Harbor Freight Tools Retrofit Concrete Trenching and Repair Specification

PART 1 GENERAL

1.01 SCOPE
This specification covers the furnishing of all labor, equipment and materials required to repair, rehabilitate or reconstruct spalled, deteriorated or structurally damaged concrete surfaces. Depth of repairs shall be adequate to restore concrete member or slab to original dimensions after proper preparation to sound concrete. The General Contractor shall repair all concrete surfaces as shown on contract drawings or as specified herein.

1.02 REFERENCES
A. Applicable Standards and Codes:
1. ACI 302, "Guide for Concrete Floor and Slab Construction."
2. ACI 304, "Guide for Measuring, Mixing, Transporting and Placing Concrete."
3. ACI 305, "Hot Weather Concreting."
4. ACI 306, "Cold Weather Concreting."
5. ACI 318, "Standard Building Code Requirements for Reinforced Concrete."
6. ACI 503, "Standard Specification for Repairing Concrete with Epoxy Mortars."
7. ACI 504, "Guide to Sealing Joints in Concrete Structures."
8. ACI 506, "Guide to Shotcrete."
9. ACI 546, "Guide for Repair of Concrete Bridge Superstructures."
10. ICRI Guideline 3732, "Selecting and Specifying Concrete Surface Preparation."
11. ICRI Guideline 3733, "Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces."

1.03 QUALITY ASSURANCE
A. Material manufacturers shall be ISO 9001/9002 registered or provide proof of documented quality assurance system. Quality system must be independent auditing registrar. ISO 9001/9002 certification shall be included with material submittals. The material supplier shall provide job service as required to assure proper handling and installation of materials. The field representative shall instruct as needed to assure that handling, mixing, placing, finishing and curing of materials are in accordance with specification.

B. The General Contractor shall have experience and proficiency specific to the repair type and shall be approved by Harbor Freight.

C. Prior to the start of concrete repairs, the General Contractor shall conduct a meeting to review the detailed requirements for rehabilitation work. Surface preparation, proposed equipment, procedures, material mixing, placing and finishing procedures and site conditions shall be discussed and approved by the Harbor Freight project manager and architect, prior to the beginning of the work.

The General Contractor shall require the attendance of all involved parties including but not limited to the General Contractor's superintendent, repair contractor, material supplier representative and proposed equipment supplier representative.

Minutes of the meeting shall be recorded, typed and printed by the General Contractor and distributed to all parties concerned, including the Harbor Freight project manager and architect, within 5 days of the meeting.

1.04 PRE-BID INSPECTION
A. The General Contractor shall visit the site prior to bid submittal to determine the extent of the required repairs. Final bid shall include all required repairs, including total quantities and unit costs for each repair.

1.05 MATERIAL STORAGE AND HANDLING
A. The material shall be delivered in the original, unopened containers. It shall be labeled with the manufacturer's name, product name and lot number. Store materials at the job site under dry conditions and at temperatures between 50oF (10oC) and 90oF (32oC).

1.06 SITE CONDITIONS
A. Job conditions shall be maintained at standards that allow material placement within temperature and cleanliness requirements. Unusual conditions as uncovered during the course of work shall be brought to Harbor Freight's attention for analysis and disposition. These conditions include but are not limited to poor quality base concrete, severely corroded reinforcing steel, random cracks and deep oil penetration.

1.07 ENVIRONMENTAL CONDITIONS
A. Repair materials shall not be applied without protection in temperature below 45°F (7°C), or when the temperature is expected to fall below 45°F (7°C) during the curing period unless otherwise specified by the material manufacturer. Patching material shall not be applied to frozen surfaces.

B. All materials used for the repair work must be VOC compliant. The manufacturer shall supply the appropriate material safety data sheets upon request.

1.08 SHORING AND SUPPORT
A. When removal and patching of deteriorated structural concrete may cause temporary weakness, excessive deflections, or structural instability, shoring or other suitable supports shall be provided until completion and adequate curing of repairs.

PART 2 PRODUCTS

2.01 MATERIALS
A. Horizontal Repairs and Overlays:
1. Thicknesses Less Than 1/2" (13mm): Product shall be a one component, trowel applied, latex and micro-silica modified cementitious base compound. Provide the following:
"Thin-Top Supreme" by Euclid Chemical

2. Thicknesses Greater Than 1/2" (13mm): Product shall be a one component, trowel applied, latex and micro-silica modified cementitious base compound. Provide the following:
"Concrete Top Supreme" by Euclid Chemical

3. Rapid Repairs: Product shall be a one component, cementitious material for patching and repairing concrete, meeting the requirements of ASTM C-928. Provide the following:
"Euco-Speed" by Euclid Chemical

4. Repair of Existing Trench In-Fills over 1" (25mm) Thick: Product shall be a one part, microsilica modified patching and repair material for concrete. Provide the following:
"Eucocrete" by Euclid Chemical

5. Underlayment for Soft Floor Coverings: Product shall be a one component, free-flowing, self-leveling, pumpable compound designed as an underlayment for subsequent placement of floor coverings. Provide the following:
"EucoFloor SL160" by Euclid Chemical

6. Self-Leveling, Polishable Wearing Surface: Product shall be a one component, free flowing, self-leveling cementitious based compound designed as an underlayment for subsequent placement of floor coverings or as a wearing surface. Provide the following:
"LevelTop SP" by Increte Systems (Euclid Chemical)

B. Vertical/Overhead Repairs
1. General Repairs: Product shall be a one component, trowel applied, and latex modified cementitious base compound. Provide the following:
"Euco V-100" by Euclid Chemical

C. Accessory Products
1. Bonding Agents:
a. Epoxy/Cement Bonding Agent (and Protective Coating for Reinforcing Steel): Product shall be a water-based epoxy resin designed for bonding repair materials to existing concrete or for adhesion and corrosion protection of reinforcing members (24 hour maximum open time). Provide the following:
"Duralprep AC" by Euclid Chemical

b. Polyvinyl Acetate, Rewettable Type: Product shall be a resin adhesive for bonding repair materials to existing concrete when the repair is interior and dry conditions will exist after the repair is complete. Provide the following:
"Tammsweld" by Euclid Chemical

c. Latex, Non-Rewettable Type: Product shall be an acrylic latex bonding adhesive to bond the repair material to existing concrete. Provide the following:
"Akkro-7T" by Euclid Chemical

d. Latex, Non-Rewettable Type: Product shall be a styrene butadiene copolymer bonding adhesive to bond the repair material to existing concrete. Provide the following:
"SBR Latex" by Euclid Chemical

e. Epoxy Adhesive: The compound shall be a two component, 100 percent solids, 100 percent reactive compound suitable for use on dry or damp surfaces and meet the requirements of ASTM C 881. Provide the following:
"Dural #452 Epoxy" by Euclid Chemical

2. Curing and Sealing Compound: The compound shall meet the moisture retention, solids content, and non-yellowing requirements of ASTM C-1315 when applied at the manufacturer's recommended application rate per gallon. Provide the following:
"Super Aqua Cure VOX" or "Super Diamond Clear VOX" by Euclid Chemical

3. Joint / Crack Materials:
a. Single Component Polyurethane (Gun and Pourable Grade): Provide the following:
"Eucolastic 1 NS / SL" by Euclid Chemical

b. Polyurea Joint Filler: The product shall conform to the requirements of ACI 302, and be a UV resistant, fast setting, semi-rigid, polyurea. Provide the following:
"Euco QWIKjoint UVR" by Euclid Chemical

c. Crack Repair: Two-component, low viscosity hybrid urethane repair liquid used to mend cracks in concrete, repair spalled joints and repair damaged or uneven concrete surfaces.
"Euco QWIKstitch" by Euclid Chemical

PART 3 EXECUTION

Unless otherwise specified, the General Contractor shall apply all materials in strict accordance with the manufacturer's instructions which are made part of this specification.

3.01 ESTIMATING
A. Refer to manufacturer's literature for material yields and coverage rate. Actual usage will vary depending on the profile and planeness of the repair surface and should be verified by the General Contractor. The General Contractor shall install the material at the thicknesses specified herein or on drawings and shall be familiar with site conditions to determine appropriate material quantities.

3.02 PREPARATION
A. Cleaning: The surface of the existing concrete should be clean and the pores free of any dirt or material that will be detrimental to the bond of the repair material.

B. Surface Preparation: Concrete surfaces must be clean and rough. All oil, dirt, debris, paint and unsound concrete must be removed. The surface must be prepared mechanically using a scabbler, bush hammer, chipping hammer, shotblast or scarifier which will give a surface profile of a minimum 1/8" (3 mm) and expose the coarse aggregate of the concrete. For overlays, the concrete surface shall be roughened to the correct CSP profile (Concrete Surface Profile) and thickness recommended by the International Concrete Repair Institute (ICRI) Publication 03732, "Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays." The final step in cleaning shall be the complete removal of all dust, dirt, and residue by pressure washing and/or vacuum.

C. Cracks: All cracks greater than 1/8" in width shall be routed to a minimum 3/8" by 3/8". Thoroughly clean with oil free compressed air or vacuum and place bond breaker tape along the bottom of the joint. Crack must be dry before installation of the sealant. Do not rout cracks less than 1/8" width.

D. Joints: Existing joints shall be maintained by forming at joint locations or saw cutting over joint locations. Edges shall be sawcut 1/4" (6 mm) deeper than the overlay thickness and notched at the edge of the overlay to provide a locked in perimeter. Chip the edge with a hand held chipping hammer to provide the wedge shaped notch.

3.03 BONDING/PRIMING
A. After the concrete surface has been prepared, cleaned and dry, prime all areas with the bonding agent specified by the manufacturer. Apply bonding agent (or a product bond coat) by scrubbing the material into the concrete surface to penetrate into the pores of the concrete. Follow the manufacturer's recommended coverage rate. Rougher surfaces may require a stiff broom to apply the bonding agent while a relatively smooth surface will allow use of roller or squeegee application.

3.04 MIXING OF REPAIR MATERIAL
A. Follow the mixing instructions provided by the material manufacturer. Small quantities may be mixed with a drill and "jiffy" mixer. Use a paddle type mortar mixer for typical jobs. For large or pumped jobs, bulk bagged material mixed in a ready mix truck or a mixer/pump combination may be used where material workability permits. All materials should be in the proper temperature range of 60°F (15°C) to 90°F (32°C). Add the appropriate amount of water for the batch size and then add the dry product. Mix for 3 to 5 minutes. If pea gravel is added, mix an additional 2-3 minutes after its addition. The mixed product should be transported by buggy or pumped to the repair area and placed immediately. For multiple component materials, be sure the proper ratios of Part A, Part B and Part C are thoroughly mixed.

3.05 PLACING OF REPAIR MATERIAL
A. Trench In-fill:
1. In-fill trenches with "Eucocrete" pre-packaged concrete by Euclid Chemical or 4000 psi ready mixed concrete. Trench shall exhibit straight, full-depth sawcuts at the interface of existing concrete to in-fill area. Install 15 mil vapor barrier by Stego at base of area to be in-filled. In-fill concrete shall be doweled into existing slab using #4 bars spaced 16" on center. Bars shall have minimum 4" embedment in existing concrete and come to within 3" of the opposite face of existing concrete. Place, consolidate, finish and cure in-fill concrete to match finish, color and elevation of adjacent concrete. Honor all control joints per ACI 302 recommendations. Use an evaporation retarder under hot or windy conditions to prevent surface drying.

B. Self- Leveling Wear Surface:
1. Surface Prep: The concrete surface must be free of unbound cementitious by-products, loose dirt, oil, grease, or other contamination. Any animal or petroleum contamination should be removed with Increte Systems' Grease-A-Way. Exterior surfaces should be acid etched using a 5 to 1 solution of water to muriatic acid. Interior surfaces should be prepared by mechanical means (shot-blast, sand-blast or by rotary sander). Before installing Level Top SP, all concrete subfloors must be primed with two coats of Increte Systems Bond-Crete primer. Alternately, the concrete can be primed with Increte HP EPOXY and broadcast to refusal with clean and dry silica sand. Once the epoxy has dried, remove excess silica sand. Level Top SP should only be installed when ambient and substrate surface temperatures are between 50° F and 90° F. Optimum temperature installation is approximately 70° F.

2. Application: Add one 50-pound bag of LEVEL TOP SP to 5 quarts of cool water. Mix in a clean damp paddle mixer (mortar mixer). Mix for a minimum three minutes and adjust the water by adding up to 1 pint, as required. A drill and paddle mixer may also be used. Add colorant to water prior to the addition of powder when using integral colorants.

3. Thickness: For maximum economy, set gauge rake at 1/8-inch thickness. LEVEL TOP SP may be applied up to an inch thick as is. For pours greater than 1 inch use with extender aggregate. LEVEL TOP SP may also be used as an excellent patch/repair compound.

4. Staining/Sealing/Polishing: LEVEL TOP SP shall be chemically hardened with Increte's Pro-Polish Densifiers and polished to a high gloss finish. Use Pro-Polish Guard to protect your polished floors

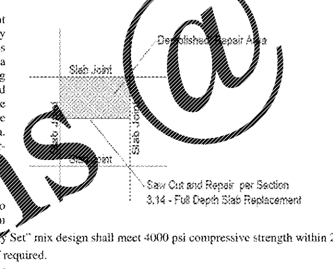
C. Vertical/Overhead Trowel Applied: Product should be placed in lifts 1" (25mm) to 2" (50 mm) in thickness. Trowel into place and allow stiffening before the next lift. Multiple lifts may be placed as long as the previous lift is well textured. If additional lifts will be placed after the product has hardened, crosshatch the surface of the previous lift to provide for a secure bond for the next lift.

D. Joints: Fill joints with joint filler no sooner than 28 days after material placement. Install joint sealant in accordance with printed instructions. Moving joints, as in the case of expansion joints, should be brought up through the overlay by saw-cutting or with the use of a divider strip

3.06 FULL DEPTH SLAB REPLACEMENT (INTERIOR OR EXTERIOR)
A. Slab defect that exhibits severe pitting or spalling, which exceeds a third of the slab panel area or ¾" in depth, as recommended by the owner. Avoid traffic on newly placed concrete for a minimum of 7 days. If traffic must be on the slab prior to this time, use the "High Strength-Early Set" mix design may be used upon approval of owner.

B. Preparation: Submit all procedures and products to owner for review and approval prior to starting work. If necessary, owner will contact a floor repair consultant for further review of the submittal package.

C. The intent of the slab replacement is that the repair area shall be encompassed by existing slab joints on at least 3 adjacent sides (See sketch of floor plan). Verify exact repair area size and location with owner before commencing work. Saw cut at outer edges of pitted or spalled areas. The cuts should be symmetrical in nature and made perpendicular and parallel to the slab joints creating a rectangular repair area. The General Contractor should avoid any over-cutting at saw cut intersections.



D. Repair:
1. Concrete shall be designed to meet 4000 psi compressive strength within 28 days.
2. Alternate "High Strength-Early Set" mix design shall meet 4000 psi compressive strength within 24 hours (see below).
3. Compact existing subgrade, if required.
4. Replace vapor retarder, if required.
5. Construction joints in slab on grade shall be butt joints with "Covex" dowel system by PNA Construction Technologies. All dowels shall be installed per manufacturer's instructions.
6. Install concrete flush with the surface of the floor. Apply a trowel finish to match adjacent concrete.
7. Re-cut original joint through repair. Repair material shall not permanently bridge joints. Either maintain original joint during repair with and insert, or cut as soon as repair material will not ravel or dislodge from sawing.
8. Re-fill joints and re-seal joints

Alternate High Strength – Early Set Concrete Mix

Materials	Prototype Concrete Mix
Cement	728-800 lbs.
Coarse Aggregate	11 Cubic Feet +/- .50
Fine Aggregate	7 Cubic Feet +/- (Adjust as Necessary)
Water Content	291 – 320 lbs.
Air Content (Entrapped Air – **Interior Only**)	3.0% (Max.)
Air Content (Entrained Air -**Exterior Only**)	5.0% +/- 1.0% (Max.)
Mid-Range Water Reducing Admixture (Type A/F)	3oz - 10oz/100wt +/-
High-Range Water Reducing Admixture (Type F/G)	3oz - 6oz/100wt +/- (Polycarboxylate)
Non-Chloride Accelerating Admixture	28oz - 40oz/100wt +/- (add at jobsite)
W/cm	0.40 (Max)
Initial Slump (Water)	2"
Final Slump	5.5" (Max)

3.07 FINISHING
A. Finish the repair area to the specified texture. Do not add additional water to the surface during the finishing operation. If additional liquid is required, use a finishing aid. Unless otherwise specified, repair surfaces shall receive a smooth, hard-steel troweled finish. Formed surfaces may be stripped after 24 hours at normal curing temperatures.

3.08 CURING
A. Proper curing procedures are required to ensure the durability and quality of the repair. Cure all concrete surfaces with one or a

combination of the following methods. Where a specific curing procedure is not specified, at the General Contractor's selection, use the following method.

1. Membrane forming curing compounds: All exposed interior slabs, not receiving a liquid densifier, shall be cured with the specified curing and sealing compound. Exterior slabs, sidewalks, curbs, and architectural concrete, not receiving a penetrating sealer, shall be cured with the specified clear, non-yellowing curing and sealing compound. Curing / Sealing compound shall be applied at 400 ft²/gallon on steel troweled surfaces, and 300 ft²/gallon on floated or broomed surfaces.

3.09 PROTECTION
A. Keep repair area protected from other trades and weather for a minimum of 3 days after material is placed.

3.10 SHORING AND SUPPORT
A. When removal and patching of deteriorated structural concrete may cause temporary weakness, excessive deflections or structural instability, shoring or other suitable supports shall be provided until completion and adequate curing of repairs.

3.11 CLEAN-UP
A. For cementitious repair materials, clean tools and equipment with brush and water before the material hardens. For repair materials containing epoxy, clean with solvent, such as xylene, xylol or toluene. Do not allow the epoxy to harden on equipment.

END OF SECTION

POLISHED CONCRETE SPECIFICATION

PART I - GENERAL
1.01 SUMMARY, THIS SPECIFICATION INCLUDES THE FOLLOWING:

INTERIOR CONCRETE JOINT FILLER, LIQUID DENSIFIER / SEALER AND POLISHING PROCESS

A GENERAL: DO NOT COMMENCE INSTALLATION OF SEMI-RIGID POLYUREA JOINT FILLER, LIQUID DENSIFIER / SEALER AND POLISHING PROCESSES UNTIL THE BUILDING IS COMPLETELY ENCLOSED, PERMANENT POWER AND LIGHTING IS OPERATING AND THE BUILDING IS THERMOSTATICALLY CONTROLLED. INSTALLATION OF THESE MATERIALS SHALL COMMENCE APPROXIMATELY TWO WEEKS PRIOR TO "FIXTURE DATE."

PART II - EXECUTION
2.01 JOINT FILLER INSTALLATION: COMPLY WITH ACI 302 AS APPLICABLE TO MATERIALS, APPLICATIONS, AND CONDITIONS.

A. SURFACE CLEANING OF JOINTS: CLEAN JOINTS IMMEDIATELY BEFORE INSTALLING JOINT FILLER. REMOVE FOREIGN MATERIAL THAT COULD INTERFERE WITH ADHESION OF JOINT FILLER BY BRUSHING, GRINDING, BLAST CLEANING, MECHANICAL ABRADING, OR A COMBINATION OF THESE METHODS TO PRODUCE A CLEAN, SOUND SUBSTRATE CAPABLE OF DEVELOPING OPTIMUM BOND WITH JOINT FILLER. REMOVE LOOSE PARTICLES REMAINING FROM ABOVE CLEANING OPERATIONS BY VACUUMING OR BLOWING OUT JOINTS WITH OIL-FREE COMPRESSED AIR. ALSO REMOVE ALL LAITANCE AND FORM-RELEASE AGENTS FROM CONCRETE SURFACE. CLEAN NONPOROUS SURFACES WITH CHEMICAL CLEANERS OR OTHER MEANS THAT DO NOT STAIN, HARM SUBSTRATES, OR LEAVE RESIDUES COULD INTERFERE WITH ADHESION OF JOINT SEALANTS. ALL SURFACES TO BE FILLED SHALL BE CLEAN AND DRY.
B. MIXING: JOINT FILLER IS A TWO-PART PRODUCT REQUIRING MACHINE MIXING AND PLACING. PREMIX PART "B" SEPARATELY BEFORE MIXING. FOLLOW PUMP MANUFACTURER'S EQUIPMENT INSTRUCTIONS.
C. PLACEMENT: FOR PROPER LOAD TRANSFER, JOINTS MUST BE FILLED FULL DEPTH, BUT IN NO CASE SHOULD THE JOINT FILLER BE ANY LESS THAN 2" DEEP IN THE JOINT. NO BACKER ROD IS ALLOWED. JOINTS SHOULD BE OVERFILLED AND SHAVED LEVEL WITH THE SURFACE, GIVING THE FLOOR JOINTS A FLAT, SMOOTH APPEARANCE.
D. JOINT FILLER SEPARATION: THE APPROVED JOINT FILLING APPLICATOR SHALL INCLUDE IN THEIR BID A COST PER LINEAR FOOT TO MAKE ONE RETURN TRIP TO REFILL JOINTS IF JOINT FILLER SIDEWALL SEPARATION OR SPLITTING EXCEEDS 1/16", OR IF SURFACE PROFILE IS CONCAVE, CHATTERED OR IF VOIDS OCCUR. THIS SHALL TAKE PLACE ONE WEEK PRIOR TO GRAND OPENING, OR AT OWNER'S REQUEST.

2.02 INITIAL CLEANING FOR LIQUID DENSIFIER AND SEALER APPLICATION: THOROUGHLY CLEAN THE INTERIOR SALES FLOOR SLAB PRIOR TO THE INITIAL APPLICATION OF LIQUID DENSIFIER/SEALER AND POLISHING PROCESS. COMPLETELY REMOVE THE REMNANTS OF THE DISSIPATING OR REMOVABLE CURING COMPOUND FROM THE FLOOR SURFACE. THE FOLLOWING FLOOR STRIPPER OR REMOVAL SOLUTION SHALL BE APPLIED TO THE FLOOR AT THE PROPER RATIO TO THOROUGHLY STRIP, CLEAN AND REMOVE ALL CURING COMPOUND RESIDUE:
1. KUREZ DR VOX (SLAB FIRST): EUCLID "EUCO CLEAN & STRIP"
1. KUREZ RC (SLAB LAST): EUCLID "KUREZ OFF"

2.03 POLISHING PROCESS AND APPLICATION OF LIQUID DENSIFIER / SEALER: PRIOR TO APPLICATION, INSPECT INTERIOR SALES FLOOR SLAB TO ENSURE THAT SLAB IS CLEAN AND FREE OF DUST, GREASE, OILS, OR OTHER CONTAMINANTS THAT MIGHT PROHIBIT THE PROPER APPLICATION AND PENETRATION OF THE LIQUID DENSIFIER AND SEALER.

A MOCK-UP TEST SLAB: THE FOLLOWING PROCESS IS PROVIDED AS A GUIDE. MANY FACTORS, INCLUDING, BUT NOT LIMITED TO INTERIOR FLOOR SLAB FINISH, HARDNESS AND FLATNESS WILL DETERMINE THE INITIAL RESIN BOND DIAMOND TOOLING, INCLUDING ADDITIONAL GRINDING AND/OR POLISHING OPERATIONS REQUIRED TO MEET THE REQUIREMENTS SPECIFIED HEREIN. TRAINED APPLICATOR SHALL PROVIDE A MOCK-UP TEST SLAB, INCLUDING APPLICATION OF LIQUID DENSIFIER/SEALER TO A DESIGNATED AREA OF THE INTERIOR FLOOR SLAB (BACK OF BUILDING). USING THE SAME EQUIPMENT, RESIN BOND DIAMOND TOOLING, AND METHODS AS WILL BE USED TO POLISH THE INTERIOR FLOOR SLAB. INTERIOR SALES FLOOR POLISHING AND APPLICATION OF LIQUID DENSIFIER/SEALER SHALL NOT COMMENCE UNTIL OWNER HAS ACCEPTED THE MOCK-UP TEST SLAB.
1. VERIFY PRESENCE OF CURING AND SEALING COMPOUND BY APPLYING WATER TEST TO THE SURFACE OF SLAB.
a. IF WATER BEADS, CURING AND SEALING COMPOUNDS ARE PRESENT AND MUST BE REMOVED FROM THE SLAB. COMPLETELY REMOVE THE REMNANTS OF THE DISSIPATING OR REMOVABLE CURING COMPOUND FROM THE FLOOR SURFACE. THE FOLLOWING FLOOR STRIPPER OR REMOVAL SOLUTION SHALL BE APPLIED TO THE FLOOR AT THE PROPER RATIO TO THOROUGHLY STRIP, CLEAN AND REMOVE ALL CURING COMPOUND RESIDUE: "EUCO CLEAN & STRIP" BY EUCLID CHEMICAL
b. IF WATER SOAKS INTO THE SURFACE INDICATING CURING AND SEALING COMPOUNDS ARE NOT PRESENT, MOVE TO STEP 3.
2. GRINDING/POLISHING EQUIPMENT SHALL BE EQUIPPED WITH 200 GRIT RESIN BOND DIAMOND TOOLING TO VERIFY IF SURFACE WILL OPEN TO ACCEPT LIQUID DENSIFIER/SEALER. IF SLAB OPENS TO ACCEPT LIQUID DENSIFIER/SEALER, PROCEED WITH PROJECT. IF SLAB DOES NOT OPEN, DROP TO LOWER GRIT RESIN BOND DIAMOND TOOLING, AND REPEAT (100 GRIT, 80 GRIT, 50 GRIT). FOLLOW PROCESS AND DROP RESIN BOND DIAMOND TOOLING AS NEEDED UNTIL SLAB ACCEPTS DENSIFIER.
3. ALL GRIND, HONE AND POLISH STEPS SHALL INCLUDE A 2 PASS PROCESS OVERLAPPING PREVIOUS PASS BY A MINIMUM OF 6".

B. INITIAL GRIND AND HONE PROCESS:
1. START INITIAL GRIND WITH APPROPRIATE RESIN BOND DIAMOND TOOLING AS DETERMINED FROM MOCK-UP TEST SLAB.
2. OPERATE MACHINES AT 400 SQUARE FEET AN HOUR (WALK PACE), WITH HIGH TO MAXIMUM DRUM AND HEAD SPEED (TYPICALLY 300 RPM ON DRUM AND 1250 RPM ON PLANETARIES).
3. ONCE COMPLETED, CLEAN OPENED FLOOR THOROUGHLY, AND THEN APPLY EUCO DIAMOND HARD TO REJECTION. ALLOW THE SURFACE TO DRY.
4. RESIN BOND DIAMOND TOOLING SHALL BE INCREASED AT SAME OUTPUT RATES AND HEAD SPEEDS UP TO 400 GRIT HONING.

C. FINAL POLISHING PROCESS:
1. CLEAN FLOOR AND MACHINE OF ACCUMULATED LAITANCE.
2. MOUNT 800 GRIT RESIN BOND DIAMOND TOOLING AND RUN MACHINES AT 300 SQUARE FEET AN HOUR PACE WITH DRUM AND HEAD SPEEDS AT HIGH TO MAXIMUM.
3. APPLY EUCO DIAMOND HARD LIGHTLY AT 700 SQUARE FEET PER GALLON JUST PRIOR TO BURNISHING.
4. CLEAN FLOOR AND BURNISH WITH 1500 GRIT DIAMOND PAD AT 500 SQUARE FEET PER HOUR WITH A 27" BURNISHER AT 2500 RPM.

D. POLISH RESULTS: PERFORM POLISHING PROCESS TO REACH A SPECIFIED OVERALL GLOSS VALUE (SOGV) OF ≥35 AS MEASURED WITH A HORIBA IG-320, AND A SPECIFIED MINIMUM GLOSS READING (SMGV) OF ≥30. THE APPROVED APPLICATOR SHALL TAKE FOUR GLOSS MEASUREMENT READINGS AT 90° FROM EACH OTHER, AND THEN AVERAGED FOR ONE READING AT EACH LOCATION. A MINIMUM OF 25 READINGS SHALL BE TAKEN THROUGHOUT THE INTERIOR SALES FLOOR. THE OVERALL MEASUREMENT SHALL BE REPORTED TO GENERAL CONTRACTOR WITHIN 24 HOURS OF THE POLISHING PROCESS. GLOSS SHALL BE CONSIDERED A QUANTITATIVE VALUE THAT EXPRESSES THE DEGREE OF REFLECTION WHEN LIGHT HITS THE CONCRETE FLOOR SURFACE. GLOSS MEASUREMENTS WILL BE TAKEN INDEPENDENT OF AMBIENT LIGHTING AND WILL BE TAKEN WITHIN A SEALED MEASUREMENT WINDOW LOCATED BENEATH THE TEST UNIT.

DUSTING MINIMIZATION PROCESS TO BE PERFORMED ON ALL FLORIDA PROJECTS AND AS NEEDED AT OTHER LOCATIONS.

A. **DUSTING FLOOR:** DUSTING IS AN ASPECT OF WEAK CONCRETE AT THE SURFACE OF A FLOOR OR SLAB. DUSTING (THE DEVELOPMENT OF A FINE, POWDERY MATERIAL THAT EASILY RUBS OFF THE SURFACE OF HARDENED CONCRETE), IS THE RESULT OF A THIN, WEAK SURFACE LAYER, CALLED LAITANCE, WHICH IS COMPOSED OF WATER, CEMENT, AND FINE PARTICLES. THIS LAITANCE, THE WEAKEST, MOST PERMEABLE AND LEAST WEAR-RESISTANT MATERIAL IS AT THE TOP SURFACE, EXACTLY WHERE THE STRONGEST, MOST IMPERMEABLE, AND MOST WEAR-RESISTANT CONCRETE IS NEEDED. IF IT IS DETERMINED THAT THE PROJECT FLOOR IS DUSTING, USE THE FOLLOWING PROCEDURE TO HELP MINIMIZE A DUSTING SURFACE.

1. **APPLICATION OF WATER-BASED MAGNESIUM SILICOFLUORIDE DUSTPROOFER AND DENSIFIER:**
a. **COAT DILUTION**
1. 1ST COAT 1 PART SURFHARD TO 2 PARTS WATER
2. 2ND COAT 1 PART SURFHARD TO 1 PART WATER
3. 3RD COAT 2 PARTS SURFHARD TO 1 PART WATER

b. COVERAGE RATE	UNDILUTED SURFHARD	DILUTED SURFHARD
1. 1ST COAT:	900 FT²/GAL (22.1 M²L)	300 FT²/GAL (7.4 M²L
2. 2ND COAT:	400 FT²/GAL (9.8 M²L)	200 FT²/GAL (4.9 M²L)
3. 3RD COAT:	225 FT²/GAL (5.5 M²L)	150 FT²/GAL (3.7 M²/L)

c. **SURFACE PREPARATION:** THE SURFACE TO BE TREATED SHOULD BE CLEAN, FREE OF CURING COMPOUNDS, SEALERS, PAINT OR ANY OTHER CONTAMINANTS THAT COULD PROHIBIT PENETRATION OF SURFHARD. FOR BEST PERFORMANCE, CONCRETE SHOULD BE DRY BEFORE APPLYING SURFHARD. NEW CONCRETE SURFACES SHOULD BE AT LEAST 7 DAYS OLD PRIOR TO APPLICATION. EXTREMELY SOFT AND POROUS SURFACES SHOULD BE SATURATED WITH WATER PRIOR TO APPLICATION. WHEN THE SURFACE IS DRY, APPLY THE 1ST COAT OF SURFHARD AND PROCEED AS INDICATED UNDER PLACEMENT BELOW. THIS PRE-WETTING CONCENTRATES THE CHEMICAL AT THE TOP LEVEL OF THE CONCRETE. THE FINAL APPLICATION WILL HARDEN AT THE TOP SURFACE AND YIELD MAXIMUM WEARING AND RESISTANCE QUALITIES. IN SOME INSTANCES, OR IN SOME SELECTED AREAS, A SURFACE MAY REQUIRE AN ADDITIONAL APPLICATION OF UNDILUTED SURFHARD TO COMPLETE HARDENING AND DUSTPROOFING.

d. **MIXING:** SURFHARD IS EASILY DILUTED IN WATER WITH MILD AGITATION.

e. **PLACEMENT:** FLOOD EACH COAT OF SURFHARD ONTO THE SURFACE AND SPREAD WITH A SOFT FIBER BROOM, SQUEEGEE, OR MOP. ALLOW THE SOLUTION TO SOAK INTO THE CONCRETE FOR 10 TO 15 MINUTES AND REDISTRIBUTE ANY PUDDLES THAT REMAIN. TREATED SURFACES SHOULD BE THOROUGHLY DRY BETWEEN COATS. DRYING TIME MAY VARY FROM 4 TO 12 HOURS DEPENDING ON TEMPERATURE, HUMIDITY, AND WHETHER THE CONCRETE IS INDOORS OR OUTDOORS. AS VARIOUS COATS OF SURFHARD ARE APPLIED, EACH SUCCEEDING COAT WILL YIELD INCREASED COVERAGE BECAUSE THE CONCRETE SURFACE IS IN THE PROCESS OF HARDENING. AFTER THE THIRD COAT THE FLOOR SHOULD BE THOROUGHLY FLUSHED WITH WATER AND SCRUBBED WITH A STIFF BROOM TO REMOVE ANY RESIDUAL MATERIAL. IF THE FLOOR SHOULD SHOW PATCHES OF WHITE UPON DRYING, IMMEDIATELY FLOOD WITH WATER AND SCRUB THE FLOOR WITH A MECHANICAL SCRUBBER, RINSE AND DRY. DO NOT ATTEMPT FURTHER TREATMENT.

f. **NOTE:** ALL THREE COATS MAY NOT BE NECESSARY TO HARDEN THE FLOOR. IF THE FLOOR SHOULD SHOW PATCHES OF WHITE ON DRYING, IMMEDIATELY FLOOD WITH WATER AND SCRUB THE FLOOR WITH A MECHANICAL SCRUBBER, RINSE AND DRY. DO NOT ATTEMPT FURTHER TREATMENT.

2. **APPLICATION OF PENETRATING EPOXY SEALER:**

a. CONCRETE SURFACE	FIRST COAT	SECOND COAT
TROWELED SMOOTH	250 TO 300 (6.1 TO 7.4)	400 TO 600 (9.8 TO 14.7)

b. **MATERIAL REQUIREMENTS:** A TWO COAT APPLICATION USING A COVERAGE RATE OF 200 FT2/GAL (4.9 M2/L) WILL REQUIRE APPROXIMATELY 5 GAL (18.9 L) OF MATERIAL PER 1000 FT2 (92.9 M2) OF AREA. TWO COATS ARE RECOMMENDED FOR BEST RESULTS. THE CONCRETE SURFACE TEXTURE GREATLY AFFECTS COVERAGE RATES AND FINAL APPEARANCE. DO NOT APPLY AT LESS THAN 150 FT2/GAL (3.7 M2/L). APPLY A SECOND COAT IF A THICKER FILM IS DESIRED. ALLOW THE FIRST COAT TO DRY TACK FREE (BUT WAIT NO MORE THAN 24 HOURS) BEFORE THE SECOND COAT IS APPLIED.

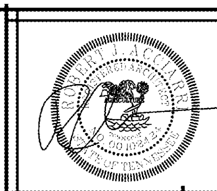
c. **SURFACE PREPARATION:** NEW CONCRETE MUST BE A MINIMUM OF 28 DAYS OLD AND POSSESS AN OPEN SURFACE TEXTURE WITH ALL CURING COMPOUNDS AND SEALERS REMOVED. THE CONCRETE MUST BE CLEAN AND SOUND. ALL OIL, DIRT, DEBRIS, PAINT AND UNSOUND CONCRETE MUST BE REMOVED. PRESSURE WASHING AND/OR POWER SCRUBBING IS RECOMMENDED. THE CONCRETE SURFACE CAN BE DAMP OR DRY AT THE TIME OF APPLICATION OF EUCO #512 VOX EPOXY SEALER. HOWEVER, BEST RESULTS ARE OBTAINED WHEN THE CONCRETE IS DAMP WITH ALL PUDDLES REMOVED.

d. **MIXING:** ALL MATERIALS SHOULD BE IN THE PROPER TEMPERATURE RANGE OF 60°F TO 90°F (16°C TO 32°C). PRE-MIX PART A AND ADD THE ENTIRE CONTAINER OF PART B TO ALL THE PART A. MIX FOR 2 TO 3 MINUTES USING A MECHANICAL (DRILL) MIXER. THE EPOXY MUST BE WELL MIXED TO ENSURE PROPER CHEMICAL REACTION. AFTER MIXING, PLACE IMMEDIATELY.

e. **PLACEMENT:** TO APPLY THE SEALER TO CONCRETE, USE A PUMP-UP OR AIRLESS SPRAYER FOR BEST RESULTS. A SHORT NAP ROLLER OR LAMB'S WOOL APPLICATOR MAY ALSO BE USED.

f. **CLEAN-UP:** CLEAN TOOLS AND EQUIPMENT WITH WARM, SOAPY WATER BEFORE THE MATERIAL DRIES.

DO NOT SCALE THESE DRAWINGS



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CONCRETE SPECIFICATIONS

DATE 06/02/20
JOB NO. 19155
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