

**Part 1      General**

**1.1      SECTION INCLUDES**

- .1      Type PC1 polished concrete floor finish as shown on Finish Schedule.
- .2      Concrete polishing to floors, including but not limited to:
  - .1      Surface preparation.
  - .2      Application of clear, colourless, liquid concrete hardener and densifier.
  - .3      Grind and polish of floor to desired finish.
  - .4      Application of water-based concrete enhancer.

**1.2      RELATED WORK SPECIFIED IN OTHER SECTIONS**

- .1      Section 09 61 05 - Floor Preparation.

**1.3      REFERENCE DOCUMENTS**

- .1      ACI 302 - Guide for Concrete Floor and Slab Construction.
- .2      ASTM C779-05 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
- .3      ASTM C805-02 - Rebound Number of Hardened Concrete.
- .4      ASTM G23-81 - Ultraviolet Light and Water Spray.
- .5      CSA-A23.1-09 - Concrete Materials and Methods of Concrete Construction.
- .6      CAN/CGSB-25.20-95 - Surface Sealer for Floors.
- .7      CAN/CSA A23.1-09/A23.2-09 (R2014) - Concrete materials and methods of concrete construction/Test methods and standard practices for concrete

**1.4      ADMINISTRATIVE REQUIREMENTS**

- .1      Coordination
  - .1      Coordinate the work of this section with the work of Section 09 61 05 as required to ensure proper application.

**1.5      SUBMITTALS**

- .1      Product Data
  - .1      Submit product data for each product in accordance with Section 01 33 00.
  - .2      Provide data on concrete finish materials and components. Indicate VOC limits.

- .3 Submit product manufacturer's technical data sheet giving descriptive data, curing time, and application requirements.
- .2 Manufacturer's Certification:
  - .1 Provide letter of certification from concrete finish manufacturer stating that floor finisher is certified applicator of special concrete finishes, and is familiar with proper procedures and installation requirements required by the manufacturer.
- .3 Operation and Maintenance Data:
  - .1 Submit detailed cleaning and maintenance instructions for concrete hardener/sealer products, and instruct Owner in proper care and maintenance of specified floor finishes, including a complete list of floor care products that will be required for on-going maintenance, in accordance with Division 01.
  - .2 Include precautions against cleaning products and methods which may be detrimental to finishes and performance.

## **1.6 COORDINATION**

- .1 Scheduling:
  - .1 Complete concrete polishing at least 10 days prior to installation of any equipment and fitments.
  - .2 Complete concrete polishing prior to installation of interior demising partitions.
  - .3 Close areas to traffic during floor application and after application, for time period recommended in writing by finish manufacturer
- .2 Use of hydraulic powered equipment or lubricant-assisted cutting tools and storage of liquid-based product is not permitted on the slab.

## **1.7 MOCK-UP**

- .1 Construct mock-up area 1200 mm x 1200 mm, with coatings applied and polishing completed.
- .2 Locate where directed.
- .3 Apply finish required to demonstrate typical sheen level, aggregate exposure, joints, surface finish, colour variation, and standard of workmanship.
- .4 Polish mock-up to expose aggregate and produce sheen level as directed by Departmental Representative and as follows:
  - .1 Polish up to 1500-grit for Departmental Representative review.
  - .2 Polish up to 2000-grit for Departmental Representative review.
  - .3 Polish up to 2500-grit for Departmental Representative review.
  - .4 Polish up to 3000-grit for Departmental Representative review.
- .5 Departmental Representative may reduce or increase degree of aggregate exposure at any point during installation of mock-up.

- .6 Mock-up may remain as part of the Work.

## **1.8 DELIVERY, STORAGE, AND HANDLING**

- .1 Delivery and Acceptance Requirements
  - .1 Deliver materials to site in containers sealed and labeled by manufacturers.
- .2 Storage and Handling Requirements
  - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding storage, handling and disposal of hazardous materials.
- .3 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21.

## **1.9 SITE CONDITIONS**

- .1 Provide temporary lighting, as required, to provide a minimum of 1200 watt light source, placed 2.5 meters above floor surface, for each 40 m<sup>2</sup> of floor being finished.
- .2 Maintain ambient temperature of 10°C minimum from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.
- .3 Ensure substrate is within moisture limits prescribed by product manufacturers.
- .4 Ventilate enclosed spaces as required during product application and for 48 hours after application.

## **Part 2 Products**

### **2.1 PERFORMANCE REQUIREMENTS**

- .1 Coefficient of Friction: Meets or exceeds ADA minimum coefficient of friction of 0.60 (on dry surfaces) or higher for accessible routes and 0.80 or higher for ramps tested in accordance with ASTM C 1028.
- .2 Finish and Appearance Quality Standards: Finish standards indicated are according to the Concrete Polishing Association of America (CPAA) as follows:
  - .1 Aggregate Exposure: Refer to Finish Schedule.
  - .2 Polishing Concrete Floor Finish:
    - .1 Finished Gloss Level 1 – Low Gloss Appearance.
    - .2 Procedure: Not less than 4 step process with full refinement of each diamond pad up to 100 grit with one application of densifier.

- .3 Gloss Measurement: based on using an IQ 20-60 Goniophotometer gloss-haze-DOI-RIQ meter, average reading of 20 on 60% Gloss, average DOI of 37.5. Determine the specular gloss by incorporating the following:
  - .1 Reflective Clarity Reading: Not less than 20 according to ASTM D5767 prior to the application of sealers, having a flat appearance with not to very slight diffused reflection.
  - .2 Reflective Sheen Reading: Not less than 15 according to ASTM D523 prior to the application of sealers; none to very low sheen.

## 2.2 MATERIALS

- .1 Densifying Agent: Liquid applied.
  - .1 Acceptable Products: Convergent Concrete Technologies Pentra-Sil (HD), WR Meadows Liqui-Hard, RetroPlate 99, Consolideck LS Lithium Densifier.
- .2 Sealer and Colour Enhancer:
  - .1 Gloss Level: Low Gloss
  - .2 Acceptable Products: Convergent Concrete Technologies Pentra-finish (HG), WR Meadows Bellatrix, RetroGuard, Consolideck LSGuard.

## 2.3 ACCESSORIES

- .1 Filler: applied during grinding, premixed as supplied by densifier manufacturer for filling pinholes, small air voids, pop-outs, micro-cracks and other gaps in the concrete surface.
- .2 New and Salvaged Resilient base (Type RB2):
  - .1 Match existing as selected by Departmental Representative.

## 2.4 EQUIPMENT

- .1 Grinding Machine:
  - .1 Three-head counter rotating variable speed floor grinding machine.
  - .2 Dust extraction system and pre-separator.
  - .3 75kw MQ power generator or equivalent.
- .2 Hand Grinder: Edging tool equipped with dust extraction.
- .3 Dust Extraction: Capable of removing airborne particulate during course of Work.
- .4 Diamond grinding segments: 40, 60, 80 and 150 grit.
- .5 Diamond polishing pads: 100, 200, 400, 800, 1500, 2000, 2500 and 3000 grit.

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**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify that floor surfaces are acceptable to receive the work of this section.
- .2 Verify that no chemical treatments have been added to cast-in-place concrete.

**3.2 APPLICATION**

- .1 Finish floor in accordance with manufacturer's written instructions and to match approved mock-up.
- .2 Provide polished floor finish as follows:
  - .1 Polish floor using incremental degrees of abrasion to achieve a Low-Gloss finish as determined by the Departmental Representative and in accordance with approved mock-up.
- .3 Provide low-gloss finish with no visible difference at wall edge;
  - .1 floors to be machine ground and polished to within 50 mm of vertical obstruction;
  - .2 floors to be hand ground and polished to within 3.2 mm of vertical obstruction.
- .4 Apply densifying agent in accordance with manufacturer's written instructions.
- .5 Apply sealer in accordance with manufacturer's written instructions.

**3.3 CLEANING**

- .1 Remove spatter from adjoining surfaces.
- .2 Repair damages to surface caused by cleaning operations.

**3.4 PROTECTION OF FINISHED WORK**

- .1 Protect installed floors in accordance with manufacturer's written instructions.
- .2 Do not allow pipe cutting using pipe cutting machinery on concrete slab.
- .3 Do not allow temporary placement and storage of steel members on concrete slabs.
- .4 Clean up spills immediately and spot-treat stains with degreaser or oil emulsifier.

**3.5 DEFECTIVE WORK**

- .1 Replace defective Work as directed by Departmental Representative.

**END OF SECTION**