PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)
.1 CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CAN/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, Poplar Plywood.
.6 CAN/CSA-O325-16, Construction Sheathing, Second Edition.
.7 CSA S269.1-16, Falsework and Formwork, Second Edition.

.2 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S701.1:2017, Standard for Thermal Insulation, Polystyrene Boards, Fifth Edition.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit shop drawings for formwork and falsework.
.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Newfoundland and Labrador, Canada.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures and Section 02 81 01 - Hazardous Materials.

.4 Co-ordinate submittal requirements and provide submittals required by Section 01 33 00 - Submittal Procedures.

.5 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners,

1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.5 (Cont'd)
and locations of temporary embedded parts. Comply with CSA S269.1, for formwork and falsework drawings.

.6 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

.7 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Store and manage hazardous materials in accordance with Section 01 33 - Submittal Procedures.

.2 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
.2 Place materials defined as hazardous or toxic in designated containers.
.3 Divert wood materials from landfill to a recycling, reuse, or composting facility as approved by Departmental Representative.
.4 Divert plastic materials from landfill to a recycling, reuse or composting facility as approved by Departmental Representative.
.5 Divert unused form release material from landfill to an official hazardous material collections site as approved by the Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Materials and resources in accordance with Section 01 35 21 - LEED Requirements.

.2 Do verification requirements in accordance with Section 01 35 21 - LEED Requirements.

.3 Formwork materials:
.1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121, CAN/CSA-O86 and CSA-O153.
.2 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.
.3 Rigid insulation board: to CAN/ULC-S701.1.

.4 Tubular column forms: round, steel, internally treated with release material.

.5 Form ties:
.1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.
.2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.

.6 Form release agent: non-toxic, biodegradable, low VOC.

.7 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC,free of kerosene, with viscosity between 15 to 24 mm^2 /s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.

.8 Falsework materials: to CSA-S269.1.

.9 Sealant: to Section 07 92 00 - Joint Sealants.

PART 3 - EXECUTION

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1.

.5 Refer to architectural drawings for concrete members requiring architectural exposed finishes.

.6 Do not place shores and mud sills on frozen ground.

.7 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.8 Fabricate 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 CSA-A23.1/A23.2.

.9 Align form joints and make watertight.
.1 Keep form joints to minimum.

.10 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.11 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.12 Construct forms for architectural concrete, and place ties as indicated and as directed.

3.1 FABRICATION AND ERECTION (Cont'd)

.12 (Cont'd)
.1 Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.

.13 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
.1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.14 Clean formwork in accordance with 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 3 days for walls and sides of beams.
.2 1 days for footings and abutments.

.2 Remove formwork when concrete has reached 70 % of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.3 Provide necessary reshoring 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 reshoring in each principal direction at not more than 3000 mm apart.

.5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END