

The Executed Agreement including General Conditions and Supplementary Conditions, Division 01, applicable drawings and amendments are part of and are to be read in conjunction with this Section

PART 1 - GENERAL

1.1 RELATED WORK

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| .1 | Concrete Formwork | Section 03 10 00 |
| .2 | Concrete Reinforcement | Section 03 20 00 |

1.2 REFERENCES

- .1 CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
 - .2 CSA-A23.2, Methods of Test and Standard Practices for Concrete.
 - .3 CSA-A23.3, Design of Concrete Structures
 - .4 CSA-A3000, Cementitious Materials Compendium.
 - .5 ASTM C260, Specification for Air-Entraining Admixtures for Concrete.
 - .6 ASTM C494, Specification for Chemical Admixtures for Concrete.
 - .7 CAN/CGSB-37.2, Emulsified Asphalt, Mineral Colloid-Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.
 - .8 CAN/CGSB-51.34, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .9 ASTM C939 Test Method for Flow of Grout for Preplaced-Aggregate Concrete
 - .10 ASTM D412, Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
 - .11 ASTM D624, Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer
 - .12 ASTM D1653, Test Methods for Water Vapour Transmission of Organic Coating Films
 - .13 ASTM D1751, Specification for Preformed Expansion Joint Fillers
 - .14 ASTM D2240 Test Method for Rubber Property—Durometer Hardness
 - .15 ASTM C309 Specification for Liquid Membrane-Forming Compounds for Curing Concrete
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1.3 CERTIFICATES

- .1 Submit certificates in accordance with Section 01 33 00.
- .2 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CSA-A23.1.
- .3 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1. Ready-mix Plant must be a member of the Atlantic Provinces Ready Mixed Concrete Association and must hold a current "Certificate of Ready Mixed Concrete Production Facilities" as issued by the Association.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Portland cement with fly ash replacement: to CSA-3000.
 - .2 Supplementary cementing materials: to CSA-A3000.
 - .3 Water: to CSA-A23.1.
 - .4 Aggregates: to CSA-A23.1. Coarse aggregates to be normal density.
 - .5 Air entraining admixture: to ASTM C260.
 - .6 Chemical admixtures: to ASTM C494. Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.
 - .7 Concrete retarders: to ASTM C494 low VOC, solvent free.
 - .8 Shrinkage compensating grout: premixed compound consisting of aggregate, cement, water reducing and plasticizing agents. Compressive strength: 8000 psi at 28 days.
 - .9 Waterstops: Specially formulated mixture of natural sodium bentonite and butyl rubber specifically manufactured as a waterstop such as Waterstop-RX or approved equal.
 - .10 Premoulded joint fillers:
 - .1 Bituminous impregnated fiber board: to ASTM D1751.
 - .11 Dampproof membrane:
 - .1 10 mil polyethylene film to CAN/CGSB-51.34
 - .12 Dampproofing:
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- .1 Emulsified asphalt, mineral colloid type, unfilled: to CAN/CGSB-37.2.

2.2 CONCRETE MIXES

- .1 Proportion normal density concrete in accordance with CSA-A23.1, Alternative 1 to give the following properties for all concrete:
 - .1 Type GU Portland cement.
 - .2 Minimum compressive strength at 28 days: Refer to structural drawings
 - .3 Nominal size of coarse aggregate: $\frac{3}{4}$ inch.
 - .4 Slump at time and point of discharge: as per structural drawings
 - .5 Air content: as per Table 4 of CSA Standard A23.1
 - .6 Chemical admixtures: in accordance with CSA – A3000.
 - .7 Replace 20% of cement by mass with flyash in accordance with CAN/CSA-A23.5. If floor hardener is to be used in slabs, contact supplier of hardener regarding compatibility between hardener and flyash and adjust flyash content as necessary.
 - .8 Class of exposure shall be to Table 1 of CSA A23.1
 - .9 Concrete Mix design to meet requirements of Table 2 in CSA A23.1 for appropriate class of exposure
 - .10 All concrete to meet requirements of Tables 1 through 4 of CSA A23.1.

PART 3 – EXECUTION

3.1 PREPARATION

- .1 Obtain Consultant's approval before placing concrete. Provide 24 hours notice prior to placing of concrete.
- .2 Pumping of concrete is permitted only after approval of equipment and mix.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Prior to placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .6 In locations where new concrete is dowelled to existing work, drill holes in existing concrete. Place steel dowels of deformed steel reinforcing bars and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.
- .7 Do not place load upon new concrete until authorized by Consultant.

3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CSA-A23.1.
- .2 Anchor bolts.
 - .1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
 - .2 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.
- .3 Finishing and Curing:
 - .1 Finish concrete in accordance with CSA-A23.1. Provide steel trowel finish for floor slabs unless noted otherwise. Coordinate finish with architect prior to casting slab.
 - .2 Use procedures acceptable to Consultant or those noted in CSA-A23.1 to remove excess bleed water. Ensure surface is not damaged.
 - .3 Use curing compounds compatible with applied finish on concrete surfaces.
- .4 Rub exposed sharp edges of concrete with carborundum to produce 1/8 inch radius edges unless otherwise indicated.
- .5 Waterstops.
 - .1 Install waterstops to provide continuous water seal. Do not distort or pierce waterstop in such a way as to hamper performance. Do not displace reinforcement when installing waterstops. Install as per manufacturer's specifications.
- .6 Joints
 - .1 Construction Joints – Walls and Structural Slabs:
 - .1 In general, incorporate either horizontal or vertical construction joints, in accordance with CSA-A23.1.
 - .2 Immediately before next pour, clean construction joint and brush with grout of neat cement.
 - .3 Run reinforcement through construction joints unless noted otherwise.
 - .4 Construction Joints to be keyed unless noted otherwise.
- .7 Curing and Sealing Compound:
 - .1 Install in accordance with the manufacturers recommendations. Ensure compatibility with flooring adhesives. Remove as required prior to using flooring adhesives.

3.3 SURFACE TOLERANCE

- .1 Concrete tolerance in accordance with CSA-A23.1 straight edge method. Variations over the 10'-0" long strait edge shall be +/- 1/4"

3.4 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Owner in accordance with CSA-A23.1 and CSA-A23.2.

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- .2 Owner will pay for costs of tests.
- .3 Testing Laboratory will take additional test cylinders during cold weather concreting.
Cure cylinders on job site under same conditions as concrete which they represent.
- .4 Non-destructive Methods for Testing Concrete shall be in accordance with CSA-A23.2.
- .5 Inspection or testing will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.

END OF SECTION