

J. HOWARD ENGINEERING

8105 Edgewater Drive, #209

Oakland, CA 94621

Contrs. Lic. No.

503495

SUBMITTAL TRANSMITTAL

TO: City of Oakland

250 Frank H Ogawa Plaza, Ste 4314
Oakland, CA 94612

Attn: Wezlon Miles

Tel: (510) 238-5238

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Date: October 26, 2015

Job No.: OAK05

Submittal #: **9.0**

Project: SS Rehab of 17th, 21st, 27th St, Inyo St, & 25th Ave

Subject: Manhole Rehab Matls

Gentlemen,

We are enclosing the following submittal information for review and approval in accordance with the contract documents. Please return two (2) approved/marked sets for our records.

No.	Copies	Ref Spec/Dwg	Description	Source
1	1	500-2	Manhole Rehab Matls	Con-Tech

Notes:

Review Action (check one):

☐ 1 -No Exceptions Noted

☐ 2 -Make Corections Noted

☐ 3 -Revise & Resubmit

☐ 4 -Not Acceptable -Resubmit

PLEASE DIRECT ANY QUESTIONS REGARDING THIS SUBMITTAL TO:

Ron H. Zelaya, P.E.

Phone (510) 303-9591

ronzelaya@sbcglobal.net

Cc:

J. HOWARD ENGINEERING

By: R. Zelaya

**Rapid Set**

Construction Cement

CTS Cement Manufacturing Corporation

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Cypress, CA 90630

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REPAIR MORTAR

Rapid Set® Cement All™ — DATASHEET**Fast-Setting, High-Strength, Multi-Purpose, Non-Shrink Grout****PRODUCT DESCRIPTION:**

When mixed with water CEMENT ALL™ produces a workable, high quality repair material that is ideal where rapid strength gain, high durability and low shrinkage are desired. Apply CEMENT ALL™ in thicknesses from featheredge to 4-inches. Durable in wet environments. **SETS IN 15 MINUTES & IS READY FOR TRAFFIC IN 1-HOUR.** One 55 lb. bag of Rapid Set® Cement ALL™ yields approximately 0.5 cubic feet.

USES:

CEMENT ALL™ is a multipurpose product that can be used for general concrete repair, doweling and anchoring, industrial grouting, formed work, airport projects, and highway repair.

COMPOSITION:

Rapid Set® Cement ALL™ is a high performance blend of Rapid Set® Cement and specialty sand. CEMENTALL™ is non-metallic and no chlorides are added. Rapid Set® Cement ALL™ is similar in appearance to portland cement repair materials and may be applied using similar methods.

COLOR: [Light Grey]

The final color of CEMENT ALL™ may vary due to application techniques and environmental conditions.

LIMITATIONS:

Not intended for applications over 4" deep, for deeper sections use Rapid Set® Concrete Mix or Rapid Set® Mortar Mix. For overlay applications at least one test section should be prepared to evaluate the suitability of the materials and procedures.

TECHNICAL DATA:**Set Time:**

ASTM C-191(Mod.) at 70°F

Initial Set 15-minutes

Final Set 35-minutes

Compressive Strength:

ASTM C-109 Mod.

Age:

1-hour* 3000-psi

3-hour 4500 -psi

7-day 6000 -psi

28-day 9000-psi

Slant Shear:

ASTM C-882 Mod.

1-day 1400-psi

28-day 2600-psi

1/2

* = After Final Set

Using CEMENT ALL™

SURFACE PREPARATION:

For repairs, adjacent surfaces shall be clean, sound and free from any materials that may inhibit bond such as oil, asphalt, curing compounds, acids, dirt and loose debris. Roughen surfaces and remove all unsound concrete. Immediately prior to placement the repair surfaces shall be thoroughly saturated with no standing water.

MIXING:

The use of a power driven mechanical mixer, such as a mortar mixer or a drill mounted mixer, is recommended. Organize work so that all personnel and equipment are in place before mixing. Use clean Potable water. Rapid Set® Cement ALL™ may be mixed using 3 to 5 quarts of water per 55 lb. bag. Use less water to achieve higher strengths. Do NOT exceed 5 quarts of water per bag. For increased fluidity and workability use Rapid Set® FLOW CONTROL® plasticizing admixture from the Concrete Pharmacy®. Place the desired quantity of mix water into the mixing container. While the mixer is running add Rapid Set® Cement ALL™. Mix for the minimum amount of time required to achieve a lump-free, uniform consistency (usually 1 to 3 minutes). Do NOT re-temper.

PLACEMENT:

Rapid Set® Cement ALL™ may be placed using traditional methods. Organize work so that all personnel and equipment are ready before placement. Place, consolidate and screed quickly to allow for maximum finishing time. Do NOT wait for bleed water, apply final finish as soon as possible. Rapid Set® Cement ALL™ may be troweled, floated or broom finished. On flat work Do NOT install in layers, install full depth sections and progress horizontally. Do NOT install on frozen surfaces. Use a method of consolidation that eliminates air voids. To extend working time use Rapid Set® SET CONTROL® set retarding admixture.

CURING:

Water cure all Rapid Set® Cement ALL™ installations. Begin curing as soon as the surface has lost its moist sheen. Keep exposed surfaces wet for a minimum of 1 hour. When experiencing extended setting times, due to cold temperature or the use of retarder, longer cure times may be required. The objective of water curing shall be to maintain a continuously wet surface until the product has achieved sufficient strength.

TEMPERATURE:

Warm environmental and materials temperatures will reduce the working time of CEMENT ALL™. To compensate for warm temperatures, keep material cool and use chilled mix water. Temperatures below 70°F (21°C) will decrease the rate of strength gain and CEMENT ALL™ should not be applied if surface or ambient temperature is below 45°F (7.2°C).

2/2

EPXY PRIMER

CORROSION CONTROL LINING SYSTEMS

HYDRO-POX

HYDRO-POX 251

DESCRIPTION:

HYDRO-POX 251 is a time proven 100% solids, 2-component, 2:1 by volume Epoxy Lining System. **HYDRO-POX 251** is a stress dissipating very low viscosity primer/saturant epoxy system with exceptional wetting characteristics. **HYDRO-POX 251** is designed as a deep penetrating primer sealer that can reinforce porous substrates. **HYDRO-POX 251** combines the unique features of broad chemical resistance and very high die-electric strength. **HYDRO-POX 251** cures down to 40F and completely cures at 100% relative humidity, with NO VOC'S and extremely quick turn around time.

USES:

Designed as a deep penetrating, saturating resin system primer/sealer/injection/laminating/potting compound. **HYDRO-POX 251** thickened with **HYDRO-THIX** (see data-sheet) rheology modifier produces mayonnaise consistency 100% solids spray applied surfacing compounds for filling bugholes/rock pockets in concrete, making fillets, or joint filling applications. For immersion and non-immersion applications to protect steel, cast iron, concrete, FRP and other difficult to adhere to substrates in above and below grade water, wastewater and chemical containment, and atmospheric applications.

Typical Applications include but are not limited to:

- Priming concrete and other above and below grade substrates.
- Crack Injection, Pressure or gravity.
- Chemically resistant concrete sealers
- Composite fabrication: laminating fiberglass, fillets, syntactic foams.
- Potting compounds electrical applications.
- Surfacing compounds when thickened.
- All minimum downtime applications above and below grade.

APPLICATION INSTRUCTIONS:

LIMITATIONS:

Apply when substrate temperatures are above 40F. For optimum application properties, bring material to 70-80F prior to mixing and application. Unmixed material should be maintained in protected storage between 40-100F.

SURFACE PREPARATION:

CLEAN ALL SURFACES. Substrate must be sound, clean, free from oil and grease. Curing compound residues and any foreign matter must be thoroughly removed. Surface preparation is best accomplished by mechanical means, such as abrasive air blasting or by high pressure water blasting. For Immersion service on steel an SSPC SP-10 is a recommended minimum. For Immersion or gas area service on concrete reference applicable SSPC/NACE/ASTM Standards.

APPLICATION:

- Mix ratio: 2:1 by volume
- Gel time @ R.T. (200 gram mass): 30 minutes, (2-gallon mass): 15 minutes
- Method of Application: Brush, Roll, and Squeegee, Pour or Spray.
- Application Temperature Range 40-140F
- Thinner: NOT RECOMMENDED
- Clean up: MEK, Lacquer Thinner, Toluene, and Xylene. Cured material-mechanical removal.

1/2

Temp. (F.)	Pot Life (Hrs:Min)	Cure Time (Hours)	Minimum Recoat Time(Hours)	Maximum Recoat Time(Hours)
50	0:35	36	Same day	Same day
77	0:20	18	Same day	Same day
90	0:15	10	Same day	Same day

Note: The above values are approximate depending on coating thickness and surface temperatures. Below 40F cure is significantly retarded and film properties may be degraded.

MIXING:

Material is supplied as a unit. Always mix a complete unit in the proportions supplied. For 1.5-gallon kits, combine entire contents of "A" and "B" components and mix thoroughly of 3 minutes or until material is completely homogenous, with a power mixer, apply immediately.

THINNING:

DO NOT THIN. For optimum application properties, bring material to 70-80F prior to mixing and application.

CLEAN-UP

Clean all tools immediately after use with Toluene, Xylene, MEK, or Lacquer thinner. It is good practice to periodically flush spray equipment during the course of the day – certainly before any work stoppage for lunch breaks etc.

PACKAGING/STORAGE:

HYDRO-POX 251 is available in 1.5 and 150 gallon kits. All containers should be kept closed in dry protected storage between 40-100F.

HEALTH AND SAFETY:

Before use all operators and applicators must consult the Material Safety Data Sheet (Parts A and B). Wear Protective clothing, gloves, goggles, and organic vapor respirator.

DISCLAIMER AND LIMITED WARRANTY:

CCI/CON-TECH OF CALIFORNIA INC. warrants its product to be free of manufacturing defects. Our products will meet our published physical properties when applied in accordance with our directions and tested in accordance with our standards. Proven defective material will be replaced on a limited one-year warranty. Applicators have a legal responsibility for proper application methods as per instructions and specifications. There are no warranties by CCI of any nature whatsoever, expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. CCI shall not be liable for any damages of any sort, including any removal or consequential damages, resulting from any claimed breach of implied, including any warranty of merchantability or fitness for a particular purpose, or from any other cause whatsoever. CCI shall also not be responsible for the use of this product in a manner to infringe on any patent held by others.

2/2

EPoxy-MORTAR

CORROSION CONTROL LINING SYSTEMS

HYDRO-POX

HYDRO-POX 212GL

DESCRIPTION:

HYDRO-POX 212 GL is a time proven 100% solids, 2-component, silica extended, fiber reinforced 2:1 by volume Epoxy Grouting/Lining System. **HYDRO-POX 212 GL** offers single coat film build to 80-150 mils vertical and overhead. Its unique formulation allows application by roller or spray, eliminating the labor-intensive process of trowel application to achieve high film builds. **HYDRO-POX 212 GL** combines the unique features of broad chemical resistance to acid bases. **HYDRO-POX 212 GL** cures down to 40F and completely cures at 100% relative humidity. High film build is obtained in a single coat, multiple pass application with NO VOC'S and extremely quick turn around time. Several Wastewater Agency approvals.

USES:

Designed as a monolithic corrosion control lining system for immersion and non-immersion applications to protect steel, cast iron, concrete, FRP and other substrates in above and below grade water, wastewater and chemical containment, and atmospheric applications.

Typical Applications Include but are not limited to:

- All Potable Water Tanks, Pipes, Treatment Structures; Concrete and Steel.
- All Wastewater Tanks, Pipes, Treatment Structures; Concrete and Steel.
- Secondary Containment of all Process Chemicals used in the treatment of Potable Water and Wastewater, other chemical process industries.
- Repair of existing Coal tar, Coal tar epoxy, FBE, and Epoxy linings.
- All minimum downtime applications above and below grade.

APPLICATION INSTRUCTIONS:

LIMITATIONS:

Apply when substrate temperatures are above 40F. For optimum application properties, bring material to 70-80F prior to mixing and application. Unmixed material should be maintained in protected storage between 40-100F. Always mix a complete unit.

SURFACE PREPARATION:

CLEAN ALL SURFACES. Substrate must be sound, clean, free from oil and grease. Curing compound residues and any foreign matter must be thoroughly removed. Surface preparation is best accomplished by mechanical means, such as abrasive air blasting or by high pressure water blasting. For immersion service on steel an SSPC SP-10 is a recommended minimum. For immersion or gas area service on concrete reference applicable SSPC/NACE/ASTM Standards.

APPLICATION:

- Mix ratio: 2:1 by volume (Always mix a complete unit.)
- Gel time @ R.T. (200 gram mass): 50 minutes, (3-gallon mass): 25 minutes
- Method of Application: Brush, Roll, Trowel, Squeegee or Spray(Parastatic pump)
- Application Temperature Range 40-140F
- Thinner: NOT RECOMMENDED
- Clean up: MEK, Lacquer Thinner, Toluene, and Xylene. Cured material-mechanical removal.

Temp.	Pot Life	Cure Time	Minimum Recoat	Maximum Recoat
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1/4

(F.)	(Hrs: Min)	(Hours)	Time (Hours)	Time (Hours)
50	0:50	48	no minimum	24
77	0:25	24	no minimum	12
90	0:15	12	no minimum	same day

Note: The above values are approximate depending on coating thickness and surface temperatures. Below 40F cure is significantly retarded and film properties may be degraded.

MIXING:

Material is supplied as a unit. Pre-condition material to between 70-80F. **Always mix a complete unit in the proportions supplied.** For 3-gallon kits, combine entire contents of "A" and "B" components and mix thoroughly for 3 minutes or until material is completely homogenous, with a power mixer, apply immediately.

THINNING:

DO NOT THIN. For optimum application properties, bring material to 70-80F prior to mixing and application.

CLEAN-UP

Clean all tools immediately after use with Toluene, Xylene, MEK, or Lacquer thinner. It is good practice to periodically flush spray equipment during the course of the day - certainly before any work stoppage for lunch breaks etc.

PACKAGING/STORAGE:

HYDRO-POX 212GL is available in 3-gallon kits, consisting of 2-gallons "A" Component in a 5-gallon pail, 1-gallon of "B" Component within the same 5-gallon pail. All containers should be kept closed in dry protected storage between 40-100F.

HEALTH AND SAFETY:

Before use all operators and applicators must consult the Material Safety Data Sheet (Parts A and B). Wear Protective clothing, gloves, goggles, and organic vapor respirator.

DISCLAIMER AND LIMITED WARRANTY:

CCI/CON-TECH OF CALIFORNIA INC. warrants its product to be free of manufacturing defects. Our products will meet our published physical properties when applied in accordance with our directions and tested in accordance with our standards. Proven defective material will be replaced on a limited one-year warranty. Applicators have a legal responsibility for proper application methods as per instructions and specifications. There are no warranties by CCI of any nature whatsoever, expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. CCI shall not be liable for any damages of any sort, including any removal or consequential damages, resulting from any claimed breach of implied, including any warranty of merchantability or fitness for a particular purpose, or from any other cause whatsoever. CCI shall also not be responsible for the use of this product in a manner to infringe on any patent held by others.

APPLICATION DATA-SHEET FOR HYDRO-POX 212 GL: PROTECTION OF CONCRETE SURFACES IN MUNICIPAL AND INDUSTRIAL WASTEWATER TREATMENT COLLECTION SYSTEMS AND TREATMENT STRUCTURES.

1.0 SCOPE:

- 1.1 This Application data-sheet covers surface preparation, application, inspection and testing of the HYDRO-POX 212 GL protective lining system.
- 1.2 HYDRO-POX Lining Systems with documented resistance to Microbial Influenced Corrosion, Hydrogen Sulfide Gases, and other chemicals will fill, coat, seal, and protect the interior concrete surfaces of Manholes, Wet Wells, Clarifiers, Digesters, Sedimentation Basins, Sludge thickeners, Chlorine Contact Basins, and all related collection and treatment system substrates. When applied in accordance with this application data-sheet.

2.0 CONTRACTORS:

- 2.1 The Ultimate performance of HYDRO-POX depends on application by Licensed Professional Applicators, which shall be manufacture approved on a non-exclusive basis.

3.0 SURFACE PREPARATION:

- 3.1 All surfaces to be coated with HYDRO-POX 212 GL must be clean, sound, dry and have an "open" capillary system to ensure penetration and mechanical bond (Adhesion). Remove all dirt, dust, cement laitence, efflorescence, form release agents, curing compounds, grease, oils, growths, etc. Surface Preparation is best accomplished by mechanical means, such as abrasive air blasting or high-pressure water blasting above 5000 psi. to achieve an anchor pattern similar to course sandpaper. For concrete reference applicable standards, ASTM D 4259, or NACE RPO892-92.
- 3.2 Any ferrous surface contained within the structure to be lined shall be cleaned according to SSPC SP-10, or NACE #2, and coated prior to flash rusting.

4.0 APPLICATION:

- 4.1 All prepared concrete surfaces shall fully saturated with HYDRO-POX 251 penetrating primer. (See HYDRO-POX 251 Data-sheet).
- 4.2 For optimum application properties pre-condition material to 70-80 F prior to mixing and application. Mix the entire contents of A + B with a power mixer, scraping the sides until a smooth homogenous consistency is obtained. Jiffy mixers have proven to be very

3/4

effective. Material is supplied as a unit. Always mix a complete unit. Do not apply material below 40 F.

- 4.3 The lining system shall be applied over a freshly primed in a single coat multiple pass application to achieve an 80-150 mil thickness. Successive coats must be applied within the recoat time period for proper bonding. (see HYDRO-POX 212 GL data-sheet) For Successive coats applied after the recoat interval has been exceeded, a sweep blast will be necessary to remove any gloss to achieve a 2-4 mil anchor pattern to achieve proper bonding.
- 4.4 Eliminate pinholing and shadowing of the applied HYDRO-POX 212 GL system by fully saturating the surface with HYDRO-POX 251, and applying HYDRO-POX 212 GL in a decreasing or shaded surface condition. Always use a multiple pass method when applying.
- 4.5 Complete cure of the HYDRO-POX system will take 3 days. Down time is avoided by allowing a structure to be returned to service after a thin film set. For immersion a minimum 24-hour cure is required.

5.0 QUALITY ASSURANCE:

- 5.1 The Contractor shall quality assure all work prior to owner furnished inspection.

6.0 INSPECTION:

- 6.1 The Entire procedure of installation: surface preparation and application should be inspected. Such inspection shall not relieve the contractor of its responsibility to furnish materials and perform work in accordance with these procedures.
- 6.2 When the owner furnishes and inspector, all coating work shall be done in the presence of the inspector. Any coating work done in the absence of the inspector is subject to rejection unless specifically allowed by the inspector.

4/4