

## NEW CONSTRUCTION

### SECTION 03 35 00 - CONCRETE POLISHING, PROCESSING, & FINISHING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Includes inspection of concrete slab, removal of stains, oils, residues, dirt, etc., if any, and application of a concrete polishing, processing and finishing system. Work area shall include all areas as indicated on the drawings.
- B. For work in this section, Concrete Polishing, Processing and Finishing Contractor shall hereafter be referred to as "Contractor".

##### 1.02 QUALITY ASSURANCE.

- A. Installer qualifications: Contractor shall have a minimum of five (5) years experience installing the specified process on no fewer than five (5) similar projects that have been in-place for more than one year, and shall provide trained laborers with prior experience in the specified process.
- B. Contractor shall have a minimum of one year experience in applying each of the specified products with no fewer than five (5) similar projects where each specified product was used.
- C. Pre-Installation Meeting:
  - 1. Shall occur before placement of concrete foundations.
  - 2. Shall be attended by the Contractor, General Contractor, Walgreens Construction Superintendent, Flat Work Contractor, and architect.
  - 3. Establish project timeline and communicate necessity of quality assurance measures.
  - 4. Review Walgreens criteria specification 03 30 00 - Cast In Place Concrete for requirements including placement, finishing, curing, and floor flatness and floor levelness requirements.
  - 5. Review imbedded items. Floor clean outs, drains, and other items imbedded in the slab that are to be flush with the finished floor shall be placed flush with top of slab at placement.
  - 6. Review interior column foundation details to assure that all concrete is flush with top of slab elevation.
- D. Protection of concrete floor surface:
  - 1. All trades shall be aware of the need to protect the concrete floor slab throughout the entire construction process - from slab pour to project completion.

2. All equipment shall be "diapered" to prevent floor surface abrasion and to prevent oils, hydraulic fluids, grease, etc., from contacting the floor surface.
3. Vehicles shall not be permitted on the floor surface.
4. Acids and acidic detergents shall not contact the floor surface.
5. Protect the floor surface from cutting oils, primers, solvents, dyes, etc.
6. Protect the floor surface from impact, abrasion, chips, gouges, etc.
7. Pipe cutting machinery shall not be permitted on the concrete floor surface.
8. Steel shall not be placed on the concrete floor to avoid rust stains.
9. All painters shall protect the concrete floor with drop cloths. All paint on the concrete floor shall be immediately removed.
10. All trades shall be informed that the concrete floor shall be protected at all times.
11. Slab protection materials and methods shall be approved by the Concrete Polishing Contractor and coordinated by the General Contractor. All protection materials (masonite, etc.) if any, shall be installed and maintained to assure uniform slab dry-out.
12. After floors are polished, perform periodic sweeping and damp mopping to prevent abrasion of the floor finish prior to store opening.

E. Mockup:

1. Shall be used as a reference as to the appearance of the finished product.
2. Shall be 7'-0" x 7'-0" in size minimum and large enough to depict results from actual equipment to be used throughout the process. Locate mockup within the store as directed by the Walgreens Construction Department and General Contractor.
3. Shall be produced in conformance with this specification section.
4. Shall be evaluated for approval by Walgreens Construction Department. Contractor shall remove and replace mockups as required for approval.
5. Mockup may be incorporated into finished work.

1.03 SUBMITTALS

- A. Submit with bid complete submittal package for approval by Walgreens

including:

1. Manufacturer and model of all abrasives and equipment that mechanically rotate abrasives.
2. Manufacturer and model of vacuum equipment.
3. Manufacturer and model of power generator.
4. Product information and technical data for products along with documentation indicating that Contractor has been certified by each product manufacturer to install specified products.
5. Contractor job references including listing of minimum five (5) similar projects in-place for more than one year. Provide physical address and contact information for each project. Include information on equipment, abrasives, and products used for each project.
6. Project Phasing Schedule indicating work descriptions, locations/areas of each work phase, and duration for each phase.
7. Details and descriptions of all dust control measures.
8. Cleaning and maintenance recommendations for finished surface including recommended products, materials, equipment and methods
9. Detailed description of polishing, processing and finishing sequence indicating each phase or step and all materials and equipment used.

#### 1.04 JOB CONDITIONS

- A. Maintain work area temperature, humidity, and ventilation within limits recommended by manufacturer of any products used for application.
- B. Job site lighting shall be operational and sufficient light shall be provided for the process.
- C. Contractor shall provide and coordinate all dumpster and waste removal throughout the project.
- D. New concrete shall have cured a minimum of 45 days prior to initiating the installation of concrete polishing, processing and finishing work.
- E. On-site storage space is extremely limited. Contractor shall coordinate with the Walgreens Construction Department and General Contractor and provide storage units as required.
- F. Existing HVAC return grilles in work area shall be filtered.
- G. Contractor shall not begin grinding or polishing until all dust control measures indicated are installed.
- H. Contractor shall provide power source for all electrical equipment required

to complete the project. Contractor shall coordinate with General Contractor regarding generator location, operating times, noise considerations, fuel storage, etc. Generator shall run quietly and exhaust shall be managed to prevent exhaust fumes from entering the parking area or the building through air intakes, grilles, open doors, etc.

## PART II - PRODUCTS

### 2.01 MATERIALS

#### A. Joint Filler:

1. Questmark 5830 Fast Set Flexible Joint Sealant. Two component 100% solids polymer system.
2. Sika Corporation Sikaflex - 1c SL self leveling 1-part polyurethane sealant.
3. Metzger/McGuire Spal-Pro RS 88 polyurea joint filler.
4. The Euclid Chemical Company QWIKjoint polyurea joint filler.

#### B. Crack Repair Material:

1. Questmark 5818 Epoxy Crack Filler. Two component 100% solids epoxy crack filler for shallow crack repair. Color to match floor slab.
2. Metzger/McGuire MM-80 epoxy joint filler.
3. The Euclid Chemical Company Euco 700 epoxy joint filler.

#### C. Patching Material:

1. Multiple minor surface defects & irregularities:
  - a. Questmark 2341 Polyaspartic Urethane Seamless Binder
  - b. National Polymers, Inc. NP380 two component 100% solids quick set epoxy binder.
  - c. The Euclid Chemical Company Euco #452 Epoxy System.
2. Featheredge Patches:
  - a. Rapid Set Cement All By CTS Cement Manufacturing Corp. High strength, non-shrink grout for patches 0"– 4" deep.
  - b. Ardex Feather Finish by Ardex Engineered Cements. Self drying, cement based finishing underlayment for patches 0" - 1/2" deep
  - c. Ardex SD-P by Ardex Engineered Cements. Self drying, fast setting concrete underlayment for patches 0" – 1" deep and patches up to 3" deep with addition of appropriate aggregate to match existing.

- d. The Euclid Chemical Company Tamms Thin Patch, polymer modified patching mortar. Maximum thickness 1" per lift.
3. Patches deeper than 1/2":
    - a. Rapid Set Mortar Mix By CTS Cement Manufacturing Corp. High strength repair mortar for patches 1/2" - 6"
    - b. Ardex DSD-T by Ardex Engineered Cements. Self drying, self leveling concrete topping for patches 1/2" - 2" and patches up to 5" deep with addition of appropriate aggregate to match existing.
    - c. Rapid Set Concrete Mix By CTS Cement Manufacturing Corp. Rapid hardening concrete for patches 2" – 24" deep.
- D. Epoxy Grout Coat:
1. Questmark 3380 Clear Quick Set Seamless Epoxy Binder. Two component 100% solids epoxy seal coat.
  2. National Polymers, Inc. NP380 two component 100% solids quick set epoxy binder
  3. The Euclid Chemical Company Duraltex Epoxy binder, clear, two component, 100% solids epoxy binder.
- E. Densifier:
1. Questmark 7923 Diamond Guard II
  2. National Polymers, Inc. NP7936 one component water based, lithium based solution.
  3. National Polymers, Inc. NP7937 one component water based, lithium based solution.
  4. Convergent Concrete Technologies, LLC Pentra-Sil NL water based, lithium based solution
  5. Lythic Solutions, Inc. Lythic Densifier, Colloidal Silica Concrete Hardener and Densifier.
  6. Prosoco, Inc. Consolideck LS Lithium Silicate densifier.
  7. The Euclid Chemical Company UltraSil Li+ water based lithium silicate densifier, sealer.
  8. Concrete Polishing Solutions Armor Densifier, aqueous Lithium polysilicate solution.
- F. Stain Inhibiter:

1. Questmark 7924 Diamond Guard Plus densifier and stain inhibitor. Solvent-free lithium silicate and polymer surface application.
2. National Polymers 7940 Stain Inhibiter. One component water-based organic polymer and silane/siloxane surface conditioner and stain guard.
3. Convergent Concrete Technologies, LLC Pentra-Guard HP surface hardener and protective clear coat. Hybrid organic/inorganic nano lithium surface treatment.
4. Lythic Solutions, Inc. Lythic Protector, Colloidal Silica protection coat.
5. Prosoco, Inc. Consolideck LS Guard lithium silicate and copolymer formulation.

### PART III - EXECUTION

#### 3.01 PREPARATION

- A. Remove oil, grease, dirt, slab coatings, loose concrete if any and other contaminants that may affect the final finish.
- B. Inspect substrate to assure satisfactory surfaces. Identify conditions or defects that cannot be mitigated through the concrete polishing, processing and finishing process including filling, patching and repair procedures specified herein.
- C. Repair of isolated surface defects:
  1. Rout edges of spalls/pits to form 1/2" deep "shoulder" at edges.
  2. Clean area of defect with grinder or wire brush to remove all loose material and laitance. Vacuum.
  3. At spalled joints install edge form as required. Treat form with non-staining release agent.
  4. Mask edges of repair with tape and install Patching Material.
  5. Allow Patching Material to cure per manufacturer's recommendations.
  6. Polish/finish to match adjacent floor finish.
- D. Repair of multiple minor surface defects & irregularities:
  1. Clean defects with wire wheel to remove all loose material and laitance. Vacuum.
  2. Apply Patching Material generously in and around defects.
  3. Trowel Patching Material flush with slab surface and repeat

troweling in opposite directions until material begins to thicken.

4. Allow Patching Material to cure per manufacturer's recommendations.
5. Grind-off overfill, ensuring that Patching Material is flush with slab surface.
6. Inspect and reapply as required until smooth surface is achieved.

E. Large surface repair:

1. Rout or sawcut edges of spalls/pits to form 1/2" deep "shoulder" at edges.
2. Roughen surface and vacuum clean. Inspect and remove all loose material with wire brush and vacuum.
3. Mask edges of repair with tape.
4. Where required by Patching Material manufacturer, install bonding agent.
5. Install Patching Material and float level per manufacturer's recommendations.
6. Trowel until surface is level and smooth without defects.
7. Allow Patching Material to cure per manufacturer's recommendations.
8. Polish/finish to match adjacent floor finish.

F. Repair of cracks up to 1/8" in width:

1. Clean crack cavity:
  - a. Lightly rake crack with sharp tool.
  - b. Remove all loose segments including islands formed by crack.
  - c. Do not route, saw cut or widen joint.
  - d. Vacuum crack to remove all dirt, debris and laitance.
2. Mask slab surface along crack as required.
3. Install Crack Repair Material per manufacturer's recommendations until material crowns the floor surface without voids.
4. Cure sufficiently per manufacturer's recommendations and shave Crack Repair Material flush with floor surface using razor scraper.

5. Polish crack repair area to blend surface.
- G. Repair of cracks greater than 1/8" up to 1/4" wide:
1. Rout top of crack to provide square edge - 1/2" deep x minimum 1/8" wide, maximum 1/4" wide.
  2. Clean crack cavity. Vacuum crack to remove all dirt, debris and laitance.
  3. Mask slab surface along crack as required.
  4. Prime crack per Crack Repair Material manufacturer's recommendations.
  5. Deposit silica sand into crack to within 1/8" to 1/4" from top of floor surface.
  6. Install Crack Repair Material per manufacturer's recommendations until material crowns the floor surface without voids.
  7. Cure sufficiently per manufacturer's recommendations and shave Crack Repair Material flush with floor surface using razor scraper.
  8. Polish crack repair area to blend surface.
- H. Saw cut control joints:
1. Clean joint of dirt, debris, coatings, etc. Joints must be free of all laitance and visible moisture. Joints shall have continuous, square edges without spalls or voids.
  2. If necessary, re-saw the joint to a depth of 3/4" with a dry cut, vacuum-equipped saw using a slightly oversized blade. Blade shall be wide enough to remove edge spalls and to produce square corners on both sides of the joint. Total joint width shall be 3/4" maximum.
  3. Install joint filler material into the irregular portion of the contraction joint below the saw cut portion. Allow joint filler to set-up and bond to the irregular surfaces of the joint.
  4. Mask edges of joint as required and install 1/8" deep max. layer of silica sand into the bottom of the saw cut portion of the joint to serve as a bond break. Install joint filler material per manufacturer's recommendations until material crowns the floor surface without voids.
  5. Cure sufficiently per manufacturer's recommendations and shave joint filler material flush with floor surface using razor scraper.
- I. Installation of Joint Filler at formed construction joints.
1. Clean joint of dirt, debris, coatings, etc. Joints must be free of all



laitance and visible moisture. Joints shall have continuous, square edges without spalls or voids.

2. Mask edges of joint as required and install backer rod. Install Joint Filler per manufacturer's recommendations until material crowns the floor surface without voids.
3. Cure sufficiently per manufacturer's recommendations and shave Joint Filler flush with floor surface using razor scraper

### 3.02 INSTALLATION

#### A. Finish level #3:

General Sales, Photo, Patient Seating, Pharmacy Seating Area, Patient Services, Multi-Purpose Room, Pharmacy Service Area and Liquor Department, and Passages not separated from General Sales by a door. (sales/front of house):

1. Floor surfaces shall be polished to a level 3 finish.
2. Floor surfaces shall be ground to expose fine aggregates.
3. Edges shall be polished to match the field of the floor.
4. Construction and control joints are to receive joint filler.
5. Floor surfaces shall have an average minimum gloss reading of 55.
6. Floor surfaces shall have a minimum dry static coefficient of friction (SCOF) of 0.6. as measured per latest editions of ASTM C 1028 or ASTM F-609.

#### B. Finish Level #2

Passages Separated from General Sales by a door, Employee Room, Office, Porter, Training Room, Market Service Area:

1. Floor surface shall be ground, densified and polished.
2. Edges shall be polished to match the field of the floor.
3. Construction and control joints are to receive joint filler.
4. Floor surfaces shall have a minimum dry static coefficient of friction (SCOF) of 0.6. as measured per latest editions of ASTM C 1028 or ASTM F-609.

#### C. Finish Level # 1

General Stock Room, beneath Cooler/Freezer, Vestibule, and Electrical Room:

1. Floor surfaces to be densified.
2. Construction and control joints beneath Cooler/Freezer are to receive joint filler.

- D. Concrete polishing, processing and finishing process - Finish Level #3 - General Sales, Photo, Patient Seating, Pharmacy Seating Area, Multi-Purpose Room, Patient Services, Pharmacy Service Area, Liquor Department, and Passages not Separated from General Sales by a door (Sales/front of house):
1. Mechanically grind floor surface with #40 grit metal bonded diamonds (16, 25 grit prior if necessary) removing construction debris and floor slab imperfections. Continue until scratch pattern is uniform and fine aggregate exposure is achieved. Vacuum the floor thoroughly using a squeegee vacuum attachment.
  2. Squeegee apply Epoxy Grout Coat into floor surface to seal all porous floor areas. Allow to cure overnight.
  3. Mechanically grind floor surface with #80 grit metal bonded diamonds removing excess grout coat and all scratches from previous grit. Vacuum the floor thoroughly after each grind using a squeegee vacuum attachment.
  4. Mechanically grind floor surface with #150 grit metal bonded diamonds or Hybrid diamond tool removing all scratches from previous grit. Vacuum the floor thoroughly after each grind using a squeegee vacuum attachment.
  5. Clean floor surface thoroughly using water and an AutoScrubber.
  6. Apply densifier at approximately 200 square feet per gallon using a stiff, long bristled broom. Cover the entire work area liberally and allow to soak for ten (10) minutes. Re-apply to areas where the densifying impregnator has soaked in and allow to sit for an additional thirty (30) minutes. Squeegee or AutoScrub excess material off of floor. Allow 1-2 hours to dry before proceeding.
  7. Mechanically grind floor surface with #100 resin bonded diamonds to begin the process of creating the initial shine. Clean floor surface with clean water and an AutoScrubber or a mop and a wet vacuum.
  8. Mechanically grind floor surface with #200 resin bonded diamonds to finish the process of creating the initial shine. Clean floor surface with clean water and an AutoScrubber or a mop and a wet vacuum.
  9. Start the polishing process utilizing #400 grit resin bonded diamonds to improve the shine and remove swirls in the concrete. Clean floor surface with clean water and an AutoScrubber or a mop and a wet vacuum.
  10. Continue the polishing process utilizing #800 grit resin bonded diamonds to improve the shine and remove swirls in the concrete. Clean floor surface with clean water and an AutoScrubber or a mop and a wet vacuum.
  11. Continue the polishing process utilizing #1500 grit resin bonded

diamonds to improve the shine and remove swirls in the concrete.  
Clean floor surface with clean water and an AutoScrubber.

12. Apply densifier using two light coats applied with a micro fiber mop. Allow to first coat to dry before applying second coat. Once second coat is dry to the touch, allow additional 20 minutes before proceeding to the next step.
  13. Resume the polishing process utilizing #3000 grit diamond pad and burnisher in order to heat cure the densifier per manufacturer's recommendations and provide the final shine.
  14. Apply light coating of Stain Inhibiter using micro fiber mop. Allow to dry. Burnish using #3000 grit diamond pad and high speed burnisher in order to heat cure the Stain Inhibiter per manufacturer's recommendations and provide the final shine.
- E. Concrete polishing, processing and finishing process - Finish Level #2 - Passage 1,2,& 3, Employee Room, Office, Porter, Training Room (back of house):
1. Mechanically grind floor surface with #100-200 grit metal bonded diamonds removing construction debris and floor slab imperfections. Continue until scratch pattern is uniform and fine aggregate exposure is achieved. Vacuum the floor thoroughly using a squeegee vacuum attachment.
  2. Apply densifier at approximately 200 square feet per gallon using a stiff, long bristled broom. Cover the entire work area liberally and allow to soak for ten (10) minutes. Re-apply to areas where the densifying impregnator has soaked in and allow to sit for an additional thirty (30) minutes. Squeegee or AutoScrub excess material off of floor. Allow 1-2 hours to dry before proceeding.
  3. Polish utilizing #3000 grit diamond pad and high speed burnisher in order to heat cure the densifier per manufacturer's recommendations and provide the final shine.
- F. Walgreens Construction department may visually inspect and accept installation at each work area before work shall begin in successive work areas. Surfaces shall be free of random scratch patterns. Edges shall be processed to match remainder of floor
- G. Remove all debris, dust control measures, tape, etc. and complete cleanup of all work areas.

### 3.03 GLOSS & SLIP RESISTANCE TESTING

- A. Contractor shall perform testing and provide certification to Walgreens that the finished installation conforms to specified requirements for gloss and static coefficient of friction (SCOF). Testing shall be performed with Contractor's equipment and may be observed by the Walgreens Field Superintendent.
- B. Walgreens reserves the right to have an independent testing service verify gloss levels prior to acceptance using a Horiba IG-320 Gloss Checker with measurement angle set to 60 degrees. Gloss readings shall be taken at each of the test

locations indicated in article 3.03.C below with four (4) readings taken at each location. The average of all of the readings shall be a minimum of 55.

- C. Walgreens shall have an independent testing service verify static coefficient of friction (SCOF) levels prior to acceptance, using an American Slip Meter, Inc. ASM 725 or ASM 825 horizontal slip meter. SCOF readings shall be taken at six (6) test locations in the Sales area and one additional test location within the passage adjacent to the Toilet Rooms where the passage is not separated from Sales by a door. Four (4) SCOF readings shall be taken at each test location. The average of the four (4) readings in each test location shall have a minimum SCOF of 0.6. Each test location shall have a minimum average SCOF of 0.6.
  - 1. Six (6) Test Locations Within the Sales Area:
    - a. Front entrance adjacent to the registers
    - b. Hallmark aisle
    - c. Beauty Aisle
    - d. Aisle adjacent to Photo
    - e. Aisle adjacent to cooler/freezer
    - f. Pharmacy Seating

#### 3.04 MAINTENANCE

- A. In an effort to develop a uniform maintenance program that will extend the service life of polished concrete floors, Walgreens will institute the following procedures for all polished concrete floor maintenance.
- B. Contractor shall review the following maintenance procedures, and by submitting bid Contractor shall agree that the procedures outlined herein shall be acceptable for the long term maintenance and durability of the Contractor's proposed polished concrete floor system.
- C. The following supplies will be provided by Walgreens and will remain at the stores:
  - 1. Johnson Diversey Prominence neutral pH floor cleaner
  - 2. Johnson Diversey Dust mop heads
  - 3. Johnson Diversey Dust mop frame and handle
  - 4. Twister brand - HTC America "Blue" cleaning and burnishing pads
- D. The following procedures will be performed daily or as needed:
  - 1. Dust Mopping
    - a. Broom sweep around fixtures, checkouts, displays and other areas not accessible to the dust mop. Sweep into aisles.
    - b. Removal of gum & stickers with approved putty knife.
    - c. Dust mop, collect and dispose of dust and debris with broom and dustpan.

2. Wet Mopping
  - a. Fill clean bucket with 4 gallons of water and add 2 ounces of Prominence floor cleaner.
  - b. Damp mop using cleaning solution.

E. The following procedures will be performed at frequencies dependant upon store traffic counts. Tier 1 stores (yearly traffic count of 300,000 or less) will be Autoscrubbed and burnished every other week. Tier 2 stores (yearly traffic count of 300,000 or more) will be Autoscrubbed and burnished every week.

1. Autoscrub
  - a. Prior to autoscrubbing, the floor should be swept, dust mopped and all dust and debris should be collected and removed.
  - b. Fill Autoscrubber with clean water and Prominence cleaner mixed at a dilution of 1:64.
  - c. Fill clean bucket with same dilution of cleaning solution indicated above. Trail mop using this solution and clean mop.
  - d. Mount Twister "Blue" pads on Autoscrubber. Scrub floor with squeegee down, pads on medium pressure, solution valve 3/4 open, and move in straight line at a normal walking speed. Trail mop excessive wet areas behind scrubber. Change mop solution as it becomes visibly soiled in the bucket. Do not rinse floor after cleaning. Let floor dry completely before burnishing.
2. Burnishing
  - a. Mount Twister "Blue" pad on burnisher.
  - b. Start engine and walk in straight line at slow walking speed (1 2 feet per second) overlapping each pass.
  - c. Change pad every five burnishing cycles or when pad becomes worn out.
  - d. Dust mop the area after burnishing.

END OF SECTION