

Part 1 General**1.1 DESCRIPTION**

- .1 This section specifies the requirements for the expertise, supply, installation, finishing, curing protection of concrete cast in place according to the plans, present specifications and contractual documents.

1.2 DEFINITIONS

- .1 The following definitions apply to the present section of the specifications:
 - .1 The Laboratory: the expert in quality control of the placement of materials and concrete mandated by the contractor.
 - .2 The plans: the signed & sealed drawings issued by the Department Representative to be used for the proposed project.

1.3 REFERENCE STANDARDS

- .1 The instructions of the following publications & standards mentioned below form an integral part of the specifications, without limiting the instructions of this document itself.
- .2 ASTM International
 - .1 ASTM C939-10, Test Method for Flow of Grout for Preplaced Aggregate Concrete.
 - .2 ASTM C260/C260M-10a(2016), Standard Specification for Air-Entraining Admixtures for Concrete.
 - .3 ASTM C309-11, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .4 ASTM C494/C494M-16, Standard Specification for Chemical Admixtures for Concrete.
 - .5 ASTM C1017/C1017M-13e1, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .6 ASTM D624-2012, Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.
- .3 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, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .4 CSA Group
 - .1 CSA A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA A283-06(R2016), Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.4 ABBREVIATIONS AND ACRONYMS

- .1 Portland Cement: hydraulic cement, blended hydraulic cement (XXb - b denotes blended) and Portland-limestone cement.
 - .1 Type GU, GUb and GUL - General use cement.
 - .2 Type MS and MSb - Moderate sulphate-resistant cement.
 - .3 Type MH, MHb and MHL - Moderate heat of hydration cement.
 - .4 Type HE, HEb and HEL - High early-strength cement.
 - .5 Type LH, LHb and LHL - Low heat of hydration cement.
 - .6 Type HS and HSb - High sulphate-resistant cement.
- .2 Fly ash:
 - .1 Type F - with CaO content less than 15%.
 - .2 Type CI - with CaO content ranging from 15 to 20%.
 - .3 Type CH - with CaO greater than 20%.
- .3 GGBFS - Ground, granulated blast-furnace slag.

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation Meetings: in accordance with convene pre-installation meeting one week prior to beginning of the concrete works.

1.6 DOCUMENTS/SAMPLES TO BE SUBMITTED

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 At least 4 weeks prior to commencing work, the laboratory must submit to the Departmental Representative all the documents necessary to certify that the materials listed below conform to the specified requirements.
 - .1 Portland cement
 - .2 Blended hydraulic cement
 - .3 Supplementary cementing materials
 - .4 Grout
 - .5 Additives
 - .6 Aggregates (provide granulometry study)
 - .7 Water
- .3 The laboratory must also provide to the Departmental Representative a mixing formula, stamped by a NAPEG Engineer, certifying that the chosen formula will produce quality concrete with the strength, performance and requirements according to CSA A23.1/A23.2. This formula must be based on the granulometry of the local aggregates.
- .4 Concrete pours: provide 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.
- .5 The laboratory must provide a certificate stating that the mixing plant, equipment and materials to be used for the manufacture of concrete conform to the requirements of CSA A23.1/A23.2.

- .6 The acceptance by the Departmental Representative does not absolve the responsibility of the Contractor to provide specialized concrete with plastic as well as hardened properties that meet the requirements of the specifications.
- .7 Minimum 4 weeks prior to starting concrete work, provide proposed quality control procedures for review by the Department Representative on following items:
 - .1 Concrete pours in hot-weather
 - .2 Concrete pours in cold-weather
 - .3 Curing
 - .4 Finishing
 - .5 Grouting
- .8 All documents are to be submitted in two (2) copies. One annotated copy will be returned to the Contractor. The Contractor remains responsible to make additional copies and distribute them.

1.7 AUTHORIZATION / APPROVAL FROM DEPARTMENT REPRESENTATIVE

- .1 Where required in accordance with the obligations of this specification section, authorization or approval of the Department Representative shall be deemed to have been obtained when it has been notified in writing or verbally recognized by all present at a site meeting at which the said Department Representative has attended.
- .2 All concrete test results, from the laboratory, must be submitted to the Department Representative for consideration purposes, and in the case of any deviations from the concrete formula, do not continue work without a prior written authorization.
- .3 Submit two (2) copies of material safety data sheets required under ~~SIMDU I~~, in accordance with Section 01 35 29.06 **SIMDUT**.



Part 2 Products**2.1 MATERIALS**

- .1 Cement: Portland cement GU type and / or GUb- SF, depending on the type of concrete conforming to CSA A3001. Use one recognized brand of cement, per type of concrete for the entire contract.
- .2 Hydraulic slag cement: conforming to CAN/CSA-A362.
- .3 Supplementary cementing materials: conform to CSA A3001.
- .4 Mixing water: conforming to section 4.2.2 of CSA-A23.1/A23.2.
- .5 Fine aggregate: normal mass, according to Article 4.2.3 of CSA-A23.1/A23.2. It may be natural sand or sand manufactured with a proportion of at least 20% natural sand.
- .6 Coarse Aggregate: normal density, conforming to Article 4.2.3 of CSA-A23.1/A23.2 particles will be crushed, durable, free of dust and harmful materials. The particle size will have a maximum of 20 mm, unless otherwise specified. With the approval of the Department Representative, a maximum of 10 mm may be used in some hard to reach places. The coarse aggregates are to have a normal density. The amount of flat and elongated particles shall conform to Table 12 CSA-A23.1/A23.2.
- .7 Air entraining admixture: to ASTM C260.
- .8 Chemical admixtures and pozzolanic mineral admixtures: meeting the specifications of ASTM C494/C494M and ASTM standards C1017/C1017M respectively. The use of calcium chloride or adjuvants that may contain it are not permitted. The Department Representative must approve accelerators or retarders used during the concrete pour in cold weather or hot weather.
- .9 Superplasticizer: conforms to specifications at ASTM C494/C494M.
- .10 Non-shrinking mortar for concrete repairs: premixed Portland cement based product containing a non-metallic aggregate and plasticizer, and able to reach a compressive strength of at least 35 MPa at 7 days.
- .11 Setting retarder: conforming to ASTM C494/C494M water based, low VOC, solvent free. The film retarder shall not be exposed to moisture at any time.

2.2 CONCRETE FORMULA

- .1 The contractor's laboratory is responsible for the concrete mix and must at his own expense take all necessary steps to ensure the quality and consistency of the product.
- .2 The concrete must be prepared in a plant with a stationary mixer.
- .3 Straight out of the mixer, the slump of the concrete must be within 60 mm to 100 mm. In all cases where the addition of a superplasticizer is required, the minimums and maximums will be checked before the superplasticizer is added to the concrete. After the addition of the superplasticizer, the slump must be at a maximum of 150 mm.
- .4 Air Content %: as specified in table below.
- .5 Adding superplasticizer: As indicated in the plans, other sections of the specifications or to facilitate the casting of concrete with the approval of the Department Representative. Using a superplasticizer is expected where there is a high concentration of steel reinforcement, confined spaces or difficult to access places.

- .6 Ensure that the adjuvants used are compatible and that they are thoroughly mixed into the concrete following the manufacturer's instructions. If an adjuvant proves to be harmful or ineffective, replace it immediately with one approved by the Department Representative, while assuming all costs.
- .7 Produce and provide normal density concrete as specified in the following table and in accordance with the requirements of the specifications and plans. Base mixtures do not contain entrained air or coarse aggregates up to a maximum nominal size of 20 mm.

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	Exposure type	Resistance at X days (MPa)	Cement	Maximum ratio E/L	Aggregates	Entrained air	Remark
Exterior foundations for lighting and flagpoles	S-3 C-1	30 @ 56d* 35 @ 28d	MS or GU** GU	0.50 0.40	20	5% to 8%	Note 1
Exterior concrete slab	C-1	35 @ 28d	GU	0.40	20	5% to 8%	Note 1
Slab on decking <u>and concrete base for mechanical equipment</u>	N	25 @ 28d	GU	As per formula	20	-	Note 1
<u>Concrete topping</u>	<u>N</u>	<u>25 @ 28d</u>	<u>GU</u>	<u>As per formula</u>	<u>12</u>	<u>:</u>	<u>Note 1</u>
Note 1: Limit temperature of pour to 5°C. *: if GU cement is used, the resistance shall be 30 @ 28d **: if GU cement is used, a concrete additive must be added such as silica fume to improve sulphate resistance							

- .8 No change in the composition of concrete mixtures originally submitted for consideration by the Department Representative may be made without the written consent of the Department Representative.
- .9 The slump and entrained air content of concrete are affected when cast by a pump.

Part 3 Execution**3.1 PREPARATION**

- .1 Ensure that the formwork is completed as well as clean, free of ice, snow and water. Ensure that the reinforcements and any other units have been placed in accordance with the requirements of Sections 03 10 00 and 03 20 00 of the specifications. Thoroughly clean and remove all rubbish and debris of any kind in the formwork right before the casting of concrete.
- .2 If it is necessary to melt ice that adheres to the reinforcement or inner walls of the forms, the use of a steam jet or another method may be approved by the Department Representative. The use of de-icing agents is never allowed.
- .3 It is forbidden to pour concrete slabs when the formwork is sitting on frozen soil. In periods of frost, take the necessary steps to prevent freezing of the soil.
- .4 When concrete is pumped, the concrete formulas should be adjusted accordingly. The concrete must retain its characteristics when exiting the pipe of the pump.
- .5 Submit for approval to the Department Representative 5 days prior to casting a plan showing the location and dimensions of all sleeves and parts embedded in the concrete. This plan must make clear all elements embedded in the concrete of all subcontractors.
- .6 Ensure that the reinforcing bars and embedded pieces are not moved during the casting of concrete.
- .7 During concreting operations:
 - .1 Development of cold joints not allowed. Concrete pourage must be continuous to authorized construction joints.
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .8 Pumping of concrete is permitted only after approval of equipment and mix
- .9 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .10 Prior to placing of concrete obtain the Department Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .11 Protect previous Work from staining.
- .12 Maintain accurate records of poured concrete items to indicate date, location of pour, characteristics of concrete, truck numbers, quality, air temperature, test samples taken and any other additional and relevant information.
- .13 In locations where new concrete is dowelled to existing work, drill holes in existing concrete, clean them out properly and insert steel rebars using a high adhesion to epoxy grout to anchor and maintain the structures.
- .14 Do not place load upon new concrete until authorized by the Department Representative.

3.2 AUTHORIZATION TO CAST CONCRETE

- .1 Before any work begins, get approval from the Department Representative on the methods of casting concrete that must conform to Section 7-2 7.4 of the standard CAN/CSA-A23.1/A23.2.

- .2 Notify the Department Representative at least 96 hours in advance whenever a concrete pour of any volume is foreseen. A form entitled "Concrete Notice" must be used and completed by the Contractor.
- .3 No concrete pour shall be undertaken without the authorization of Department Representative.
- .4 Permission to cast concrete shall be granted when the Department Representative has made an inspection of the formwork and is satisfied that the requirements of Article 3.1 have been met.
- .5 It is forbidden to cast concrete when it is raining or snowing, unless the Department Representative is satisfied with the steps taken to accommodate the concrete during transport and casting.
- .6 The authorization granted by the Department Representative to cast concrete when the outside temperature is below 5°C or above 25°C in no way relieves the Contractor of his responsibility to produce the necessary strength and durability of concrete.

3.3 BATCHING & DELIVERY OF CONCRETE

- .1 All concrete is to be made in the plant. The equipment used for measuring, mixing and the transport to the job site must comply with the specifications of the National Ready Mixed Concrete Association.
- .2 Ensure that the temperature of concrete delivered to the site complies with upper and lower limits specified in Tables 14 and 24 **20** of the CSA A23.1/A23.2.
- .3 Plan the batching of concrete and schedule deliveries to the site so that each casting takes place without interruption. Each batch of concrete must be entirely poured into the forms within two (2) hours after mixing. Follow the recommendations of section ~~5.2.4.3.4~~ **5.2.5.3.1** of CSA A23.1/A23.2 for delivery times.
- .4 It is never allowed to add water to the concrete during delivery from the factory to the site. Similarly, it is not allowed to add water to the concrete prior to pouring from the concrete trucks, unless the Department Representative gives authorization. If so, the amount of water added is to be listed on the delivery bill and signed and certified by the representative of the Department Representative.
- .5 The Contractor has the responsibility to manufacture and deliver concrete mixes, required for the work at hand as to the conditions required by CSA-A23.1/A23.2.
- .6 The Contractor shall include costs for all means and precautions that must be used to allow the manufacture and delivery of concrete mixes while respecting the requirements of CSA-A23.1/A23.2. This includes the addition of superplasticizer to adjust the workability of mixes in heavily reinforced or difficult to access areas, the adding of ice or nitrogen to ensure temperature control during delivery and casting during hot weather, the adding of hot water and heating of aggregates during delivery and casting in cold periods, or any other situations where the Contractor is obligated to act in order to meet the requirements of CSA-A23.1/A23.2.
- .7 The use of aluminum is prohibited for all materials intended for mixing, transport or installation of concrete.

3.4 CASTING

- .1 Perform the casting of concrete in accordance with the requirements of CSA-A23.1/A23.2.





- .2 Use internal mechanical vibrators in accordance with Section ~~7-2-5~~ **7.4.4.2** of CSA A23.1/A23.2 and entrust handling to qualified operators. The diameter and frequency of these vibrators are subject to the approval of the Department Representative.



- .3 Adjoin fresh concrete with bedrock or hardened concrete in accordance with section ~~7-2-2~~ **7.2.1.3** of CSA-A23.1/A23.2.
- .4 Saturate hardened concrete surfaces with water immediately before casting concrete on these surfaces.
- .5 Place concrete continuously or in layers where the thickness of each new layer integrates with the underlying layers before the concrete hardens so as to cause the formation of cold joints.
- .6 If difficulties arise during casting, change the concrete formula following the directives of the Laboratory and use the proposed adjutant whilst assuming all costs.
- .7 Use an appropriate conduit or vertical tube whenever the concrete must be cast from a vertical drop of 1.5 meters or more.
- .8 The addition of a superplasticizer to concrete is required before it is placed in forms when walls have a height of 2 meters (including retaining walls) or more, and for columns and beams containing high concentrations of reinforcement.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

3.5

CURING & PROTECTION OF CONCRETE



- .1 Concrete curing is carried out according to the requirements of CSA-A23.1/A23.2 Section ~~7-4~~ **7.7**.
- .2 Except for the items mentioned in the paragraph below, the use of curing compounds is permitted provided that the products comply with the specifications of ASTM C309 03 type 1 or 1-D, and that they do not affect the adhesion or placement of finishes and sealants. Attach a written declaration that the various products to be used are compatible. In the case of floor slabs, the treatment must be carried out with water in accordance with ~~Article 7.4.2.1 by either of the methods (a) and (b) described in section 7.4.2.2.1~~ **7.1.1** CSA A23.1/A23.2 (wet cure).



- .3 The curing of concrete in a humid atmosphere must be carried out for a minimum period of 7 days.
- .4 Ensure that, throughout the duration of the curing process, the concrete will not be subject to any overloading and will be adequately protected against shocks, excessive vibrations, bad weather and other disturbances.



- .5 If the outdoor temperature is 27°C or more, comply with the requirements of Article ~~7.4.1.4~~ **7.1.1** CSA A23.1. Follow the recommendations of ACI 305R "Hot Weather Concreting", of the American Concrete Institute.



- .6 If the outdoor temperature is 5°C or less, or if it is possible that it descends to this level or lower within the 24 hours following the casting of concrete, comply with the requirements of section ~~7.4.1.5~~ **7.1.2** CSA A23.1. Follow the recommendations of ACI 306R "Cold Weather Concreting", American Concrete Institute; however, avoid overheating the cast concrete.
- .7 During the curing process, protect the cast sections from bad weather and wind.
- .8 The costs of supplying, installing, powering and maintaining temporary structures and equipment that are required to protect the concrete during the curing process in either hot or cold weather are all included in the contractual work.

- .9 The Contractor must take the necessary measures to control plastic cracking, flaking and scaling due to shrinkage.
- .10 The costs of supplying, installing, powering and maintaining structures and equipment that are required to protect the concrete during the curing process in either hot or cold weather are all included in the contractual work.

3.6 CONSTRUCTION JOINTS

- .1 The location of construction joints for each concrete pour must be approved by the Department Representative. The Department Representative may require that these joints be moved or arranged differently for reasons of structural continuity and/or appearance.
- .2 No construction joint shown on the plans shall be removed or moved without the permission of the Department Representative.
- .3 Leave a minimum curing time of 7 days prior to pouring of another section adjacent to an already cast section.
- .4 Submit for approval to the Department Representative details of all splices required for overlapping rebars crossing construction joints that are not indicated on the plans or steel reinforcement drawings.
- .5 Placing construction joints is included within the regular contract of the Contractor. The Contractor is not entitled to charge extra even if joints are added following directives issued by the Department Representative.

3.7 FINISHING OF CONCRETE WITHIN FORMWORK

- .1 Clean and finish the formwork surfaces in accordance with section ~~7.7.3~~ **7.9.2** of CSA-A23.1/A23.2. A smooth finished formwork surface is required in accordance with Article ~~7.7.3.6~~ **7.9.2.6** of CSA-A23.1/A23.2 for surfaces that will be visually exposed in completed buildings. A rough finished formwork surface is required for all other surfaces according to Article ~~7.7.3.5~~ **7.9.2.5** of CSA-A23.1/A23.2.
- .2 Fill holes left by formwork ties in accordance with Section 03 10 00 of the specifications.

3.8 REPAIRING OF CONCRETE

- .1 Remove and replace any damaged or defective concrete with new concrete meeting the specifications and demands of the plans.
- .2 After removing the formwork, any voids or other defects found on the surface of concrete should not be repaired before the Department Representative has examined them. Submit the proposed repair methods for the defects if any are found to the Department Representative for approval. Do not make any surface corrections before receiving permission from the Department Representative. Where it is possible and acceptable, complete the repairs as soon as possible after the removal of formwork.
- .3 Any marks, streaks or other irregularities on the surfaces that are to be waterproofed with a membrane or surfaces that remain exposed must be removed within a period of 24 hours after the removal of the formwork. Holes left by tie rods must be sealed within the same time period.

3.9 CUTTING, PIERCING & NOTCHING CURED CONCRETE

- .1 It is never permissible for any reason whatsoever to cut, drill or notch elements already that have already been cast, unless the Department Representative gives permission.
- .2 Any part of hardened concrete that is cut, drilled or notched must be authorized by the Department Representative at a specific location and according to the exact approved dimensions. Use rotary tools that prevent spalling the concrete.

3.10 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 the Department Representative.
- .2 Where approved by the Department Representative, 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 the Department Representative.
- .4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from the Department Representative before placing of concrete.
- .5 Confirm locations and sizes of sleeves and openings shown on drawings.
- .6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

3.11 GROUT

- .1 Grout under base plates and machinery using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

3.12 TOLERANCES / DEFECTIVE CONCRETE

- .1 If the tolerances specified in Section 6.4 of CSA-A23.1/A23.2 were not observed during the construction of an element shown on the plans, the Department Representative may require that this element be demolished and rebuilt according to the tolerances of the Article with the Contractor assuming all costs.
- .2 If the concrete of an already built structure shown on the plans does not have the required compressive strength, and may compromise its structural efficiency, the Department Representative may require that it be strengthened or demolished and rebuilt; all costs will be assumed by the Contractor.
- .3 If the concrete of an already built structure shown on the plans does not meet the minimum compressive strength specified in the plans, but the Department Representative calculates that there is no need to replace or enhance the concrete, the Contractor will bear all costs of the verification and provide a discount based on the difference between the requested and obtained values of the defective concrete

3.13 FIELD QUALITY CONTROL

- .1 The Laboratory is to be mandated by the Contractor.
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- .2 The quality control of the concrete is to be performed in accordance with CSA-A23.1/A23.2. The Contractor is responsible for monitoring the quality of his work and must provide the Department Representative with a quality control program.
- .3 Submit for approval to the Departmental Representative the proposed formulas, prepared by the Laboratory, of each class of concrete. Specify the type and brand of all additives used.
- .4 The Laboratory must monitor the concrete pour and take the required samples for quality control tests during each concrete pour.
- .5 For every 50 m³ of cast concrete, the Laboratory will take one (1) sample of concrete and cast four (4) standard cylinders used for strength tests at 7 and 28 days respectively. The Laboratory will never take less than one (1) sample per day of each type of concrete cast, and for each type of particular structural element cast.
- .6 The cylinders should be numbered consecutively. The laboratory report must indicate the exact location of the concrete sampled along with the number of the original truck.
- .7 The laboratory will measure the slump and air content of the concrete whenever samples for resistance testing are taken and as often as necessary in regard to the nature of the work at hand.
- .8 Find a place on site protected from the weather elements where the concrete cylinders can be stored safely at an ambient temperature of 10°C - 25°C before their delivery to the testing laboratory.
- .9 The Laboratory will collect additional cylindrical specimens when casting in cold weather. The curing of these samples should be on the site, under the same conditions as the concrete elements from which they are taken.
- .10 The Testing Laboratory shall provide a complete inspection report to the Departmental Representative. This report will be necessary before acceptance of work.
- .11 If tests conducted by the Department Representative indicate that the concrete of an already built element shown on the plans does not meet the minimum specified compressive strength, all costs incurred by the provisions of Article 4.4.6.7 **4.4.6.6.1.3** of CSA A23.1-A23.2, on the Non-compliance with the results of tests on cylinders subjected to a standardized treatment, CSA A23.1 A23.2 will be assumed by the Contractor.
- .12 The Contractor is solely responsible for the completion of all required concrete work as shown on the plans and specifications. All work that does not meet the specification requirements for any reason whatsoever (quality of materials, mixing, casting, resistance, impermeability, etc.) must be modified in accordance with the requirements of the Department Representative or shall be demolished in whole or in part and rebuilt in accordance with the plans and specifications at the Contractor's expense.

3.14**CLEANING**

- .1 Clean in accordance with Section 01 74 11- Cleaning.
- .2 Waste Management: in accordance with Section 01 74 24 ~~19- Construction/Demolition Waste Management and Disposal.~~

3.15**CONCRETE TOPPINGS**

- .1 **Concrete topping preparation must meet all requirements of the resilient flooring manufacturer for installation conditions, finish and performance.**

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- .2 Concrete topping must be fully cured and free of any hydrostatic and/or moisture problems. Moisture and alkalinity tests must be performed under in-service conditions as required by the resilient flooring manufacturer.
 - .3 Concrete topping must be free of all contaminants that can inhibit bond. All contaminants must be removed from the surface via mechanical abatement or as recommended by flooring manufacturer. Follow resilient flooring manufacturer recommendations concerning use of abatement chemicals.
 - .4 Concrete topping must have a smooth finish, proper density and be highly compacted with a tolerance of 3.2mm in 3.05m radius (or as required by resilient flooring manufacturer). Minor surface cracks or grooves must be filled according to resilient flooring manufacturer requirements.
 - .5 All substrate must be properly prepared to provide a satisfactory bonding surface for the adhesive being used to install the resilient flooring.
 - .6 Saw cuts shall be grooved in the concrete slab. Depressions shall be 1/6 of the total concrete thickness depth. Saw cuts should be spaced at a minimum of one saw cut per slab thickness multiplied by a factor of 25.
 - .7 Provide the necessary concrete stops along edges of the concrete slab.
 - .8 The wood structure is to be protected prior to and during the concrete pour.
 - .9 Wet curing is prohibited. Use a chemical curing process for the concrete slab instead.

END OF SECTION