



By CTS Cement Manufacturing Corp.

**CSI SECTION 03 35 00 – POLISHED CONCRETE FINISHING**  
**03 53 00 – POLISHED CONCRETE FLOOR TOPPINGS**

*Fast-Setting, High Strength, Cementitious, Non-Shrink, Polishable Architectural Topping & Resurfacer*

*EDITOR NOTE: The following guideline specification has been prepared to assist architects and design professionals in the preparation of project master specifications. It is intended for use by qualified design professionals and is not intended to be used verbatim. Appropriate modifications to meet specific project requirements are required. Make appropriate [selections] where options are provided and delete items that are not applicable to the project. Contact CTS Cement Technical Service for additional information or project specification assistance.*

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Supply and installation of a fast-setting, high strength, cementitious, non-shrink, polishable architectural topping & resurfacer for interior and exterior flooring installations.

**1.2 RELATED SECTIONS**

- [A. Section 03 01 00 - Maintenance of Concrete
- [B. Section 03 01 40 - Maintenance of Precast Concrete
- [C. Section 03 30 00 - Cast-in-Place Concrete
- [D. Section 03 40 00 - Precast Concrete
- [E. Section 07 91 29 - Joint Fillers
- [F. Section 09 61 00 - Flooring Treatments

**1.3 REFERENCES**

- A. ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
- B. ASTM C 309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
- C. ASTM C348 Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars
- D. ASTM C 779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces
- E. ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method
- F. ASTM C 1315 Liquid Membrane-Forming Compounds Having Special Properties of Curing and Sealing Concrete
- G. ASTM E430 Standard Test Method for Measurement of Gloss of High-Gloss Surfaces by Abridged Goniophotometry
- H. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- I. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- J. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- K. ACI 302.1R-04 Guide for Concrete Floor and Slab Construction



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#### 1.4 SUBMITTALS

- A. General: Submit samples and manufacturer's product data sheets, installation instructions, maintenance procedures, project references, etc. in accordance with Division 01 General Requirements Submittal Section.
- B. Test Data: Submit qualified testing data that confirms compliance with specified performance requirements.
- C. Maintenance Data: For inclusion in maintenance manual required by Division 01.
  - a. Include manufacturer's instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under intended use.
  - b. Include precautions against cleaning products and methods which may be detrimental to finishes and performance.

#### 1.5 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer:
    - a. Must have marketed fast-setting, high strength, cementitious, polishable materials in the United States for at least five years and must have completed projects of the same general scope and complexity.
    - b. Overlay and complementary materials must be manufactured by or approved for use by CTS Cement Manufacturing Corp. (800-929-3030, [www.CTScement.com](http://www.CTScement.com)) and distributed by the same or an authorized CTS Cement dealer.
  - 2. Applicator:
    - a. Must be experienced and competent in installation of fast-setting, high strength, cementitious, polishable materials and provide evidence of a minimum of five years experience in work similar in size and scope to that required by this section.
    - b. Must retain sufficient production capability, facilities, and personnel to produce specified work.
    - c. Must provide proof of current placement on the CTS Preferred Applicator List. Temporary listings must be approved in writing by an authorized CTS Cement Manufacturing Technical Representative at least 15 days prior to installation and are required to have an authorized CTS Representative on site for initial application.
- B. Samples:
  - 1. Submit samples for approval. Samples must be of materials specified and of suitable size as required to accurately represent each color and texture used on project. Prepare each sample using the same tools and techniques for actual project application.
  - 2. Maintain and make approved samples available at the job site throughout the construction process and until final acceptance.
  - 3. Mock-Up: Provide a mock-up of the complete system sample panel, sized to [enter sample mock-up dimensions], using workmen, equipment, and techniques proposed for use on the project.
    - a. Mock-up must be reviewed for uniformity of depth and thickness, finish color and texture, and overall quality of construction.
    - b. The approved panel will become the standard of comparison for finished work for the project.



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- c. The approved panel must remain on site throughout the construction process and until final acceptance.
  - d. Approved mock-up may become part of the completed work if undisturbed at time of substantial completion.
  - e. Upon project completion and final acceptance, dispose of the sample in accordance with local construction waste guidelines.
- C. Walkway Auditor:
- 1. Certified by CPAA or NFSI to test polished concrete floors for dynamic and static coefficient of friction according to ANSI B101.1 and B101.3.
- D. Coefficient of Friction:
- 1. Achieve following coefficient of friction by field quality control testing in accordance to the following standards:
    - a) ANSI B101.1 Static Coefficient of Friction - Achieve a minimum of [.5] for level floor surfaces.
    - b) ANSI B101.3 Dynamic Coefficient of Friction - Achieve a minimum of [.35] for level floor surfaces.

## 1.6 PRE-INSTALLATION MEEETINGS

- A. Pre-installation Conference: Conduct conference at the Project Site located at [enter site address] at least two (2) weeks prior to initial overlay placement.
- B. Organize meeting to review specification requirements and finished aesthetics. Require representatives of each entity directly concerned to attend, including the following:
  - [1. Owner.
  - [2. Architect.
  - [3. Contractor's Superintendent/Supervisor.
  - [4. Overlay & Polishing Subcontractor(s), including Finishers and Supervisor.
  - [5. Complementary Hardeners, Sealers, Colorants Manufacturer(s).
  - [6. Overlay Manufacturer's Representative.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver products in original, unopened, undamaged packaging with manufacturer's identification (i.e., brand logo, product name, weight of packaged unit, lot number). Maintain records of manufacturer's product lot numbers.
- B. Storage: Store products in a dry location, covered, out of direct sunlight, off the ground, and protected from moisture. Maintain storage temperature required by the manufacturer. Keep materials dry until used. Store bulk sand in a well-drained area on a clean, solid surface. Cover sand to prevent contamination. Protect materials from temperature extremes.
- C. Handling: Handle products in accordance with manufacturer's published recommendations.



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## 1.8 SITE / ENVIRONMENTAL CONDITIONS

- A. Temperature: Maintain ambient and surface temperatures between 50°F (10°C) and 90°F (32°C). Do not apply materials if ambient temperature falls below 50°F (10°C) within 24 hours of application. Protect materials from uneven and excessive evaporation during dry weather, windy conditions and strong blasts of dry air.
- B. Inclement Weather: Do not apply materials during inclement weather unless appropriate protection is employed.
- C. Sunlight Exposure: Avoid, whenever possible, installation of materials in direct sunlight which could adversely affect aesthetics.
- D. Substrate: Prior to installation, the substrates must be inspected for surface contamination or other conditions that may adversely affect the performance of the materials and be free of residual moisture.
- E. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting product performance.
- F. Damage and Stain Prevention: Take precautions to prevent damage and staining of substrates and surfaces to be polished before and after installation.
  - 1. Protect areas to receive polished topping at all times to prevent oils, dirt, metal, excessive water and other potentially damaging materials from affecting the finished surface.
  - 2. Prohibit use of markers, spray paint, and soapstone.
  - 3. Prohibit vehicle traffic over surfaces. If necessary to complete a scope of work, drop cloths or other suitable materials must be placed under vehicles at all times.
  - 4. Prevent staining by hydraulic-powered equipment fluids.
  - 5. Prohibit steel from being placed on the finished surface to avoid rusting.
  - 6. Prohibit pipe-cutting operations over surfaces.
  - 7. Prohibit ferrous metals storage over surfaces.
  - 8. Protect from petroleum, oil, hydraulic fluid, or other liquid dripping from equipment working over surfaces.
  - 9. Protect from acids and acidic detergents contacting substrates and surfaces to be polished.
  - 10. Protect from painting activities.
  - 11. All trades must be informed that the surfaces must be protected at all times.
  - 12. Installed topping area must be closed to traffic during finish floor application and after application for the length of time recommended by the manufacturer.

## 1.9 COORDINATION AND SCHEDULING

- A. Coordinate installation of materials with all other trades to avoid impeding other construction.
- B. Sufficient manpower must be provided to ensure continuous application and timely finishing.



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## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design: CTS Cement Manufacturing Corp., 12442 Knott Street, Garden Grove, CA 92841 (800-929-3030, www.CTScement.com).
- B. Components: Obtain overlay and complementary materials manufactured by CTS Cement from authorized distributors. No substitutions or additions of other materials are permitted without prior written permission from the manufacturer for this project.

### 2.2 MATERIALS

- A. Fast Setting, High Strength, Cementitious Polishable Overlay
  - [1. Rapid Set® TRU [Natural or Gray]: a pre-packaged, high-performance, fast-setting, self-leveling cementitious, polishable overlay material mixed with water on site. Suitable for use interior and exterior, in wet and dry conditions, for flooring applications where high durability, rapid strength gain and polished aesthetics are desired. Ideal for fast-track projects Ready for foot traffic in 2 to 3 hours; coatings in 12 hours; grind and polish in 24 hours.
- B. Primer
  - [1. Rapid Set® TXP™ FAST: a high-performance, 100% solids, no VOC, fast-curing, moisture tolerant, interior epoxy primer designed for use with cementitious overlays. Provides high bond strength to ensure strong adhesion. Acceptable MVER ≤ 10 lbs/1000 sq. ft. per 24 hr. and RH ≤100%. Ready for overlay in 4-6 hours.
- C. Additives and admixture materials must be approved for use by CTS Cement Manufacturing Corp. prior to use. (800-929-3030, www.CTScement.com)
- D. Water: Clean, potable water free of deleterious amounts of silt and dissolved salts.

### 2.3 MATERIAL PERFORMANCE

- A. Fast Setting, High Strength, Non-Shrink Cementitious Polishable Overlay
  - 1. Minimum performance requirements:

<b>Compressive Strength (ASTM C109 Modified*)</b>	4 hours 24 hours 28 days	3,000 psi 5,000 psi 6,500 psi
<b>Tensile Strength (ASTM C307 Modified*)</b>	7 Days 28 Days	210 psi, minimum 365 psi, minimum

*\*Data obtained at 70°F (21°C)*

- B. Finished Sheen/Gloss Level
  - [1. Polished Concrete Level 1 – Low Gloss: At a distance of 100 feet, the floor will reflect images from side lighting and achieve gloss meter readings of 30 to 40.
  - [1. Polished Concrete Level 2 – Medium Gloss: At a distance of 30 to 50 feet, the floor will clearly reflect from side and overhead lighting and achieve gloss meter readings of 41 to 55.



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- [1. Polished Concrete Level 3 – High Gloss: Looking straight down, the floor will clearly reflect overhead and side light, with the appearance of the floor looking wet and achieve gloss meter readings of 56 or higher.
- C. Floor Flatness and levelness requirements are:
1. FF = [\_\_\_\_], Specified Overall Value in [\_\_\_\_] areas as detailed on drawings]
  2. FF = [\_\_\_\_], Minimum Local Value in [\_\_\_\_] areas as detailed on drawings]
  3. FL = [\_\_\_\_], Specified Overall Value in [\_\_\_\_] areas as detailed on drawings]
  4. FL = [\_\_\_\_], Minimum Local Value in [\_\_\_\_] areas as detailed on drawings]
- a) Substrate floor flatness and levelness should be tested prior to installation of the overlay according to ASTM E1155 *Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers* by an independent testing agency experienced with the testing procedure and possessing the necessary equipment.

## 2.4 AGGREGATES

- A. Fine and coarse aggregates must conform to ASTM C33/C33M.
- B. Lightweight aggregates must conform to ASTM C330/C330M.
- C. Decorative Broadcast Aggregates: [TRU Broadcast Aggregate] [Quartz] [Granite] [Marble] [Limestone] [River Gravel] [\_<<other>>\_]; [Angular] [Smooth] [Flat] [\_<<other>>\_]; \_\_\_\_ inch (\_\_\_\_ mm) minimum size to \_\_\_\_ inch (\_\_\_\_ mm) maximum size; Clean [washed] [\_<<other>>\_]. Color: [\_\_\_\_\_]
- D. Provide aggregates from a single source with a documented satisfactory service record for at least 10 years in similar applications and service conditions using similar aggregates and cementitious materials.

## 2.5 RELATED MATERIALS

**EDITOR NOTE:** *Modify to suit project scope and requirements.*

- A. Repair Materials: Products designed to repair cracks and surface imperfections prior to application of overlay material.
  1. Rapid Set LevelFlor®: a quick setting, hydraulic cement-based, self-leveling floor underlayment suitable for use both indoors and outdoors to produce a flat, strong surface. Applied at 0.25 to 2.0" depth neat, up to 5" extended.
  2. Rapid Set Cement All®: a pre-packaged, high-performance, fast-setting, multi-purpose, non-metallic, cementitious, non-shrink grout and concrete repair material mixed with water on site. Suitable for use in wet environments and any application where high durability and rapid strength gain are desired. Structural strength is achieved in one (1) hour. Suitable for structural and non-structural applications. Applied at 0 to 4" depth.
  3. Rapid Set® Mortar Mix: a pre-packaged, trowel grade, high-performance, fast-setting, multi-purpose, non-metallic, cementitious repair material [with integral air entrainment] mixed with water on site. Suitable for indoor and outdoor use, use in wet environments, and for any application where high durability, rapid strength gain and low shrinkage are desired. Structural strength is achieved in one (1) hour. Suitable for structural and non-structural applications from 1/2 in. to 6 in. depths.



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4. Rapid Set® Concrete Mix: a pre-packaged, trowel grade, high-performance, fast-setting, multi-purpose, non-metallic, cementitious repair material [with integral air entrainment] mixed with water on site. Suitable for indoor and outdoor use, use in wet environments, and for any application where high durability, rapid strength gain and low shrinkage are desired. Structural strength is achieved in one (1) hour. Suitable for structural and non-structural applications from 2 in. to 24 in. depths.
  5. Metzger/McGuire Rapid Refloor: a 100% solids, two-component, low viscosity structural polyurea/polyurethane hybrid intended for use in repairing cracks and small surface defects such as bolt holes and pop-outs in industrial, retail or commercial concrete floors.
- B. Liquid Densifier: An aqueous solution of Silicon Dioxide dissolved in one of the following Hydroxides that penetrates into the concrete surface and reacts with the Calcium Hydroxide to provide a permanent chemical reaction that hardens and densifies the wear surface of the cementitious portion of the concrete. All of the following have the same chemistry varying only by the alkali used for solubility of the Silicon Dioxide.
1. Sodium Silicate
  2. Potassium Silicate
  3. Lithium Silicate
  4. Alkalis solution of Colloidal Silicates or Silica
- C. Admixtures: Must conform to ASTM C494. All additives and admixture materials must be approved for use by CTS Cement Manufacturing Corp. prior to use. (800-929-3030, www.CTScement.com)
- D. Sand: Washed and kiln dried angular cut #20 - #30 grit silica sand for use with primer.
- E. Installation Accessories: Gauge rakes, spreaders or rollers for overlay placement. Use the Rapid Set® TRU® Spiked Roller to remove entrapped air.

## 2.6 PIGMENTS/COLORANTS

- A. Must comply with ASTM C979/C979M, synthetic mineral-oxide pigments or colored water-reducing admixtures and be color stable, [free of carbon black,] nonfading, and resistant to lime and other alkalis.

*EDITOR NOTE: Modify below to suit project scope and requirements. Retain one of the following two paragraphs when specifying colored finish.*

- [B. Dye: Non-film forming soluble colorant dissolved in a carrier designed to penetrate and alter coloration and appearance of a concrete floor surface without a chemical reaction. Color: \_\_\_\_\_]
- [B. Pigmented Micro Stains: Fine pigment particles (<3.9 x 10<sup>-4</sup> inches) suspended in water-based silicate solution that penetrates concrete and reacts with calcium hydroxide to lock in color particles. Color: \_\_\_\_\_]

## 2.7 SEALERS/GUARDS

*EDITOR NOTE: Modify below to suit project scope and requirements.*

- [A. Sealer - Semi Impregnating Stain Protection: A film forming material which will penetrate into the polished and densified concrete leaving a protective surface film of less than .05 mils which meets the OSHA requirements for slip resistance as tested by ASTM D 2047 and stain resistance of ASTM D 1308. [Color: \_\_\_\_\_]



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- [A. Sealer - Impregnating Stain Protection: Non film forming stain and food resistant penetrating sealer designed to be applied to densified and polished concrete which meets the requirements of OSHA for slip resistance as tested by ASTM D 2047 and stain resistance of ASTM D 1308. [Color: \_\_\_\_\_]]

## 2.8 JOINT AND CRACK FILL MATERIALS

- A. Saw Cut Contraction/Construction Joint Filler and Crack Filler
1. Metzger/McGuire Spal-Pro RS 88 Semi-Rigid Polyurea Joint Filler.
  2. Metzger/McGuire MM-80®/MM-80P Semi-Rigid Polyurea Joint Filler.
  3. Metzger/McGuire Rapid Refloor.
- B. Color to match adjacent finished floor surface.

## 2.9 POLISHING EQUIPMENT

- A. Field Grinding and Polishing Equipment:
1. A multiple-head, counter-rotating, walk-behind or ride-on machine, of various size and weights, with diamond tooling affixed to the head for the purpose of grinding concrete. Excludes janitorial maintenance equipment.
    - a) Minimum three (3) head counter rotating, variable speed floor grinder with at least 600 pounds of down pressure.
  2. If dry grinding, honing, or polishing, use dust extraction equipment with flow rate suitable for dust generated, with squeegee attachments.
  3. If wet grinding, honing, or polishing, use slurry extraction equipment suitable for slurry removal and containment prior to proper disposal.
- B. Edge Grinding and Polishing Equipment: Hand-held or walk-behind machines with dust extraction attachments and pads which produces same results, without noticeable differences, as field grinding and polishing equipment.
- C. Burnishing Equipment: High speed walk-behind or ride-on machines capable of generating 1000 to 2000 revolutions per minute and with sufficient head pressure of not less than 20 pounds to raise floor temperature by 20 degrees F.
- D. Diamond Tooling: Abrasive tools that contain industrial grade diamonds within a bonded matrix (such as metallic, resinous, ceramic, etc.) that are attached to rotating heads to refine the concrete substrate.
1. Bonded Abrasive: Abrasive medium that is held within a bonding that erodes away to expose new abrasive medium as it is used.
  2. Metal Bond Tooling: Diamond tooling that contains industrial grade diamonds with a metallic bonded matrix that is attached to rotating heads to refine the concrete substrate. These tools are available in levels of soft, medium, and hard metallic matrices that are matched with contrasting concrete substrates (i.e. hard matrix/soft concrete, medium matrix/medium concrete, soft matrix/hard concrete) and are typically used in the grinding and early honing stages of the polishing process.
  3. Resin Bond Tooling: Diamond tooling that contains industrial grade diamonds within a resinous bonded matrix (poly-phenolic, ester-phenolic, thermoplastic-phenolic) that is attached to rotating heads to refine the concrete substrate. Resin bond tooling does not have the soft/medium/hard characteristics of metal bond tooling and are typically used for the later honing and polishing stages of the polishing process.



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4. Hybrid Tooling: Diamond tooling that combines metal bond and resin bond that has the characteristics of both types of tooling. These types of tools are typically used as either transitional tooling from metal bond tools to resin bond tools or as a first cut tool on smooth concrete surfaces.
  5. Transitional Tooling: Diamond tooling that is used to refine the scratch pattern of metal bond tooling prior to the application of resin bond tooling in an effort to extend the life of resin bond tooling and to create a better foundation for the polishing process.
  6. Abrasive Pad: An abrasive pad, resembling a typical floor maintenance burnishing pad, that has the capability of refining the concrete surface on a microscopic level that may or may not contain industrial grade diamonds. These pads are typically used for the maintenance and/or restoration of previously installed polished concrete flooring.
- E. Power Supply: Ensure appropriate power sources, generators, etc. as required to produce specified work and avoid disruption or delays on the project.
- F. Dust Extraction: Provide dust extraction system, pre-separator, and squeegee attachments with minimum flow rating of 580 cubic feet per minute.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify project site conditions under provisions of Section 01 00 00.
- B. Compliance: Comply with manufacturer's instructions for installation of materials. Existing concrete must have a minimum compressive strength of 3000 psi and a minimum density of 100 pcf (pounds per cubic foot).
- C. Coordinate installation with adjacent work to ensure proper sequencing of construction.
- D. Protect adjacent and surrounding surfaces not specified to receive overlay with necessary means to ensure protection against overspray, water or other harmful debris.
- E. Close off areas receiving overlay during installation from all traffic and stop excessive air movement across the top of the surface until overlay has reached final set.
- F. Advise Contractor of discrepancies preventing proper installation of materials. Do not proceed with the work until unsatisfactory conditions are corrected.

### **3.2 VAPOR TESTING CONCRETE FLOORS**

- A. Alkalinity:
  1. Test Method: Measure pH according to method indicated in ASTM F 710.
  2. Acceptable Results: pH between 8 and 14.
- B. Moisture Vapor Transmission Rate:
  1. Test Method: Perform anhydrous calcium chloride test according to ASTM F 1869.
  2. Acceptable Results: Up to 10 pounds per 1000 square feet in 24 hours when one coat of TXP Fast primer is used at a minimum 10 mils thickness.
    - a. When test results indicate over 10 pounds up to 20 pounds per 1000 square feet in 24 hours, use two coats of TXP Fast or TXP EP-105UF Primer as follows:
      - i. Apply two coats with the first coat applied neat at a minimum 16 mil thickness, followed by a second coat at a minimum of 10 mils with full broadcast aggregate to achieve a total minimum thickness of 26 mils.
- C. Relative Humidity:
  1. Test Method: Perform relative humidity test using in situ probes according to ASTM F 2170.



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- D. Acceptable Results: Up to 100 percent. When additional sealers, guards or coatings are used, the manufacturer's MVT and RH recommendations must be followed.

### 3.3 PREPARATION

- A. Mechanically roughen surfaces and remove all loose, unsound, contaminated material.
- B. Use appropriate mechanical means and methods to completely remove existing floor coverings, coatings, mastics, paints, adhesives and other floor materials that may inhibit bond.
- C. Bonding surfaces must be clean, sound, and free from any materials that may inhibit bond such as oil, dirt, asphalt, sealing compounds, acids, wax and loose dust and debris.
- D. Prevent damage to substrate during demolition and preparation.
- E. Correct conditions that are found to be out of compliance with the requirements of this section, to include substrate repair and pre-leveling, joint and crack treatment as required to achieve the specified finish.
- F. Mechanically prepare the substrate to an ICRI CSP 3-5.
- G. Where required, place divider/terrazzo strips. Level and set strips to appropriate heights prior to pouring the overlay.
- H. Pin or otherwise mark all existing joint locations to ensure they can be located and re-saw cut after placement of topping.
- I. Prime the prepared concrete in accordance with manufacturer's published procedures and recommendations.
- J. Immediately broadcast washed and kiln dried angular cut #20 - #30 grit silica sand onto epoxy primer ensuring complete coverage prior to initial set. Broadcast to refusal.
- K. After epoxy primer cures, remove all loose silica sand.

### 3.4 MIXING

- A. Comply with manufacturer's printed instructions.
- B. Include careful monitoring of mix water volume being used, with allowance for the following special designs.
  - 1. Any decorative aggregates used and loading dosage as recommended and approved by the overlay manufacturer.
  - 2. Integral colorants. Must be approved by the overlay manufacturer and water volume per mix verified.
- C. Use CS Unitec (Hippo Mixer), batch mixers or equivalent to prepare overlay material. If barrel mixing, use a 1/2" heavy-duty drill (12 mm) with a minimum of 650 rpm.
- D. Clean barrels/mixers periodically and use a 1/8" screen (#8 Classifier) to remove any unmixed and/or hardened material prior to placing the mixed overlay onto the floor.
- E. Verify proper flow using the Rapid Set® Self Leveling Products Field Flow Test.

### 3.5 APPLICATION

- A. Comply with manufacturer's printed instructions and the following:
  - 1. Verify that all substrates and ambient temperatures are between 50°F (10°C) and 90°F (32°C) and will remain within range until the overlay has reached full cure. Ideal installation conditions are 60°F (15.6°C) to 80°F (26.7°C).



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2. To prevent pinholing and micro-crazing, eliminate air movement over the surface and do not apply overlay when relative humidity is below 30%.
  3. Have all required tools, equipment and materials organized and as close to the placement area as possible.
  4. Pour or pump overlay and spread in place with a gauge rake set at the appropriate thickness. Use the Rapid Set TRU®Spiked Roller to coax the material into place. Use rounded metal spiked shoes to avoid damaging the primer. Contact the CTS Cement Technical Support (800.929.3030) if other tools are required. Use methods that avoid pinholes.
  5. Place overlay to grade levels required and to conform to drawing details.
  6. The minimum installation thickness must be 3/8" minimum. For high-load, rubber wheeled traffic areas, nominal thickness must be 1/2" minimum.
- B. Pre-Leveling: Use Rapid Set LevelFlor® from featheredge to 1" (2.5 cm) thick and up to 5" (12.7 cm) thick when extended with aggregate. Mix and install according to manufacturer's published instructions. Allow the pre-leveling course to dry at least 12 to 16 hours before application of primer and overlay.

### 3.6 CURING

- A. For exterior applications, apply a fine water mist to newly hardened surface as soon as it can be done without marring the surface. Fine water mist continuously until one hour after final set.
- B. Allow topping to cure for a minimum of four (4) hours prior to saw cutting joints.
- C. Prevent damage to overlay and protect from all traffic for the length of time recommended by the manufacturer.

### 3.7 COLORING CONCRETE FLOORS

- A. Dye or Pigmented Micro Stain Application:
1. Apply solution by methods and techniques required by manufacturer to produce finish matching approved field mock-ups.
  2. Maintain wet edge, working newly applied solution into edges of adjacent wet edges of previously treated surfaces.
  3. Maintain consistent saturation throughout application.
  4. Avoid splashing, dripping, or puddling of solution on adjacent substrates.
  5. When color matches approved mock-ups, neutralize as required by manufacturer.

### 3.8 JOINT CUTTING, PREPARATION AND FILLING

- A. Joints must be installed prior to the polishing process.
- B. Honor all existing joints. Locate original joint locations and saw cut through topping into the original joint. Saw blade must penetrate to the depth of the original joint or 2" deep, whichever is smaller. Prefill joints greater than 2" deep.
- C. Ensure saw-cut joint is completely free of dust/debris/laitance.
- D. Apply stain prevention film or other masking agent along surface on both sides of the joint to avoid residual staining.
- E. Install joint filler. Fill from the bottom of the joint, being careful to avoid entrapping air.



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- F. Slightly overfill joint to a crowned profile.
- G. After sufficient cure, razor excess filler leaving a filler profile that is flush with floor surface.
- H. If filler profile is low/concave, remove top 1/2" of filler and re-apply.

### **3.9 POLISHING**

- A. Allow overlay to cure for a minimum of 24 hours before beginning the polishing process.
- B. Use overlay manufacturer's approved polishing system from one of the following manufacturers:
  - 1. HTC
  - 2. SASE
  - 3. Husqvarna
  - 4. Lavina
  - 5. STI
- C. Comply with overlay manufacturer's and polishing equipment manufacturer's published Technical Bulletins and guidelines.

### **3.10 SEALING**

- A. Apply densifiers, sealers, guards or stain protectors per manufacturers' instructions.
- B. Achieve waterproofing, hardening, dust-proofing, and abrasion resistance of the surface without changing the designed aesthetics of the finish.

### **3.11 PROTECTION**

- A. Prevent damage to overlay and protect from all traffic for at least 72 hours after final surface treatment.
- B. Do not allow standing water, rubber matting, or other non-breathable objects onto the polished surface.
- C. Protect the finished surfaces from damage, soiling and other construction activities.
- D. Provide suitable protective cover without damaging the polished surface.
- E. Follow maintenance guidelines as provided in Section 1.4 Submittals.

### **3.12 CLEAN-UP**

- A. Remove and legally dispose of debris material from job site.
- B. Clean excess material from surrounding areas and all tools immediately, before material cures. If materials have cured, remove using mechanical methods that will not damage the substrate.
- C. Clean adjacent surfaces as needed using materials and methods recommended by the manufacturer of the material being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Project Designer/Owner.

END OF SECTION

*Rev. April 2019*

*This sample guideline specification is intended for use by a qualified design professional. The sample guideline specification is not intended to be used verbatim as an actual specification without appropriate modifications for the specific project requirements.*