



FOUNDATION REPORT – MCINTYRE RIVER CULVERT, SITE 48C-36/C, G.W.P. 6301-14-00 PRELIMINARY DESIGN FOR 8 STRUCTURES ALONG VARIOUS HIGHWAYS IN NORTHWEST REGION

PHASE 1 – QUALITY CONTROL CHECKLIST DOCUMENT REVIEW, INVESTIGATION AND FOUNDATION REPORTING

Number	Item	Initial and Date		Project Specific Comments
		Complete	In Progress	
1	Review of project documentation and available Foundation Reports.	✓ Nov. 2014		Reviewed project documentation provided with Terms of Reference (TOR) in Request for Proposal (RFP) and review of available GEOCRE reports.
2	Site Visit to inspect the terrain and the performance of existing structures and/or roads.	✓ Dec. 2014		A site visit was carried out in December 2014 as part of the foundation investigation.
3	Location, number and depth of boreholes and any other subsurface investigations, and sample frequency.	✓ Dec. 2014		Five (5) boreholes were advanced along the existing structure alignment to depths between 1.5 m and 14.4 m below existing ground surface. A total of forty-one (41) split-spoon samples and one (1) auger sampler were obtained in the boreholes advanced at the structure location. Soil samples were obtained at about 0.75 m to 1.5 m intervals of depth as per the TOR.
4	Determination of groundwater elevation in boreholes.	✓ Dec. 2014		Groundwater levels were measured with respect to ground surface in all open boreholes upon completion of drilling.
5	Number of laboratory tests and type of laboratory tests.	✓ Jan. 2014		A total of eighteen (18) water contents, ten (10) Atterberg Limits, fourteen (14) grain size distribution and four (4) organic content tests were carried out on select soil samples. Additionally, one (1) corrosivity test suite was carried out on a sample of river water.
6	Abandonment of boreholes and site restoration.	✓ Dec. 2014		The boreholes were abandoned in accordance with O. Reg. 903 (as amended) upon completion.
7	Surveying of boreholes.	✓ Dec. 2014		Borehole locations and ground surface elevations were measured in reference to existing culvert features and highway centreline. The ground surface elevation of the highway centreline was obtained from the profile drawing, provided by HMM. Northing and easting (MTM NAD 83) coordinates were derived from these measurements.
8	Submission of Foundation Investigation and Design Reports, via the TPM to MTO's Project Manager and to the MTO Foundation Group.	✓ Apr. 2015		
9	Report signed and sealed by two P.Eng.'s from Golder, one of whom is the Designated MTO Contact.	✓ Apr. 2015		Stamping of draft reports is not required.



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10	Report(s) in two sections: i) Foundation Investigation Report ii) Foundation Design Report	✓ Apr. 2015		
11	Foundation Investigation Report presents a subsurface model under the plan limits of foundation elements, and at the immediate approaches within 20 m of the structure. Reports consist of factual information only. Includes sections on Site Description, Investigation Procedures, and Description of Subsurface Conditions.	✓ Apr. 2015		Stratigraphic profile provided along the culvert alignment.
12	Presentation of Record of Borehole sheets to MTO format.	✓ Apr. 2015		
13	Presentation of Borehole Location Plan and Soil Strata drawing to MTO format.	✓ Apr. 2015		
14	Presentation of Figures (Grain Size Distribution, etc.) to MTO format.	✓ Apr. 2015		
15	Foundation Design Report presents discussion and recommendations for design with recommendations in accordance with the Highway Bridge Design Code currently in effect at MTO pertaining to both temporary and permanent conditions of the Project.	✓ Apr. 2015		
16	Appropriate range of alternatives considered.	✓ Apr. 2015		Concrete box culverts, open footing culverts (box or arch), circular pipe culverts and a pre-cast slab on sheet pile abutments option are considered feasible at this site.
17	Structure foundations design addressed including axial and lateral resistances for shallow / deep foundations.	✓ Apr. 2015		
18	Earth pressure design addressed.	✓ Apr. 2015		



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19	Embankment design addressed, including settlement analysis for the new approaches, and stability of existing embankments during construction.	✓ Apr. 2015		Applicable to embankment at culvert location.
20	Earth / rock excavation requirements addressed.	✓ Apr. 2015		
21	Construction concerns addressed including any required specifications and special provisions for materials and specialized construction activities and recommendations for methods of overcoming anticipated construction problems.	✓ Apr. 2015		References to applicable OPSS and OPSD included in the text of the report.

Interim Milestone Quality Review No. 1 Audit Report (Submission of Draft Report)	Designated MTO Contact:	
	Date:	May 5, 2015
	Project Manager:	
	Date:	May 5, 2015