

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 03 54 13 – Gypsum Cement Underlayment.
- .2 Section 04 05 19 – Masonry Anchorage and Reinforcing.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C260-01, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C309-03, Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete.
 - .3 ASTM C494/C494M-05, Standard Specification for Chemical Admixtures for Concrete.
 - .4 ASTM C1017/C1017M-03, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-37.2-M88, Emulsified Asphalt, Mineral Colloid-Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.
 - .2 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283-00(R2003), Qualification Code for Concrete Testing Laboratories.
 - .3 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.

1.3 ACRONYMS AND TYPES

- .1 Cement: hydraulic cement or blended hydraulic cement (XXb - where b denotes blended).
 - .1 Type GU or GUb - General use cement.
 - .2 Type MS or MSb - Moderate sulphate-resistant cement.
 - .3 Type MH or MHb - Moderate heat of hydration cement.
 - .4 Type HE or Heb - High early-strength cement.
 - .5 Type LH or LHb - Low heat of hydration cement.
 - .6 Type HS or HSb - High sulphate-resistant cement.

- .2 Fly ash:
 - .1 Type F - with CaO content less than 8%.
 - .2 Type CI - with CaO content ranging from 8 to 20%.
 - .3 Type CH - with CaO greater than 20%.
- .3 GGBFS - Ground, granulated blast-furnace slag.

1.4 DESIGN REQUIREMENTS

- .1 Alternative 1 - Performance: in accordance with CSA-A23.1/A23.2, and as described in MIXES of PART 2 - PRODUCTS.

1.5 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit testing results and reports for review by Contract Administrator and do not proceed without written approval when deviations from mix design or parameters are found.
- .3 Concrete pours: submit accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.
- .4 Concrete hauling time: submit for review by Contract Administrator deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to Site of Work and discharged after batching.

1.6 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Minimum 4 weeks prior to starting concrete Work, submit concrete design mixes for review by Contract Administrator.
- .3 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 30 – Health and Safety Requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Concrete hauling time: maximum allowable time for concrete to be delivered to Site of Work and discharged not to exceed 120 minutes after batching.
- .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .3 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling.
 - .2 Provide an appropriate area on the job Site where concrete trucks can be safely washed.

Part 2 Products

2.1 MATERIALS

- .1 Cement: to CAN/CSA-A3001.
- .2 Supplementary cementing materials: to CAN/CSA-A3001.
- .3 Water: to CSA-A23.1.
- .4 Aggregates: to CAN/CSA-A23.1/A23.2.
- .5 Admixtures:
 - .1 Air entraining admixture: to ASTM C260.
 - .2 Chemical admixture: to ASTM C494 ASTM C1017.
- .6 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA-A23.1/A23.2.
 - .1 Compressive strength: 50 MPa at 28 days.
- .7 Non premixed dry pack grout: composition of non metallic aggregate Portland cement with sufficient water for mixture to retain its shape when made into ball by hand and capable of developing compressive strength of 50 MPa at 28 days.
- .8 Premoulded joint fillers:
 - .1 Bituminous impregnated fibre board: to ASTM D1751.
 - .2 Sponge rubber: to ASTM D1752, Type I, flexible grade.
- .9 Topping:

2.2 MIXES

- .1 Alternative 1 - Performance Method for specifying concrete: to meet Contract Administrator performance criteria in accordance with CAN/CSA-A23.1/A23.2. See structural drawings for requirements.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain Contract Administrator's approval before placing concrete.
 - .1 Provide 48 hours notice prior to placing of concrete.
- .2 During concreting operations:
 - .1 Development of cold joints not allowed.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.

- .4 Prior to placing of concrete obtain Contract Administrator's approval of proposed method for protection of concrete during placing and curing.
- .5 Protect previous Work from staining.
- .6 Clean and remove stains prior to application for concrete finishes.
- .7 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .8 In locations where new concrete is dowelled to existing Work, drill holes in existing concrete.
 - .1 Place steel dowels and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.
- .9 Do not place load upon new concrete until authorized by Contract Administrator.

3.2 REPAIR PROCEDURES

- .1 Identify locations of existing reinforcing bars to be retained and chip out around bars. Saw cut remaining perimeter of the area to a depth of 10mm with the edges cut as neatly as possible keeping the sides square. Care is to be taken not to cut existing reinforcing steel that is to be retained.
- .2 Remove deteriorated concrete to a minimum depth indicated for the repair method identified for the area, to clean sound undamaged concrete.
- .3 Feather edging is not permitted and a minimum thickness of 10mm must be maintained over the whole repair area.
- .4 Substrate should be prepared to provide a rough surface having at least 5mm amplitude at 20mm frequency.
- .5 Reinforcing steel that is exposed greater than $\frac{1}{2}$ its diameter shall have the concrete removed around its entire circumference. Reinforcement should have all rust removed by the use of power tools, abrasive blasting or wire brushing.
- .6 Substrate is to be reviewed by Contract Administrator to ensure that adequate removal of concrete has taken place, and to quantify areas of concrete repair.
- .7 Prior to application of repair mortar or concrete, thoroughly saturate the surface of the concrete provide a saturated surface condition. Any surface water should be removed using compressed air.
- .8 Repair mortar to be mixed and applied in accordance to manufacturers recommendations.
- .9 Provide curing sealer on all vertical surfaces of repaired beam sections. Ensure sealer is compatible with waterproof membrane.

3.3 CONSTRUCTION

- .1 Do cast-in-place concrete Work in accordance with CSA-A23.1/A23.2.
- .2 Sleeves and inserts:
 - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by Contract Administrator.
 - .2 Where approved by Contract Administrator, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.
 - .3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Contract Administrator.
 - .4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Contract Administrator before placing of concrete.
 - .5 Check locations and sizes of sleeves and openings shown on drawings.
- .3 Anchor bolts:
 - .1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
- .4 Grout under base plates using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.
- .5 Finishing and curing:
 - .1 Finish concrete in accordance with CSA-A23.1/A23.2.
 - .2 Wet cure all slabs for a minimum of 7 days.
 - .3 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges unless otherwise indicated.
- .6 Toppings: Refer to Section 03 54 13 – Gypsum Cement Underlayment.
- .7 Joint fillers:
 - .1 Furnish filler for each joint in single piece for depth and width required for joint.
 - .2 Locate and form isolation joints at interface of different construction methods that could lead to differential movements between the two items.
 - .3 Install joint filler.
 - .4 Use 12 mm thick joint filler to separate slabs-on-grade from other surfaces and extend joint filler from bottom of slab to within 12 mm of finished slab surface unless indicated otherwise.

3.4 FIELD QUALITY CONTROL

- .1 Site tests: conduct following test in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - SUBMITTALS.
 - .1 Concrete strength cylinder tests.

- .2 Slump tests.
- .3 Air test.
- .2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by the Contract Administrator for review in accordance with CSA-A23.1/A23.2.
- .3 Three concrete test cylinders and one slump test and one air test shall be taken for every 75 cubic meters or less of concrete placed per day.
- .4 The inspection firm has the authority, at its discretion, to reject trucks with unacceptable concrete from the Site.
- .5 Non-Destructive Methods for Testing Concrete: in accordance with CSA-A23.1/A23.2.
- .6 Inspection or testing by Contract Administrator will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

3.5 VERIFICATION

- .1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established in PART 2 - Products, by Contract Administrator and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

END OF SECTION

Part 1

General

1.1 SUMMARY

- .1 Resurfacing of interior concrete floors

1.2 RELATED SECTIONS

- .1 Section 09 65 16 – Resilient Sheet Flooring
- .2 Section 09 30 13 – Ceramic Tile

1.3 REFERENCES

- .1 AASHTO M148 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete (same as ASTM C 309).
- .2 ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- .3 ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- .4 ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- .5 ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- .6 COE CRD-C 621 - - Standard Specification for Packaged Dry, Hydraulic-Cement Grout .7(Nonshrink) (same as ASTM C 1107).
- .7 ICRI Concrete Surface Profile Standards (CSP).

1.4 SECTION INCLUDES

- .1 Dura-Cap “Green” floor underlayment with fly ash. Fly ash is a non-combustible mineral portion of coal generated in a coal combustion power plant.
- .2 Maxxon Floor Primer
- .3 Maxxon Overspray

1.5 DELIVERY, STORAGE AND HANDLING

- .1 General Requirements: Materials shall be delivered in their original, unopened packages, and protected from exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

1.6 QUALITY ASSURANCE

- .1 Installer's Qualifications: Installation of Dura-Cap “Green” shall be by an applicator authorized by Maxxon Corporation using Maxxon approved mixing and pumping equipment.

1.7 SITE CONDITIONS

- .1 Environmental Requirements: Before, during and after installation of Dura-Cap "Green", building interior shall be enclosed and maintained at a temperature above 50 degrees F (10 degrees C) and below 100 degrees F (37.7 degrees C) until structure and subfloor temperature are stabilized.

1.8 FIELD SAMPLE

- .1 Prior to commencement of Work, provide a sample application for Contract Administrator's review. Field sample shall be in an area designated by the Contract Administrator.
- .2 The Contract Administrator, Contractor and manufacturer's representative shall be in attendance during application.
- .3 The field sample, if accepted shall become a part of the finished Work and shall be the minimum standard of quality and workmanship for remainder of the project.
- .4 Test area to be comprised of two areas, total test area to be 5% of project size.
- .5 Test area shall be placed and evaluated for a period of two days prior to acceptance by the Contractor, the Contract Administrator and the Manufacturer's representative.

Part 2 Products

2.1 MATERIALS

- .1 Dura-Cap "Green" gypsum cement: Floor underlayment compound shall be Dura-Cap "Green" gypsum cement underlayment as manufactured by Maxxon Corporation, Hamel, MN. All others must receive prior approval.
- .2 Sand Aggregate: Sand shall be 1/8 inch (3 mm) or less, washed masonry or plaster sand, meeting requirements of Maxxon Corporation Sand Specification 101.
- .3 Mix Water: Potable, free from impurities.
- .4 Subfloor Primer: Maxxon Floor Primer
- .5 Sealer: Maxxon Overspray

2.2 MIX DESIGNS

- .1 General Requirements: Dura-Cap "Green" mix proportions and methods shall be in strict accordance with product manufacturer recommendations.

Part 3 Execution

3.1 PREPARATION

- .1 Condition and Cleaning of Subfloor: Subfloor shall be structurally sound. General Contractor shall clean subfloor to remove mud, oil, grease, and other contaminating factors before arrival of the Dura-Cap "Green" underlayment crew.
- .2 Leak Prevention: Fill cracks and voids with a quick setting caulk or patching material where leakage of Dura-Cap "Green" could occur.
- .3 Priming Subfloor: Prime subfloor using the Maxxon Floor Primer. Priming instructions vary according to the porosity of the subfloor, multiple coats may be necessary.

- .4 Expansion Joints: Allow joints to continue through the Dura-Cap "Green" at the same width.

3.2 APPLICATION OF SELF-LEVELLING FLOORING

- .1 Scheduling: Application of Dura-Cap "Green" shall not begin until the building is enclosed, including roof, windows, doors, and other fenestration. Install after drywall installation unless tenant finish requirements identify partitioning after the pour.
- .2 Application: Dura-Cap "Green" mix proportions and methods shall be in strict accordance with product manufacturer recommendations.
- .3 Drying: General Contractor shall provide continuous ventilation and adequate heat to rapidly remove moisture from the area until the Dura-Cap "Green" is dry. General Contractor shall provide mechanical ventilation if necessary. Under the above conditions, for 3/4 inch (19 mm) thick Dura-Cap "Green", 5-7 days is usually adequate drying time. To test for dryness, tape a 24 inch by 24 inch (609 mm by 609 mm) section of plastic or high density rubber mat to the surface of the underlayment. After 48-72 hours, if no condensation occurs, the underlayment shall be considered dry. Perform dryness test 5-7 days after pour.

3.3 PREPARATION FOR INSTALLATION OF GLUE DOWN FLOOR GOODS

- .1 Sealing: Seal all areas that receive glue down floor goods with Maxxon Overspray according to the Maxxon Corporation's specifications. Any floor areas where the surface has been damaged shall be cleaned and sealed regardless of floor covering to be used. Where floor goods manufacturers require special adhesive or installation systems, their requirements supersede these recommendations.
- .2 Floor Goods Procedures: See the Maxxon Corporation's "Procedures for Attaching Finished Floor Goods to Maxxon Underlayments" brochure for guidelines for installing finished floor goods. This procedure is not a warranty and is to be used as a guideline only.

3.4 FIELD QUALITY CONTROL

- .1 Slump Test: Dura-Cap "Green" mix shall be tested for slump as it is being pumped using a 2 inch by 4 inch (50 mm by 101 mm) cylinder resulting in a patty size of 8 inches (203 mm) plus or minus 1 inch (25 mm) diameter.
- .2 Field Samples: At least one set of 3 molded cube samples shall be taken from each day's pour during the Dura-Cap "Green" application. Cubes shall be tested as recommended by the Maxxon Corporation in accordance with modified ASTM C 472. Test results shall be available to Contract Administrator and/or Contractor upon request from applicator.

3.5 PROTECTION

- .1 Protection From Heavy Loads: During construction, place temporary wood planking over Dura-Cap "Green" wherever it will be subject to heavy wheeled or concentrated loads.

END OF SECTION