1000ft²/24hr.
 - c. If the vapor drive exceeds 3lb/1000ft²/24hr then the Owner and/or Engineer shall be notified and advised of an additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
 - iv. Repair deep area, holes and non-moving cracks with Perdüre ECF.
- B. Non-Porous Substrates:
 - i. Ceramic tile, terrazzo, quarry tile and stone shall be solid, well bonded, clean and free of bond breaking contaminates such as glazes, wax, oil and sealers.
 - ii. Surfaces shall be mechanically abraded until a 'profile' (CSP 3 or 4) is obtained for maximum bonding strength. Wet mop the floor removing all debris, dust and loose material prior to installing the primer.
- C. Wood Substrate:
 - i. The wood subfloor must be adequate to withstand live and dead loads with a deflection limitation of L/360.
 - ii. Fill cracks and voids in subfloor where leakage of slurry could occur.

3.3 INSTALLATION

- A. Priming:
 - i. Two or more application of primer may be required on porous substrates.
 - ii. Test: If the primer turns clear in approximately 30 minutes, then additional coats are needed.
 - iii. Allow the first coat to dry before applying additional coats.

- iv. Allow the primer to dry to a non-tacky film, approximately 3 to 4 hours depending on temperature and humidity before applying Päräm 6000.
 - v. Primed floor shall be covered with Päräm 6000 within 24 hours, or primer shall be reapplied.
 - vi. Protect primed substrate from foot traffic.
 - vii. Install a bond breaker where vertical surfaces meet the new topping.
- B. Mix proportions and methods shall be in strict accordance with product manufacturer recommendations.
- C. Self leveling concrete installation:
- i. Temperature shall be a minimum of 50⁰F and shall not exceed 80⁰F.
 - ii. Close all windows and doors to minimize air flow.
 - iii. Divide the areas to permit continuous placement without cold joints.
 - iv. To prevent ridges between batches, use a smoother tool and work a narrow dimension.
 - v. The minimum thickness of Päräm 6000 over radiant heat systems is ¾”.
 - vi. Päräm 6000 shall be mixed in 2-bag batches at one time. Mix each bag of the powder with the specified amount of water. Mix thoroughly for 2-3 minutes to obtain a lump-free mixture.
 - vii. Aggregate Mix: For pre-leveling and areas to be installed over 1.5” thick. Aggregate may be added to reduce material costs. The addition of aggregate will diminish the workable of the product and may make it necessary to install a finish layer. Allow the first layer to dry for 12-16 hours.
 - viii. Protect the poured Päräm 6000 from excessive heat or draft conditions during the curing process. Turn off all forced ventilation and radiant heating systems. The floor can be walked on in 3-4 hours. However, if the surface is colored using a dyes or stains or any other cementitious micro-topping (Sgraffino / Pentimento) or covered with epoxy or polyurethane resin coatings or simply sealed with acrylic, epoxy and polyurethane sealers, it is recommend to wait 24 hours.
 - ix. Apply Pellucid / DESO Dyes / Patianetch – as per site mock-ups or samples.
 - x. Install in accordance with manufacturer’s instructions.
- D. Sealing:
- i. The sealing process should not begin before 24 hours after completion of the pour. There must be NO foot traffic on the poured floor prior to installation of the sealer.
 - ii. As per manufacturers’ instructions, apply 1 coat of Perdüre E32 – water based epoxy primer and allow it to dry for at least 6 hours before applying the Polyurethane top coat.
 - iii. Apply one coat of Perdüre U50 (HS) as per manufacturer’s instructions.
 - iv. Surface and air temperature, humidity and air-movement conditions must be as specified in manufacturer’s technical data sheets.

3.4 CURING & PROTECTION

- A. Allow the floor system to cure in compliance with manufacturer’s directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
- B. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.
- C. Protect finished work until fully cured in accordance with manufacturer’s recommendations

END OF SECTION