

Project Specific Supplementary Quality Control Plan

Project: Preliminary Design for the Replacement and Rehabilitation of 12 Structures, New Liskeard Area
GWP No.: 5267-11-00 **Assignment No.:** 5013-E-0018
Location: Deception Creek Bridge, Site 39E-169 **Highway No.:** Highway 668
Service Provider/Sub-Contractors : Terraprobe Inc.
Specialty: Geotechnical (Structures & Embankments) Medium Complexity **Date:** September 16, 2016
Soil and Rock Including Testing for Foundation Engineering Medium Complexity

#	Phase/Task	Methodology	Deliverable	Reference Manuals	Independent Technical and Quality Control Review		QC Review and Auditor Staff	Completion Date
					Procedure	Documentation		
1.0 REFERENCE DOCUMENT REVIEW								
.1	Project familiarization and reference document review	Same as in Generic Category Plan			Review start-up meeting notes, background information and any summary notes, and complete checklist	Initials on start-up meeting notes and summary notes	R. Abdul	June 15, 2015
2.0 FIELD INVESTIGATIONS AND LABORATORY TESTING								
.1	Site inspection	Same as in Generic Category Plan			Review summary notes and complete checklist	Initials on summary notes and checklist	R. Abdul	June. 19, 2015
.2	Health and Safety and Traffic Control	Same as in Generic Category Plan			Identify health and safety and traffic control concerns	Prepare appropriate Health and Safety and Traffic Control Plans	R. Abdul	Aug. 21, 2015
.3	Define field investigation programs.	Same as in Generic Category Plan			Review field instructions	Initials on field instruction sheet and checklist	R. Abdul	Aug. 21, 2015
.4	Field investigations	Same as in Generic Category Plan			Review field borehole logs	Initials on field borehole logs	R. Abdul	Sept. 07, 2015
.5	Laboratory testing	Same as in Generic Category Plan			Review laboratory test results	Initials on lab test results	J. Crowder	Oct. 16, 2015
3.0 EXTERNAL STAKEHOLDER CONSULTATION								
.1	Consultation with MTO, project team, etc. as applicable	Same as in Generic Category Plan			Review correspondence and complete checklist	Initials on checklist	R. Abdul	Throughout project life
4.0 DRAFT FOUNDATION INVESTIGATION REPORT								
.1	Foundation Investigation Data	Same as in Generic Category Plan			Critical technical review	Checked and initialed calculation sheets, signatures on reports	R. Abdul	August 09, 2016
<i>Milestone Quality Review No. 1</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklists</i>			M. Tanos	August 09, 2016
5.0 FINAL FOUNDATION INVESTIGATION REPORT								
.1	Foundation Investigation Data	Same as in Generic Category Plan			Critical technical review Complete checklist including items contained in Terms of Reference	Checked and initialed calculation sheets, signatures on reports	R. Abdul	Sept. 16, 2016
<i>Milestone Quality Review No. 2</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklists</i>			M. Tanos	Sept. 16, 2016



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6.0 FINAL DESIGNS								
.1	Design check	Same as in Generic Category Plan			Review foundation considerations	Initials on review / meeting notes	R. Abdul	N/A
.2	Staging / Detours	Same as in Generic Category Plan			Review staging / detour requirements	Initials on review / meeting notes	R. Abdul	N/A
.3	Constructability review	Same as in Generic Category Plan			Review constructability issues	Initials on review / meeting notes	R. Abdul	N/A
<i>Milestone Quality Review No. 3</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklist</i>			M. Tanos	N/A
7.0 CONTRACT PACKAGE PREPARATION / REVIEW								
.1	Review of 60% Contract Drawings and Specifications	Same as in Generic Category Plan For "Contract Preparation"			Complete checklist	Signatures on memos, reports and drawings	R. Abdul	Not Applicable (N/A)
<i>Milestone Quality Review No. 3</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklists</i>			M. Tanos	N/A
.2	Review of 90% Contract Drawings and Specifications	Same as in Generic Category Plan For "Contract Preparation"			Complete checklist	Signatures on reports and drawings	R. Abdul	N/A
<i>Milestone Quality Review No. 4</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklists</i>			M. Tanos	N/A
.3	Review of Contract Drawings and Specifications Prior to Submission to Contract Tendering Section	Same as in Generic Category Plan For "Contract Preparation"			Complete checklist	Signatures on reports and drawings	R. Abdul	N/A
<i>Milestone Quality Review No. 5</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklists</i>			M. Tanos	N/A
.4	Contract Foundation Investigation Reports	Same as in Generic Category Plan			Complete checklist	Signatures on reports and drawings	R. Abdul	N/A
<i>Milestone Quality Review No. 6</i>		<i>Audit Memo/ Report</i>		<i>Review Procedures/ Complete Checklists</i>			M. Tanos	N/A

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**QUALITY CONTROL CHECKLIST
FOUNDATION ENGINEERING SERVICES**

**MTO NORTHEASTERN REGION
AGREEMENT NO. 5013-E-0018**

No.	Item	Checked	Project-Specific Comments
1	Review of project documentation and available Foundation Reports.	√	Reviewed available drawings and reports, as well as subsurface conditions in general vicinity of the site.
2	Site visit to inspect terrain and performance of existing structures and/or roads.	√	Site visit performed by Mr. Satyajit Manani, C.E.T.
3	Location, number and depth of boreholes and any other subsurface investigations, and sample frequency.	√	As per the RFP & Terms of Reference. Three boreholes were drilled – one at each abutment location and one borehole in the vicinity where a retaining wall is proposed. Boreholes were drilled to depths of 18.9 m, 20.0 m and 21.1 m. Soil samples were obtained at 0.75 m and 1.5 m intervals and in-situ vane shear testing was performed in the silty clay deposits.
4	Determination of groundwater elevation in boreholes.	√	Water level observed in open boreholes during drilling. A standpipe piezometer was installed in two select boreholes to allow for on-going ground water monitoring.
5	Number of laboratory tests and type of laboratory tests.	√	29 moisture contents, 19 grain size distributions, 8 atterberg limits and 1 consolidation test were completed on selected samples out of a total of 47 recovered samples.
6	Abandonment of boreholes and site restoration.	√	Boreholes backfilled in accordance with Ontario Regulation 903 (as amended).
7	Surveying of boreholes.	√	Control Point HCP 101 established on site by MMM surveyors. Borehole locations and ground surface elevations referenced to HCP 101 by Terraprobe.
8	Submission of Foundation Investigation Report to MTO's Project Manager and to the MTO Foundations Section.	√	
9	Report signed and sealed by two P.Eng.'s from Terraprobe, one of whom is the Designated MTO Foundations Contact.	√	
10	Report in two sections: (Part A) Foundation Investigation Report, and (Part B) Foundation Design Report.	N/A	Foundation Design Report Not Required.
11	Foundation Investigation Report presents a subsurface model at the site. Report consists of factual information only. Includes sections on Site Description, Investigation Procedures, Description of Subsurface Conditions and Miscellaneous.	√	
12	Presentation of borehole records to MTO format.	√	
13	Presentation of Borehole Locations and Soil Strata drawings to MTO format.	√	
14	Presentation of laboratory test result figures to MTO format.	√	
15	Foundation Design Report presents discussion and recommendations for design with recommendations in accordance with CHBDC, pertaining to both temporary and permanent conditions of the project.	N/A	Foundation Design Report Not Required.



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No.	Item	Checked	Project-Specific Comments
16	Appropriate range of alternatives considered.	N/A	Foundation Design Report Not Required.
17	Structure foundation design addressed including axial and lateral resistances for shallow/ deep foundations.	N/A	Foundation Design Report Not Required.
18	Embankment design addressed, including settlement and stability.	N/A	Foundation Design Report Not Required.
19	Earth/rock excavation requirements addressed.	N/A	Foundation Design Report Not Required.
20	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.	N/A	Foundation Design Report Not Required.
21	Recommended Additional Studies for Detail Design.	N/A	Foundation Design Report Not Required.
22	MTO and TPM comments addressed in final Foundation Investigation Report	√	

Interim Milestone Quality Review No. 2

Designated MTO Foundations Contact: _____

Michael Jenos.

Foundations Project Manager: _____

Rehman Adal

September 16, 2016

Date: _____

