SM0705 Provision of Laboratory Services

1. Package Description

Scope of Work Summary:

The Contractor shall provide:

- all equipment and personnel required to operate a fully functional Soil and Concrete Laboratory (Company will free issue the Primary Laboratory Building at Muskrat Falls, including necessary storage/curing facilities for curing concrete specimens in accordance with CSA A23.2-3C). The Primary Laboratory will be expected to operate on a twenty-four hour/seven day (24/7) work week, as required
- CCIL CSA Certification. Primary Laboratory will meet and comply with all of the CSA A283-06 (2011) Category II Advanced Certification requirements. This includes Category I test methods plus A23.2-8A, 2C, 11C and 12C as well as other test methods that may be necessary to meet project specific requirements
- Mobile Laboratories to be used at various worksites. The Mobile Laboratories will be expected to operate on a twenty-four hour/seven day (24/7) work week, or as required. CCIL CSA Certification is not required. Field personnel will be certified in accordance with CSA A283-06 (2011) requirements for concrete and soils testing for work completed outside of Muskrat Falls and along the transmission lines running from Churchill Falls to Soldiers Pond
- Concrete Engineer with a minimum of twenty (20) years relative experience and knowledge of Concrete and Soils Technology, Concrete Mix-Design, CCIL CSA Laboratory Certification and Operational Requirements, Testing and Operational Procedures and CCIL CSA Laboratory Certification and Operational Requirements under CSA A283 on large/similar projects

Contractor shall provide all necessary inspection, sampling and test equipment, including consumables to carry out the following:

- Soil / Aggregate / Concrete Aggregate sampling and testing
- Field Compaction Testing
- Sampling, curing, testing - plastic concrete - all areas at truck tail gate, chute and/or placement of formwork
- Verification of properties through trial batching on commissioning of Concrete Batch Plant at Site
- Testing for uniformity of mixed concrete after calibration of Batch Plant equipment and commissioning
- Early strength test
- Concrete-mix design adjustments and testing
- Grout - compressive strength and flow, viscosity, bleeding and expansion
- Concrete coring and testing of hardened concrete
- Supply, installation, calibration, proper operation and maintenance of all inspection, test and Laboratory equipment
- Provide laboratory equipment spares, consumables and testing supplies to sample, test or operate equipment
- Disposal of Concrete Waste
- Any other testing requested by Company as it relates to soil and concrete

For the Mobile Laboratories, it is anticipated the following tests will be required:

- Sieve Analysis
- Making and Initial Curing of Concrete Cylinders (all cylinders must be transported to Primary Laboratory for compressive strength testing)
• Density of Soils by Nuclear Densometer
• Liquid and Plastic Limit Test of Soils
• Soil Moisture Contents
• Soil Moisture Density Testing (Standard Proctors)
• Field Testing of Plastic Concrete

The following equipment shall be provided by the Contractor for the Primary Laboratory unless otherwise noted:

• Contractor shall provide the specialized concrete and soils software, as required, to run the laboratory
• Concrete Compression Machine - 180,000 kg. capacity with rigid frame that will not deform under repeated loads, continuous loading capable of providing rates of loading in compliance with CSA A23.2-9C, power operated, hydraulic system, digital readout and accessories to test 150 mm diameter x 300 mm cylinders, 100 mm x 200 mm cylinders and 50 mm cubes for use with PC and printer suitable for testing concrete of strengths specified in this Scope of Work. On site calibration of machine required in accordance with the latest edition of ASTM E4 and CSA A23.2-9C
• Pan mixer - 100 litre capacity
• Gilson Testing Screen
• LA Abrasion Machine
• Jaw Crusher
• Aggregate Soundness Bath
• Concrete Coring Machine/Portable Generator
• Sample Splitter
• Ovens
• Nuclear Densometers
• Sufficient quantity of site vehicles for carrying out required sampling and testing at the various locations of construction activities at the Muskrat Falls site and along the transmission lines between Churchill Falls and Soldiers Pond
• All other incidental sampling and testing laboratory services equipment required to perform specified testing shall also be provided by the Contractor

The Primary Laboratory will be located at Muskrat Falls. The Mobile Laboratories will support the HVac transmission line construction from Muskrat Falls to Churchill Falls, and the HVdc transmission line construction from Muskrat Falls to Soldier Ponds.