SECTION 03 54 00

RESURFACING CAST IN PLACE CONCRETE

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) format. The section must be carefully reviewed and edited by the architect, engineer or specifier to meet the requirements of the particular project. This section must also be with other specification sections and any drawings. Please also visit www.lyonsmanufacturing.com to ensure the latest version of this specification is used.

Specifier Notes: **SUPER FLOWCRETE** is self-leveling overlay or underlayment for interior applications. Lyons Manufacturing Inc also makes other products that are applicable to the same sections covered below. These products have more specific limited uses. If the details given below do not match the project application requirements you need please visit the Product Application Guide at www.lyonsmanufacturing.com to see if one of our other products is a better fit for your project or contact the factory for product recommendations.

Part 1 – General

1.01 SECTION INCLUDES

A. This section specifies a single component, Portland cement based self-leveling overlay or underlayment.

B. Overlay (Underlayment): Designed for horizontal underlayment overlays from featheredge to 2" in depth.

C. Overlay (Wearing Surface): Designed for horizontal wearing surface overlays from 1/4" to 2" in depth for traffic up to and including hard rubber tire forklifts. Not recommended for steel wheeled forklifts or heavy industrial use. Overlay may also be used for decorative applications using integral color or stains designed for use with Portland cement based concrete.

1.02 RELATED SECTIONS

A. Section 03 30 00 - Cast in Place Concrete

B. Section 03 50 00 - Cast Decks and Underlayment

1.03 REFERENCES

A. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars - Modified Air Cured.

B. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.

C. ASTM C 1042 - Standard Test Method for Bond Strength of Latex Systems Used with Concrete by Slant Shear - Modified Air Cured (Note: This Standard was withdrawn in 2008 without replacement but is still referenced by ASTM C 1059)

D. ASTM C 150 - Standard Specification for Portland Cement.

1.04 QUALITY ASSURANCE

A. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have experience with the application concrete repairs products preferably with the product specified. Experience with self-leveling products is highly recommended especially in moderate or larger applications.

B. Install materials in accordance with all safety and environment conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Material Safety Data Sheets for complete handling recommendations.

1.05 DELIVERY, STORAGE, HANDLING

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, and product identification. Materials should be stored at room temperature for 24 huors prior to installation. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

1.06 JOB CONDITIONS

A. Environmental Conditions: Minimum application temperature 45ºF. Avoid air movement across product as it cures for first 24 hours from open windows, doorways or air moving units.

B. Avoid direct sunlight through skylights or windows to top of installed product as this can lead to rapid surface drying and surface cosmetic cracking (spider-cracking).

C. Avoid activity on or near installed product during first 72 hours of curing that can lead to vibration or movement of substrate. This is especially true in any elevated or suspended substrate situations.

D. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.07 SUBMITTALS

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, and appropriate Material Safety Data Sheets (MSDS).

1.08 WARRANTY

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year.

Part 2 - Products

2.01 MANUFACTURER

A. **SUPER FLOWCRETE**, as manufactured by Lyons Manufacturing, Inc, is considered to conform to the requirements of this specification.

B. Lyons Manufacturing Inc, 8900 Forney Rd, Dallas, TX 75227 214-381-8100. FAX: 214-381-8158. Web Site: www.lyonsmanufacturing.com.

2.02 MATERIALS

A. **SUPER FLOWCRETE**, a polymer-modified, Portland cement based self-leveling topping or underlayment with self-drying characteristics.

1. Component A shall be a blend of selected Portland cements, specially graded aggregates, admixtures for controlling setting time, flow agent for increased flow time, and an organic accelerator.

2. The materials shall be non-combustible, both before and after cure.

3. The materials shall be supplied in a factory-proportioned unit.

4. The polymer-modified, Portland cement mortar must be placeable from featheredge to 2" for horizontal underlayment applications, 1/4" to 2" for horizontal wearing surface applications,

B. Primer for standard absorbent concrete shall be **P-100 Primer**.

C. Primer for non-porous subfloors shall be **EP-200 Epoxy Primer**.

D. Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

2.03 PERFORMANCE CRITERIA

A. A. Typical Properties of the mixed polymer-modified, Portland cement self-leveling mortar:

1. Working Time: Approximately 25 minutes

2. Flow/Self-Heal Time: Approximately 10-12 minutes.

3. Color: Light Gray (Optional White)

B. Typical Properties of the cured polymer-modified, Portland cement self-leveling mortar:

1. Compressive Strength (ASTM C-109 Modified)

   a. 7 day: 5000 psi min.
   b. 28 day: 6100 psi min.

2. Flexural Strength (ASTM C-348 Modified) @ 28 days: 1300 psi

3. Bond Strength (ASTM C-1042 Modified) @ 28 days: 900 psi (**P-100 PRIMER**)

Note: Tests above were performed Air Cured

Part 3 – Execution

3.01 SURFACE PREPARATION

A. All surfaces must be clean and structurally sound; free of dust, grease, oil, paint, sealers, etc. Pores of the concrete surface must be open to permit proper bonding, especially on fresh "green" concrete. Any necessary surface preparation may be done by shotblasting, scarifying, sandblasting or acid etching. If acid etch is used, be sure to neutralize surface, clean and brush thoroughly.

B. For heavy traffic applications, mechanical abrasion of the surface is recommended.

C. Concrete surfaces should be surface saturated but dry to touch (SSD).

D. Do not bridge cracks with **SUPER FLOWCRETE**. They will "telegraph" through. Fill cracks prior to placement of **SUPER FLOWCRETE**. Expansion joints should be extended through the **SUPER FLOWCRETE**.

E. Application over adhesive cutback. Remove as much of old adhesive cutback as possible, leaving only thin residue. Coat surface with thin amount of **ACRYLIC-BOND** emulsion. Then follow Priming directions with **P-100 PRIMER** or **EP-200 EPOXY PRIMER**.

F. For surfaces with low porosity, **EP-200 EPOXY PRIMER** can be used per installation instructions on the **EP-200** Literature.

G. For Decorative Overlay applications use of **EP-200 EPOXY PRIMER** and broadcast sand method is highly encouraged to reduce impacts to Decorative appearance from movement and settling.

H. Over interior plywood floors, use two coats of **P-100 PRIMER** applied at right angles. Allow **P-100 PRIMER** to dry between coats. Floor must be rigid and sound. Anchor metal lathe into wood. This will help hold the **SUPER FLOWCRETE** in place.

I. Cracking of finished floor can be expected if elevated substrate allow movement. Use of **EP-200 EPOXY PRIMER** can mitigate this in some cases.

3.02 MIXING AND APPLICATION

A. **SUPER FLOWCRETE** requires aggressive mixing to create proper flow characteristics. Use a heavy duty (>700 rpm) 1/2" or 3/4" variable speed drill to mix. Always use a clean mixing container. Place 4 & 3/4 quarts of clean water in container and slowly add **SUPER FLOWCRETE**, mixing while adding powder. Extra water will reduce strength Excessive water will cause product to separate. Mix for 2 to 3 minutes until a smooth, lump-free mixture is obtained. Mixing time should not exceed 3 minutes. DO NOT OVERMIX. DO NOT try and mix by hand. Use a premeasured pail with holes drilled so excess water over 4 & 3/4 quarts spills out.

B. If mixing tools support it, two bags may be mixed at once, use a team approach with several mixing containers for faster installation. For installations in large areas pumps designed for mixing and installing self-leveling products can be used. Contact the factory for details.

C. DO NOT entrap air while mixing. Use Jiffy or basket mixer. Bladed paddles increase opportunity to trap air. Keep paddle down in mix. At surface of material paddle will pull air into mix. End mix with paddle at bottom of mixing container. Strike container on side to help release air. Entrapped air can often result in bubbles affecting surface texture and cosmetic appearance of material.

D. **ADDITION OF COLOR** - Integral color designed to use with Portland Cement based materials can be used with **SUPER FLOWCRETE**. Always do tests to confirm expected results. Use of liquid color often provides a more consistent color across floor.

E. **AGGREGATE MIX**: Aggregate extension is not recommended to increase maximum depth. But aggregate can be added to offset materials usage. Dry clean, non limestone 3/8" pea gravel is recommended. Aggregate cannot be mixed with product as it will interfere with self-leveling of material. It must be cast in after installation of product and before self-heal time ends. Aggregate can effect cosmetic look of surface. Aggregate should not exceed 12lbs per 45lb bag of material. Do Not add extra water with aggregate. Do not spread aggregate on substrate as this will inhibit bond.

F. **BOND COAT** - To insure proper bonding, use **P-100 PRIMER** or **EP-200 EPOXY PRIMER**

1. Apply **P-100 PRIMER** per instructions on **P-100 PRIMER** Literature**.** Allow the **P-100 PRIMER** to dry to touch (usually by 45 minutes) and install **SUPER FLOWCRETE** material. Material may be applied up to 24 hours after the **P-100 PRIMER**. **The P-100 PRIMER** will re-emulsify one time. (See **P-100 PRIMER** instructions for more details).

2. For surfaces with low porosity, **EP-200 EPOXY PRIMER** can be used per installation instructions on the **EP-200** Literature.

G. **MATERIAL PLACEMENT- THICKNESS** When using as a wearing surface topping, install at least 1/4” thick. Underlayment applications may be featheredged. No single lift can be over 2".

H. **MATEIRAL PLACMENT - TECHNIQUES** Pour liquid **SUPER FLOWCRETE** roughly into place. Spread and smooth with applicator's choice of tool to spread and smooth mortar, such as guided squeegee, porcupine(spike) roller, gage rake... DO NOT TROWEL FINISH. Use a trowel or smoother to featheredge or touch up. Where spike shoes if it is necessary to walk in fresh mortar. Always pour **SUPER FLOWCRETE** into edge of in-place product. Properly mixed product will have approximately 10-12 minutes of flow and self-heal time at 70° F.

3.03 POST INSTALLATION

A. **FLOOR COVERINGS -** Normally floor coverings may be applied the next day. When used as an underlayment, always follow the directions of floor covering manufacturers concerning maximum moisture content, pH levels and perform required tests.

B. **COATINGS -** When used as a wearing surface always apply a sealer. A high-solids acrylic sealer may be applied after 24 hours. For non-breathable coatings, ensure moisture has left **SUPER FLOWCRETE**. A simple poly test can be performed over the deepest areas. **SUPER FLOWCRETE** loses its water vapor very quickly, between 48 and 72 hours. Always follow manufacturer recommendations and testing for applying over fresh concrete.

C. **STAINS** - Acid or water-based stains and acetone dyes designed to work with Portland Cement based toppings can be used with **SUPER FLOWCRETE**. Installations features such as swirls (sand lines) where bags were smoothed together are normal. Proper use of smoothing tools will minimize these marks. Staining often highlights these variances.

D. **RELEASE FOR TRAFFIC** - **SUPER FLOWCRETE** can be released for foot traffic as soon as protective sealer has dried. Heavier Traffic after 2 days. Avoid activity on or near installed product during first 72 hours of curing that can lead to vibration or movement of substrate. This is especially true in any elevated or suspended substrate situations.

E. **ADDITIONAL LIFTS** - Another layer of **SUPER FLOWCRETE** can be applied as soon as 24 hours after first layer. Reprime with **P-100 PRIMER** between layers. DO NOT Seal surface if plan to add additional lift.

F. **PROTECTION** - Protect surface of installed topping from construction traffic.

3.04 CLEANING

A. The uncured Portland cement self-leveling mortar can be cleaned from tools with water. The cured mortar can only be removed mechanically.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

instructions for each Lyons Manufacturing Inc product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.