

## PART 1 - GENERAL

### 1.1 REFERENCES

- .1 Canadian Standards Association (CSA).
  - .1 CSA A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CAN/CSA 0886-09 CONSOLIDATION, Engineering Design in Wood.
  - .3 CSA 0121-08, Douglas Fir Plywood.
  - .4 CSA 0151-09, Canadian Softwood Plywood.
  - .5 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
  - .6 CAN/CSA S269.3-M92 (R2008), Concrete Formwork.

### 1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Shop Drawings.
  - .1 Submit shop details and erection drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Coordinate submittal requirements and provide submittals required by Section 01 47 15 - Sustainable Requirements: Construction.
  - .3 Qualified professional engineer registered in jurisdiction of Place of Work signs and stamps each drawing submission.
  - .4 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 drawings. Comply with CAN/CSA S269.3 for formwork drawings.
  - .5 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.
  - .6 Indicate sequence of erection and removal of formwork/falsework as required by Departmental Representative

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Formwork Materials: for concrete, use plywood and wood formwork materials to CSA 086, CSA 0121, CSA 0151, CAN/CSA S269.3.
- .2 Form ties: use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm dia. in concrete surface.
- .3 Form liner:
  - .1 Plywood (typical): Douglas Fir to CSA 0121 or Canadian Softwood to CSA 0151, tongue and groove, square edge, thickness as indicated;
  - .2 Lumber (where indicated): 2 x 4 tongue and

groove edge, thickness as indicated.

- .4 Form release agent:
  - .1 Chemically active release agents containing compounds that react with free lime in concrete resulting in water insoluble soaps, preventing concrete from sticking to forms.
- .5 Falsework: to CSA S269.1.
- .6 Anchor Bolts: As approved by Departmental Representative.
- .7 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

### PART 3 - EXECUTION

#### 3.1 ERECTION

- .1 Verify lines, levels and column or grid centre before proceeding with formwork and ensure dimensions agree with drawings.
- .2 Construct falsework in accordance with CSA S269.1.
- .3 Construct and erect formwork in accordance with CAN/CSA S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA A23.1/A23.2.
- .4 Brace and tie together horizontally and vertically to maintain position, shape with adequate strength to resist horizontal, vertical loads from weight of wet concrete, reinforcing, form weight, wind, fluid pressure of concrete, weight of workers, other forces from equipment used in placing concrete.
- .5 Obtain Department Representative's permission before framing openings not indicated in concrete joists, beams, or columns.
- .6 Set formwork level, plumb, as indicated on firm ground, or other acceptable support.
- .7 Coat formwork with form release agent, except formwork for surfaces to receive concrete topping, sealer, or other coating, and before reinforcement, anchors accessories, and other building items are installed.
- .8 Align form joints and make watertight. Keep form joints to minimum.
- .9 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners of concrete

members, joints, unless specified otherwise.

- .10 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .11 Build in anchors, sleeves, and other inserts required to accommodate work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .12 Clean framework in accordance with CAN/CSA A23.1/A23.2 before placing concrete.

### 3.2 REMOVAL AND RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
  - .1 Walls and Columns: Concrete curing temperature of:
    - .1 21 degrees C - 35 degrees C - 2 days
    - .2 16 degrees C - 21 degrees C - 3 days
    - .3 10 degrees C - 16 degrees C - 4 days
  - .2 Beam soffits, slabs, decks and other structural members:  
Concrete curing temperature of:
    - .1 21 degrees C - 35 degrees C - 14 days
    - .2 16 degrees C - 21 degrees C - 17 days
    - .3 10 degrees C - 16 degrees C - 21 days
- .2 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate re-shoring.
- .3 Provide all necessary re-shoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .4 Space re-shoring in each principal direction at not more than 3m apart.
- .5 Re-use formwork and falsework subject to requirements of CAN/CSA A23.1/A23.2

END OF SECTION

PART 1 - GENERAL

1.1 PRICE AND PAYMENT .1  
OPTIONS

Measurement and Payment:

.1 No measurement will be made under this section.

.1 Include reinforcement costs in items of concrete work in Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
- .1 ASTM A82/A82M-07, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - .2 ASTM A184/A184M-06(2011), Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.
  - .3 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - .4 ASTM A496/A496M-07, Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
  - .5 ASTM A497/A497M-07, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
  - .6 ASTM A615/A615M-09b, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  - .7 ASTM A704/A704M-06 (2011), Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
  - .8 ASTM A767/A767-09, Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
  - .9 ASTM A775/A775M-07b, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
  - .10 ASTM A1035/A1035M-11, Standard Specification for Deformed and Plain, Low-carbon, Chromium, Steel Bars for Concrete Reinforcement.
- .2 Canadian Standards Association (CSA).
- .1 A23.1-09/A23.2-09, Concrete materials and methods of concrete construction/Test methods and standard practices for concrete.
  - .2 CAN/CSA A-23.3-04 (R2010), Design of Concrete Structures.
  - .3 CAN/CSA-G30, 18-09, Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA-G40.20-13/G40.21-13 General Requirements for Rolled or Welded Steel/Structural Quality Steels.
  - .5 CSA W186-M1990 (R2007), Welding or Reinforcing Bars in Reinforced Concrete Construction.

- .3 American Concrete Institute (ACI).
  - .1 ACI Manual of Concrete Practice (MCP), 2011.
- .4 Concrete Reinforcing Steel Institute (CRSI).
  - .1 CRSI Manual of Standard Practice 2009, 28<sup>th</sup> Edition.
  - .2 CRSI Placing Reinforcing Bars, 9<sup>th</sup> Edition.
  - .3 CRSI Design Handbook, 2008, 10<sup>th</sup> Edition

1.3 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Shop Drawings.
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacing, locations of reinforcement, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacing and locations of chairs, spacers and hangers. Prepare drawings in accordance with ACI Manual of Concrete Practice and CRSI Manual of Standard Practice.
  - .3 Detail lap lengths and bar development lengths to CAN/CSA A23.3, unless otherwise indicated.

1.4 QUALITY ASSURANCE

- .1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis.
- .2 Upon request, provide Departmental Representative with proposed source of material to be supplied.

1.5 DELIVERY, STORAGE,  
AND HANDLING

- .1 Deliver reinforcing suitably bundled, clearly identified for intended location.
- .2 Deliver to site at time required, unload in areas directed.
- .3 Store reinforcing on site on sturdy wood supports well above grade level, away from deleterious substances and haulage routes.
- .4 Protect epoxy-coated portions of bars with covering during transportation and handling.

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PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Reinforcing Steel: billet steels grade 400 MPa, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .2 Reinforcing Steel: weldable low alloy steel deformed bays to ASTM A184/A184M.
- .3 Cold-drawn Annealed Steel Wire Ties: to ASTM A82/A82M.
- .4 Deformed Steel Wire for Concrete Reinforcement: to ASTM A496/A496M.
- .5 Welded Steel Wire Mesh: to ASTM A185/A185M and ASTM A497/A497M, electrically welded, cold drawn wire, 400 MPa yield point, gauge, mesh size indicated, flat sheets only.
- .6 Epoxy Coating of Non-pre-stressed Reinforcement: to ASTM A775/A775M.
- .7 Chairs, Bolsters, Bar Supports, Spacers: to ASTM A767/A767M.
- .8 Plain Round Bars: to ASTM A615/A615M.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA A23.1/A23.2, ACI Manual of Concrete Practice, and CRSI Manual of Standard Practice.
- .2 Fabricate reinforcing only in fabricating shop. Ensure reinforcing is free of loose rust, scale, oil, structural defects.
- .3 Fabricate reinforcing to follow tolerances:
  - .1 Sheared length, plus or minus 25 mm.
  - .2 Depth of truss bar, plus or minus 13 mm.
  - .3 Stirrups, ties, spirals, plus or minus 13 mm.
  - .4 Other bends, plus or minus 25 mm.
- .4 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on shop drawings. Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.
- .5 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

PART 3 EXECUTION

3.1 FIELD BENDING

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

3.2 PLACING  
REINFORCEMENT

- .1 Place reinforcing steel as indicated on reviewed shop drawings and in accordance with CSA A23.1/A23.2, ACI Manual of Concrete Practice, and CRSI Manual of Standard Practice.
- .2 Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint. When paint is dry, apply thick even film of mineral lubricating grease.
- .3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement. Ensure cover to reinforcement is maintained during concrete pour.
- .4 All reinforcing to be held in place by suitable chairs fastened to formwork. Use hardboard pads on slab base or void form to prevent chairs from sinking.
- .5 Concrete cover to be as per table 17 of the latest edition of CSA A23.1.
- .6 Concrete cover for exposure class C-2 to be 40 mm unless noted otherwise.

3.3 FIELD TOUCH-UP

- .1 Touch-up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

END OF SECTION

## PART 1 - GENERAL

### 1.1 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
  - .1 ASTM C150/C150M-11, Standard Specification for Portland Cement.
  - .2 ASTM C260/C260M-10a, Standard Specification for Air-Entraining Admixtures for Concrete.
  - .3 ASTM C295/C295M-11, Standard Guide for Petrographic Examination of Aggregates for Concrete.
  - .4 ASTM C309-11, Standard Specification for Liquid Membrane - Forming Compounds for Curing Concrete.
  - .5 ASTM C494/C494M-11, Standard Specification for Chemical Admixtures for Concrete.
  - .6 ASTM D412-06ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
  - .7 ASTM D624-00 (2007), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
  - .8 ASTM D1751-04 (2008), Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).
  - .9 ASTM D1752-04a (2008), Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
- .2 Canadian Standards Association (CSA).
  - .1 A23.1-09/A23.2-09, Concrete materials and methods of concrete construction/Test methods and standard practices for concrete.
  - .2 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB 51.34-M86 AMEND, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

### 1.2 QUALITY ASSURANCE

- .1 Certificates.
  - .1 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/A23.2. Provide mix designs to Departmental Representative for review prior to commencement of work.
  - .2 Provide certification that plant, equipment and all materials to be used in concrete comply with CSA A23.1/A23.2.



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1.3 SITE CONDITIONS

- .1 Conform to cold/hot weather requirements of CSA A23.1/A23.3.
- .2 Cold weather requirements.
  - .1 When air temperature is at or below 5 degrees C, or when there is possibility of temperature falling to that limit within 24 hours of placing, meet requirements of CSA A23.1/A23.2.
  - .2 Ensure concrete, when deposited, is between 16 to 32 degrees C.
  - .3 Ensure site preparations and special supplementary equipment is ready while placing concrete in cold weather.
  - .4 Provide protection by adequate supplementary insulation, by enclosing concrete surfaces with raised tarpaulins, or other approved enclosures for heating such that air circulation is maintained.
  - .5 Provide for introduction of heat into enclosure.
  - .6 Maintain temperatures with heat for period specified.
  - .7 Provide means to humidify air within enclosed space if dry type heat used.
  - .8 Vent heaters outside enclosed space.
  - .9 Do not use heaters which release products of combustion into enclosed space.
  - .10 Ensure combustion gases do not contact green concrete surfaces.
  - .11 Do not place concrete on or against surface at temperature less than 5 degrees C.
  - .12 Protect concrete from alternate freezing and thawing for 14 days.
  - .13 Maintain concrete above freezing temperature for minimum 7 days.
  - .14 Withdraw protection and heating gradually so that air temperature around concrete does not drop more than 10 degrees C per day until outside air temperature achieved.
  - .15 Protect the slabs subgrade from frost.
  - .16 Frozen concrete will be rejected.
- .3 Hot Weather Concrete Work.
  - .1 When air temperature in shade is at or above 23 degrees C, or when there is possibility of temperature rising to that limit within 24 hours of placing, meet requirements of CSA A23.1/A23.2.
  - .2 Concrete temperature at time of placing in hot weather not to exceed limits in CSA A23.1/A23.2 specifications. In event that limits are exceeded, suspend concrete operations until constituent materials of concrete cool.
  - .3 Use retarding admixtures only if approved by Departmental Representative prior to use in concrete.
  - .4 Use of ice may be required to lower the

temperature of concrete for large pours.

.5 Prepare as required for expected temperatures, type of work.

.4 Maintain temperature of concrete surfaces not less than 21 degrees C for 3 days and not less than 10 degrees C for 5 days after placing

.7 Concrete hauling time: provide for review by [Departmental Representative] deviations exceeding maximum allowable time of [120] for concrete to be delivered to site of Work and discharged after batching.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- .1 Acceptable Products.
  - .1 Air Entraining Admixture.
    - .1 Grace Darex AEA.
    - .2 Sika AER.
    - .3 Sternson NVR.
  - .2 Water Reducing Agent.
    - .1 Grace WRDA Type A.
    - .2 Master Builders' Pozzoloth.
    - .3 Ssternson Porzite.
  - .3 Accelerating Agent.
    - .1 Grace Darex Set Accelerator.
  - .4 Non-shrink Grout.
    - .1 CPD Non Shrink Grout.
    - .2 Grace In-Pakt.
    - .3 Meadows CG-86.
    - .4 Meadows V-3 Grout.
    - .5 Sika Grout 212.
    - .6 Sternson M-Bed.

.2 Requests for substitutions will be considered in accordance with Section 00 26 00.

### 2.2 MATERIALS

- .1 Portland Cement: to ASTM C150 and CAN/CSA-A3000, normal Type 10.
- .2 Water and Other Concrete Materials: in accordance with CSA A23.1/A23.2.
- .3 Aggregates: to CSA A23.1/A23.2. Coarse aggregates to be normal density.
  - .1 Submit proof that aggregates meet criteria of non-expansive aggregates as per Figure 1 of CSA A23.2-26A using tests conforming to ASTM C295 and CSA A23.2-25A

- .4 Air Entraining Admixtures: to ASTM C260.
- .5 Chemical Admixtures: to ASTM C494/C494M.  
Departmental Representative to approve accelerating  
or set retarding admixture during cold and hot  
weather placing.
- .6 Non-shrink Grout: premixed compound consisting of  
non-metallic aggregate, Portland cement, water  
reducing and plasticizing agents, capable of  
development of 40 MPa at 28 days.

## 2.4 CONCRETE MIXES

- .1 Proportion normal density concrete in accordance  
with CSA A23.1/A23.2, Alternative (1) to give  
following properties for concrete as indicated on  
drawings.
  - .1 Cement Type: Portland cement as shown on  
drawings.
  - .2 Minimum Compressive Strength at 28 Days: as  
shown on drawings.
  - .3 Minimum Cement Content: as required to  
produce specified compressive strengths to suit  
class of exposure.
  - .4 Class of Exposure: as noted on drawings.
  - .5 Nominal Size of Coarse Aggregate: as shown on  
drawings.
  - .6 Slump at Time and Point of Discharge:  
consistent with application and method of  
placement. Concrete slump to be coordinated  
between contractor and concrete supplier  
considering the performance criteria and the  
contractor's criteria for construction and  
placement.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- .1 Obtain Departmental Representative's approval  
before placing concrete. Provide minimum 24 hours  
of notice prior to placing of concrete.
- .2 Pumping of concrete is permitted only after  
Departmental Representative's approval of equipment  
and mix.
- .3 Ensure reinforcement and inserts are not disturbed  
during concrete placement.
- .4 Prior to placing of concrete obtain Departmental  
Representative's approval of proposed method of  
protection of concrete during placing and curing in  
adverse weather.

- .5 Maintain accurate records of poured concrete items to indicated date, location of pour, quality, air temperature and test samples taken.
- .6 Do not place load upon new concrete until authorized by Departmental Representative.

### 3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.
- .2 Concrete class of exposure (refer to table 1, A23.1-9) for exterior equipment pad to be a Class C Exposure (32MPa@28 days).
- .3 When concrete is placed by pump, the initial slurry used to prime the pump must not be incorporated into the overlay. The priming slurry must be collected and disposed of off-site.
- .4 Ensure reinforcing is secure and not disturbed during concrete placement. Reinforcing mesh must be chaired to appropriate height. Lifting of mesh or reinforcing bars during placement is not permitted.
- .5 Ensure that rate of placing is sufficient to complete proposed placing, finishing and curing operations within scheduled time. Limit batch sizes as required if placing procedures are slower than anticipated.
- .6 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature, and test samples taken.
- .7 Anchor Bolts.
  - .1 Install anchor bolts into concrete as per manufacturer's specifications.
  - .2 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
  - .3 Only upon approval of Departmental Representative, adhesive anchors are to be drilled after concrete has set. Formed holes to be minimum 100 mm diameter. Drilled hole diameter shall comply with adhesive manufacturer's installation instructions.
  - .4 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
  - .5 Fill holes with approved adhesive and set bolts.
  - .6 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.
  - .7 Miscellaneous concrete elements (pits, trenches, etc.) to be minimum 6" (150mm) thick reinforced with 10M @12" (300mm) o/c each way

unless noted otherwise.

- .8 Delivery.
  - .1 Mix and completely discharged concrete within 120 minute time limit.
  - .2 Exceptions to this will only be allowed with special mix design and written approval of Departmental Representative.
  - .3 Water may only be added to concrete trucks by following guidelines of CSA A23.1/A23.2. Contractor and inspecting agency to document addition of water.
- .9 Grouting.
  - .1 Grout between steel reinforcing beams and existing concrete floor structure with non-shrinking grout to manufacturer's instructions, and as per structural drawings.
- .10 Finishing.
  - .1 Exterior concrete sidewalk or equipment slabs to receive a broom finish.
  - .2 Use procedures acceptable to Departmental Representative for those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.
  - .3 Rub exposed sharp edges of concrete with carborundum to produce 3mm radius edges unless otherwise indicated.
- .11 Curing.
  - .1 Workers shall not be allowed on the exterior concrete slab pad for 12 hours after placement.
  - .2 Do not place load upon new concrete until authorized by Departmental Representative.

### 3.3 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out by CSA certified testing laboratory approved by Departmental Representative in accordance with CSA A23.1/A23.2.
- .2 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.
- .3 Provide free access to all portions of work and cooperate with inspection agency.
- .4 Concrete Cylinder Tests.
  - .1 Make at least one set of 3 cylinders for each day's concreting or for each 35 cubic meters of concrete placed, for each type of concrete mix.
  - .2 Take cylinders at point of deposit of concrete.

- .3 For each test: slump and air content will be taken and 3 standard cylinders will be prepared and cured under laboratory conditions.
  - .4 One cylinder from each test will be broken at 7 days and remaining cylinders at 28 days.
  - .5 When temperatures are below 5°C, prepare one additional field cured cylinder to verify that adequate strength is attained.
  - .6 When either air or slump measurements are not within specified limits, reject concrete load. Undertake testing of subsequent concrete load to ensure conformance to specifications.
  - .7 Deliver test results directly from test laboratory to Departmental Representative and to Contractor
- .5 Test reports to include:
- .1 Project name.
  - .2 Date and time of sampling.
  - .3 Supplier, truck and departure time.
  - .4 Specified strength and admixtures.
  - .5 Cement type.
  - .6 Exact location in structure.
  - .7 Slump and air content.
  - .8 Maximum aggregate size.
  - .9 Test strength and age at time of test.
  - .10 Date cylinder received by lab.
  - .11 Testing technician identification.
  - .12 Weather and temperature information.
- .6 If any tests reveal concrete does not meet specification, Departmental Representative may enforce one or more remedial procedures such as:
- .1 Change in mix design.
  - .2 Change in concrete supplier.
  - .3 Additional testing by coring or impact hammer.
  - .4 Replacement of work.
  - .5 Other procedures as necessary.
- .7 Pay costs of remedial work to make concrete meet specifications.

END OF SECTION