

1 GENERAL

1.01 RELATED SECTIONS

- .1 Section 03 20 00 - Concrete Reinforcing.
- .2 Section 03 30 00 - Cast-in-Place Concrete.

1.02 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.
 - .2 CSA O86-14, Engineering Design in Wood.
 - .3 CSA O121-17, Douglas Fir Plywood.
 - .4 CSA O151-17, Canadian Softwood Plywood.
 - .5 CSA O153-13 (R2017), Poplar Plywood.
 - .6 CSA S269.1-16, Falsework and Falsework.

1.03 SHOP DRAWINGS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings for formwork and falsework.
- .3 Submit drawings stamped and signed by a qualified Professional Engineer registered or licensed in the Province of Newfoundland and Labrador.
- .4 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 30 - Health and Safety.
- .5 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework and formwork drawings.
- .6 Indicate sequence of erection and removal of formwork/falsework.
- .7 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.
- .8 A copy of the formwork drawings shall be kept at the Contractor's work area while temporary supporting structures are under construction or use.

2 PRODUCTS

2.01 MATERIALS

- .1 Formwork materials:
 - .1 For unexposed surfaces, use plywood and wood formwork materials to CSA O121, CSA O151, CSA O153 and CSA O86.

- .2 For exposed to view flat surfaces use medium density overlay plywood 19 mm thick.
- .2 Form ties: Use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surfaces.
- .3 Form release agent: chemically active release agents containing compounds that react with free lime in concrete resulting in water insoluble soaps, preventing concrete from sticking to forms.
- .4 Metal deck formwork: Formwork for Ramp 1 and entrance/stair slab: New, to CSSBI 12M-18, Standard for Composite Steel Deck. Zinc-iron alloy ZF coated steel sheet to ASTM A653/A653M, structural quality, Grade A, base metal thickness as indicated. Provide cell closures at deck ends to prevent loss of fresh concrete from forms.
 - .1 Ramp deck form to be minimum 20 gauge, 38 mm deep profile, 5.0 kPa minimum service load capacity for the spans indicated.
 - .2 Entrance slab form to be minimum 20 gauge, 76 mm deep profile, 6.7 kPa minimum service load capacity for the span indicated.
- .5 Joint Sealer:
 - .1 Purpose made traffic grade sealant for concrete joints. Polyurethane, elastometric sealant, Type S, Grade P, Class 25, single component, self-levelling. Movement capability $\pm 50\%$. Supply with recommended primer and backer rod as required.

3 EXECUTION

3.01 FABRICATION AND ERECTION

- .1 Verify lines, levels and centers before proceeding with formwork and ensure dimensions agree with drawings.
- .2 Obtain Departmental Representative's approval for framing openings not indicated on drawings.
- .3 Use of earth forms for footings and walls is not permitted.
- .4 Fabricate and erect falsework in accordance with CSA-S269.1.
- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.1 to produce finished concrete conforming to shape, dimension, locations and levels indicated within tolerances required by CSA-A23.1/A23.2 and as indicated below.
- .6 Formwork and all supporting or bracing members shall be design such that they will not deflect noticeable under the weight or pressure of the concrete and other loadings incidental to construction. The maximum deflection of facing materials in concrete surfaces exposed to view shall be 1/360 span between supporting members.
- .7 Formwork for exposed concrete must be constructed with watertight joints. To prevent leakage of past at corners and joints in the forms and against

existing concrete, use gaskets or other approved means which will not mar the finished appearance of the concrete. Arrange form ties and plywood panels in a regular pattern. Submit shop drawings showing pattern of forms and form ties.

- .8 A form release agent shall be applied to all forms where the finished concrete surface is to be exposed. The release agent shall be non-staining.
- .9 Align form joints and make watertight.
- .10 Keep form joints to a minimum.
- .11 Use 20 mm chamfer strips on external corners and/or 20 mm fillets at interior corners and joints of all exposed concrete members unless specified otherwise.
- .12 Form reglets, reveals, chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .13 Clean formwork in accordance with CSA A23.1/A23.2 before placing concrete.
- .14 Inspect forms after each use. Damaged surfaces must be replaced or repaired so that no evidence of the damage is apparent in the finished concrete.

3.02 FORMING FOR SUSPENDED SLABS AT ENTRANCE/STAIR/RAMP 1

- .1 Formwork for ramp and entrance/stair slabs to be constructed using composite steel deck, unless alternate material/method of formwork is approved by the Departmental Representative.
- .2 Provide metal and form closures at ends of metal deck to fully seal for containing concrete during pour.

3.03 FORMWORK REMOVAL

- .1 Leave formwork in place for the following minimum periods of time after placing concrete:
 - .1 1 day for footings.
 - .2 3 days for walls and slab.
- .2 Unless approved by Departmental Representative, wall forms shall not be removed until concrete has achieved specified design strength, or adequate temporary bracing system is in place.
- .3 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later.
- .4 Re-use of formwork and falsework subject to requirements of CSA-A23.1.

3.04 ALLOWABLE TOLERANCES

- .1 Variations from the plumb: In the lines and surfaces of walls: -6 mm per 3 metres, but not more than 20 mm.

ACCESS RAMPS UPGRADE
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.2 Variation in the thickness of slabs and walls: Minus - 6 mm; Plus - 12 mm.

END OF SECTION

1 GENERAL

1.01 RELATED SECTIONS

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 30 00 - Cast-in-Place Concrete.

1.02 REFERENCES

- .1 American Concrete Institute (ACI)
 - .1 ACI 315R-18, Guide to Presenting Reinforcing Steel Design Details.
 - .2 SP-66(04), ACI Detailing Manual - 2004.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A197/A197M-00 (2015), Standard Specification for Cupola Malleable Iron.
 - .2 ASTM A1064/18a, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- .3 Canadian Standards Association (CSA)
 - .1 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.
 - .2 CSA A23.3-14, Design of Concrete Structures.
 - .3 CSA G30.18-09 (R2014), Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA G40.20-13/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
- .4 Reinforcing Steel Institute of Canada
 - .1 Reinforcing Steel Manual of Standard Practice, RSIC, Fifth Edition, 2018.

1.03 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare reinforcement drawings in accordance with the Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .3 Submit shop drawings including placing of reinforcement and indicate:
 - .1 Bar bend details.
 - .2 Lists.
 - .3 Quantities of reinforcement.
 - .4 Sizes, spacings and locations of reinforcement, with identifying code marks to permit correct placement without reference to structural drawings.
 - .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
- .4 Detail lap lengths and bar development lengths to CSA A23.3, unless otherwise indicated.
 - .1 Provide Class 'B' tension lap splices unless otherwise indicated.
- .5 Quality assurance: in accordance with Section 01 45 00 - Testing and Quality

Control and as described in Part 2 - 2.3 Source Quality Control.

- .1 Mill Test Report: Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum 2 weeks prior to beginning reinforcing work.
 - .2 Upon request, submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.
- .6 Each shop drawing submitted to bear the stamp and signature of a qualified Professional Engineer registered in the Province of Newfoundland and Labrador.

1.04 DELIVERY, STORAGE AND HANDLING

- .1 Store and manage hazardous materials in accordance with Section 01 35 29 - Health and Safety Requirements.
- .2 Waste management and disposal:
 - .1 Separate waste materials for reuse and recycling.
 - .2 Place materials defined as hazardous or toxic in designated containers.

2 PRODUCTS

2.01 MATERIALS

- .1 Reinforcing steel: carbon steel, grade 400W, deformed bars to CSA G30.18, unless indicated otherwise.
- .2 Cold-drawn annealed steel wire ties: to ASTM A1064/A1064M.
- .3 Chairs, bolsters, bar supports, spacers: to CSA A23.1/A23.2. Non-metallic where within 40 mm of exposed concrete surfaces.

2.02 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA A23.1/A23.2, ACI 315, and the Manual of Standard Practice by the Reinforcing Steel Institute of Canada, unless indicated otherwise.
- .2 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on drawings.
- .3 Welding of reinforcement will not be permitted.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.03 SOURCE QUALITY CONTROL

- .1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 2 weeks prior to commencing reinforcing work.
- .2 Upon request, inform Departmental Representative of proposed source of

materials to be supplied.

3 EXECUTION

3.01 ON-SITE STORAGE AND HANDLING

- .1 Reinforcing steel shall be handled and stored in such a manner to keep it free of dirt, mud and water.
- .2 Reinforcing steel shall be off-loaded from the truck directly onto purpose made storage racks and covered with tarp.
- .3 Clean reinforcing steel of excess rust and previously deposited concrete prior to placing concrete.

3.02 FIELD BENDING

- .1 Do not field bend reinforcement except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits.

3.03 PLACING REINFORCEMENT

- .1 Placing reinforcing steel as indicated on reviewed placing drawings and in accordance with CSA A23.1/A23.2.
- .2 Install, support and space reinforcement in alignment to position and clearances indicated and secure to supports.
- .3 Unless otherwise indicated, provide the following cover for reinforcing:
70 mm - where concrete is cast against earth.
50 mm - 20M bars or larger.
50 mm - slabs-on-grade.
40 mm - 15M bars or smaller.
- .4 Ensure cover to reinforcement is maintained during concrete pour.
- .5 Prior to placing concrete, obtain Departmental Representative's approval, in writing, of reinforcing material and placement. Use of approved chairs to support reinforcement in slabs is mandatory.
- .6 Remove and replace reinforcement which is visibly damaged or cracked.
- .7 Do not cut reinforcement, either before or after concrete is placed, to permit incorporation of other work.
- .8 Do not relocate reinforcement without approval.
- .9 Clean reinforcement before placing concrete.

- .10 All wall dowels shall be set in footing forms prior to placing concrete and held in place by approved means so that each dowel is maintain in its correct position. Dowels shall not be inserted in freshly placed concrete.
- .11 The Departmental Representative shall be notified when the reinforcing steel is in place in sufficient time to permit an inspection of same prior to concrete placement. Minimum 24-hour notification required.

END OF SECTION

1 GENERAL

1.01 RELATED SECTIONS

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 20 00 - Concrete Reinforcing.
- .3 Section 05 50 00 - Metal Fabrication.

1.02 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C260-10a (2016), Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C309-11, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .3 ASTM C494/C494M-17, Standard Specification for Chemical Admixtures for Concrete.
 - .4 ASTM C881/C881M-15, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
 - .5 ASTM C1017/C1017M-13e1, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .6 ASTM D624-00 (2012), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 - .7 ASTM D638-14, Standard Test Method for Tensile Properties of Plastics.
 - .8 ASTM D1751-18, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
 - .9 ASTM D3575-14, Standard Test Methods for Flexible Cellular Materials made from Olefin Polymers.
- .2 Canadian Standards Association (CSA)
 - .1 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.
 - .2 CSA A283-06 (R2016), Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-18, Cementitious Materials Compendium.
 - .4 CSA B651-18 Accessible Design for the Built Environment.

1.03 DESIGN REQUIREMENTS

- .1 Alternative 1 - Performance: in accordance with CSA A23.1/A23.2, and as described in Mixes of Part 2 - Products.

1.04 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proposed quality control procedures for Departmental Representative's review.
- .3 Minimum two (2) weeks prior to starting concrete work, submit proposed

quality control procedures for Departmental Representative's approval for following items:

- .1 Cold and hot weather concreting.
- .2 Temporary bracing.
- .3 Chairs and spacers for support of reinforcing.
- .4 Curing of concrete.
- .5 Finishes.
- .6 Formwork removal.
- .7 Joint forming and filling.

1.05 CONSTRUCTION AND QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out in accordance with CSA A23.1.
- .2 Testing laboratory will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .3 Non-destructive methods for testing concrete shall be in accordance with CSA A23.2.
- .4 Inspection and testing by Departmental Representative, or Testing Agency designated by Departmental Representative, will not augment or replace the Contractor's responsibilities.

1.06 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 At least 2 weeks prior to beginning Work, inform Departmental Representative of proposed source of aggregates and provide access for sampling.

1.07 QUALITY ASSURANCE

- .1 Quality assurance: in accordance with Section 01 45 00 - Testing and Quality Control.
- .2 Provide certification that plant, equipment and materials to be used in concrete comply with requirements of CSA A23.1.
- .3 Provide mix designs in compliance with CSA A23.1 to provide concrete quality, yield and strength as specified under 2.2 Mixes. Mix designs to be prepared by and stamped by an engineer licensed to practice in the Province of Newfoundland and Labrador.
- .4 Provide certification that the concrete supplier is certified by the Atlantic Provinces Ready Mixed Concrete Association program or equivalent. This certification is to remain in good standing for the duration of the project and until the warranty period expires.

1.08 DELIVERY, STORAGE AND HANDLING

- .1 Concrete hauling time: maximum allowable time for concrete to be delivered to site of Work and discharged no tot exceed 120 minutes after batching.
 - .1 Modifications to maximum time limit must be agreed to by the

- Departmental Representative, the laboratory representative and the concrete producer as described in CSA A23.1/A23.2.
- .2 Deviations to be submitted for review by Departmental Representative.
 - .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 Divert unused concrete materials from landfill to local quarry facility approved by Departmental Representative.
 - .3 Provide an appropriate area on the job site where concrete trucks can be safely washed.
 - .4 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved by Departmental Representative.
 - .5 Unused admixtures and additive materials must not be disposed of into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.
 - .6 Prevent admixtures and additive materials from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

2 PRODUCTS

2.01 MATERIALS

- .1 Cement: to CSA A3001, Type GU, or Type GUb.
- .2 Supplementary cementing materials: to CSA A3001.
- .3 Water: to CSA A23.1.
- .4 Aggregates:
 - .1 To CSA A23.1/A23.2. Coarse aggregates to normal density.
 - .2 Maximum aggregate size to be 19 mm.
- .5 Admixtures:
 - .1 Air entraining admixture: to ASTM C260.
 - .2 Chemical admixture: to ASTM C494 and ASTM C1017. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .6 Anchorage adhesive for dowel and anchor rod embedment: to ASTM C881/C881M, Type IV, Grade 3, Class A, B and C. Provide purpose made sieve or screens or ancho drilled into hollow concrete or masonry block units.
- .7 Joint sealant: self-levelling, two component sealant capable of remaining resilient over temperatures ranging from -25°C to 35°C. Material will be capable of an elongation of 300%, have tensile recovery of 90% ASTM D412 hardness of 25-35 Shore A and have a high bond strength to the concrete faces.

- .8 Non-slip and Colour Contrasting Concrete Stair Nosings and Tactile Indicators:
- .1 To be purpose-made for exterior use and meet requirements for accessible design as presented in CSA B651 Accessible Design for the Built Environment.
 - .2 Submit product literature to Departmental Representative for review.
 - .3 Surface tactile indicator to be a cast-in-place (wet set) replaceable panel.
 - .4 Non-slip color contrasting concrete stair nosings to be cast-in-place.
 - .5 Colour to be safety yellow or as otherwise directed by Departmental Representative.
- .9 Piles:
- .1 Augured steel piles to have minimum capacity of 45 kN (Specified Load) and minimum diameter of 48 mm.
 - .2 All helical pile components to be hot-dip galvanized to ASTM A123 (min. 610 g/m²).
 - .3 Pile auger blade to be minimum 300 mm diameter.
- .10 Foundation Insulation:
- .1 Extruded polystyrene to CAN/ULC S701 meeting the following:
 - .1 Minimum thermal resistance (RSI): 0.88/25 mm.
 - .2 Minimum compressive strength to ASTM D1621: 275 kPa.
 - .3 Maximum water absorption to ASTM D2842: 0.6% by volume (96 hr water immersion.)
 - .4 Water vapour permeance to ASTM E96: 57.2 ng/pa·s·m².
 - .5 Coefficient of linear thermal expansion to ASTM D696: 6.3 x 10⁻² mm/m·°C.
 - .6 Minimum flexural strength to ASTM C203: 480 kPa.
 - .7 Compressive modulus (typical) to ASTM D1621: 9650 kPa.

2.02 MIXES

- .1 The Contractor shall be responsible for the concrete mix design.
- .2 It shall be the responsibility of the Contractor to ensure that the mixture proportions shall be properly batched, mixed, placed and cured such that the concrete conforms to the specifications.
- .3 Proportion normal density concrete in accordance with CSA A23.1, Alternative 1 - Performance method, to give the following quality for concrete as indicated:
 - .1 For concrete in footings:
 - .1 Type GU Portland cement.
 - .2 Minimum compressive strength at 28 days: 25 MPa.
 - .3 Class of exposure: N.
 - .4 Maximum water/cement ratio: as per CSA A23.1.
 - .5 Nominal maximum size of coarse aggregate: 20 mm
 - .6 Slump at time and point of discharge: as per CSA A23.1.
 - .2 For concrete in walls and slabs
 - .1 Type GU Portland cement.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Class of exposure: C-1.
 - .4 Maximum water/cement ratio: as per CSA A23.1.

- .5 Nominal maximum size of coarse aggregate: 20 mm.
- .6 Air content: as per CSA A23.1.
- .7 Slump at time and point of discharge: as per CSA A23.1.
- .4 Provide quality management plan to ensure verification of concrete quality to specified performance.

3 EXECUTION

3.01 PREPARATION

- .1 Obtain Departmental Representative's approval before placing concrete.
 - .1 Provide 24 hour notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting procedures:
 - .1 Development of cold joints not allowed.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum re-handling, and without damage to existing structure or Work.
- .4 Pumping of concrete is permitted only after approval of equipment and mix.
- .5 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .6 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .7 Protect previous work from staining.
- .8 Clean and remove stains prior to application for concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .10 Do not place load upon new concrete until authorized by Departmental Representative.
- .11 Reinforcing steel, embedded parts, and inserts to be secured in position prior to placing concrete.
- .12 Helical Piles:
 - .1 Install in accordance with manufacturer's direction.
 - .2 Installation to be field confirmed as meeting all specified requirements and developing minimum load capacity.
 - .3 Tops of piles to be anchored to underside of prefabricated stairs.
 - .4 Helical piles to be plumb and within ± 25 mm tolerance of plan locations.
 - .5 Submit torque-installation records on piles; and torque monitoring calibration data.

3.02 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.
- .2 Hot-weather and cold-weather concreting shall be carried out, protected, and cured in accordance with CSA A23.1.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Cure all concrete slab top surfaces and top of wall (curb portion) by moist cure to CSA A23 standards and for a minimum 7 consecutive days after placing.
- .5 Finishing:
 - .1 Finish concrete in accordance with CSA A23.1.
 - .2 Formed surfaces:
 - .1 Exterior wall surfaces to be left exposed in finished work - smooth-rubbed finish.
 - .3 Slab/Ramp finish as per CSA A23.1.
 - .1 Finish exterior entrance slabs, walks and ramps with a broom finish to within tolerance defined in Table 22, Class B and CSA B651-18 - Accessible Design for the Built Environment, to the approval of the Departmental Representative.
 - .2 Saw cut joints to CSA A23.1/A23.2.
 - .3 After curing of concrete slabs is complete, seal all joints in slab and joints at junction with vertical surfaces using sealant as specified in Division 7.
 - .4 Slab surfaces:
 - .1 Use procedures acceptable to Departmental Representative, or those noted in CSA A23.1, to remove excess bleed water. Ensure surface is not damaged.
- .6 Brace of shore to counteract unbalanced earth pressures on foundation walls where backfill is not placed simultaneously on both sides of walls.
- .7 Location of construction joints, other than indicated on the drawings, shall be forwarded to the Departmental Representative for review and acceptance.

3.03 SAW-CUT JOINTS

- .1 Use purpose-made concrete saws.
- .2 Saw-cut locations to be as shown on the drawings.
- .3 Re-cut construction joints to provide recess dimensions required for joint sealant installation. 40 mm - 15M bars or smaller.
- .4 Apply joint sealer in saw-cut joints in accordance with sealant manufacturer's written instructions.

3.04 CONCRETE STAIR TREAD NOSINGS

- .1 Obtain approval of Departmental Representative of product prior to installation.
- .2 Install colour contrasting, non-slip concrete stair nosings in strict

accordance with Manufacturer's written directions.

3.05 INSTALLATION OF TACTILE WARNING SURFACE PANEL

- .1 Install cast-in-place tactile warning surfacing panel according to manufacturer's written instructions unless otherwise indicated.
- .2 Place tactile warning surfacing panel to dimensions and orientation indicated in contract documents.

3.06 CURING

- .1 Moist curing shall be in accordance with CSA A23.1/A23.2 and shall be done by:
 - .1 Non-staining absorptive mat fabric kept continuously wet.
- .2 Moist cure all concrete slab top surfaces to CSA A23 standards and for a minimum 7 consecutive days after placing.

3.07 FOUNDATION INSULATION

- .1 Install in locations indicated on plans.
- .2 Apply adhesive to insulation board in accordance with manufacturer's recommendations.
- .3 Stagger joints between layers (600 mm offset).
- .4 Cut, fit and butt joints tight.
- .5 Fill voids with foam insulation.

3.08 SURFACE TOLERANCE

- .1 Concrete tolerance in accordance with CSA A23.1/A23.2 and as otherwise indicated on the drawings.

3.09 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out in accordance with CSA A23.1/A23.2 by testing laboratory designated by Departmental Representative.
 - .1 Ensure testing laboratory is certified in accordance with CSA A283.
 - .2 Submit test results to Departmental Representative as soon as test is complete.

END OF SECTION