

# Appendix A

## Design Criteria

Categories	Items	Description
Design Basis	Soil/Pile Foundation	- Working Stress Design
Design Codes	Cast-in-Place Concrete	<p><b><u>CSA Standards</u></b></p> <ul style="list-style-type: none"> <li>- CSA A23.1-00 Concrete Materials and Methods of Concrete Construction.</li> <li>- CSA A23.2-00 Methods of Test for Concrete.</li> <li>- CSA A23.3-94 Design of Concrete Structures (Structures Design).</li> <li>- CSA A23.4-00 Precast Concrete - Materials and Construction.</li> <li>- CSA A3001-03 Cementitious Materials for Use in Concrete.</li> </ul>
Design Parameters	Ground Snow and Rain	<ul style="list-style-type: none"> <li>- <math>S_s = 1.7</math> kPa</li> <li>- <math>S_r = 0.2</math> kPa</li> </ul>
	Wind	<ul style="list-style-type: none"> <li>- <math>q(1/10) = 0.35</math> kPa</li> <li>- <math>q(1/30) = 0.42</math> kPa</li> <li>- <math>q(1/100) = 0.49</math> kPa</li> </ul>
	Design Temperature Range	<ul style="list-style-type: none"> <li>- During Construction: <math>-35^{\circ}\text{C}</math> to <math>35^{\circ}\text{C}</math>.</li> <li>- Ambient: <math>-35^{\circ}\text{C}</math> to <math>35^{\circ}\text{C}</math></li> </ul>
Load Factors (Limit States)	Dead Load	- 1.25
	Live Load	- 1.5
	Wind	- 1.5
	Temperature	- 1.25
	Buoyancy, Overtuming	- 0.85 for dead loads, 1.5 for live loads
	Combination	<ul style="list-style-type: none"> <li>- 1.0 for any single load</li> <li>- 0.7 for 2 of live, wind and temperature</li> <li>- 0.6 for all live, wind and temperature</li> </ul>

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Concrete Work	Design Parameters	<ul style="list-style-type: none"> <li>- 28-day concrete strength of 35 MPa for all water retaining structural concrete; other concrete as appropriate for type of usage.</li> <li>- Portland cement type 50 (HS) will be used for concrete in contact with native soil and for water retaining structures.</li> <li>- Portland cement type 10 (GU) will be used for concrete not in contact with native soil.</li> <li>- Water to cement ratio shall be less than 0.42 for all structures.</li> <li>- Reinforcing bars will be specified to conform to CAN/CSA-G30.18-M92.</li> <li>- Black steel or galvanized steel bars will be used as appropriate.</li> </ul>
Metals	Materials	<ul style="list-style-type: none"> <li>- Structural steel – CSA G40.21, minimum 350 MPa.</li> <li>- Miscellaneous steel – CSA G40.21, minimum 300 MPa.</li> <li>- Square and Rectangular Hollow Structural Shapes - CSA G40.21, minimum 350 MPa.</li> <li>- Bolted connections for steel – ASTM A325.</li> <li>- Anchor bolts, non-submerged – Galvanized steel.</li> </ul>