

Project Specific Supplementary Specialty Plan: Foundation Assignments

GWP No.: GWP 2041-13-00

Purchase Order No.: 2013-E-0053

Highway No.: Hwys 12, 89 & 400

Location: Central Region

Consultant/Sub-consultant Name: McIntosh Perry /Thurber Engineering Ltd.

Specialty: Foundation Engineering - Geotechnical (Structures & Embankments)

Date: July 2016

No. (1)	Phase/Task (2)	Methodology (3)	Deliverables (4)	Reference Manuals (5)	Independent Technical Review		Quality Control Review & Audit Staff (8)	Completion Date (9)
					Procedure (6)	Documentation (7)		
1.0 Reference Document Review								
1.1	Reference Document Review	Review Design Criteria, Collect and review background information, e.g. GEOCRES files, published ecological data, maintenance reports, etc.	Internal document list	RFP	Confirm adequacy/ sufficiency of data	Initials	K. Power, P.Eng.	Mar 3, 2016 KTP
2.0 Data Collection – Field Investigation								
2.1	Prepare Safety Plan	Confirm field staff understanding of OHS requirements. Confirm qualifications of sub-contractor personnel. Submit Notices to Ministry of Labour, as applicable.	Health & Safety Plan	MOL/OHS Act and Regulations, Book 7, and Thurber's Safety Manual	Review Plan	Initials	K. Power, P.Eng.	Mar 24, 2016 KTP
2.2	Site Reconnaissance	Review site conditions including traffic, access, brush/tree cover, etc.	Notes / Records	OHSA, MTO Temporary Conditions Manual	Review Reconnaissance Notes	Initials	K. Power, P.Eng.	Mar 24, 2016 KTP
2.3	Traffic Control Plan	Prepare a written plan for traffic control taking into account site conditions.	Traffic plan	Ontario Traffic Manual, Book 7, OHSA	Review Traffic Plan	Initials	K. Power, P.Eng.	Mar 24, 2016 KTP

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2.4	Site Clearances	Obtain permissions to enter for investigation on private land. Obtain underground utility locates (gas/water, communications, etc.).	PTE Records Locate Records	N/A	Review PTE and Utility Clearances	Initials	K. Power, P.Eng.	Mar 14, 2016 KTP
2.5	Project Notifications	File Notice of Project with MOL. Notify MTO Project Manager, MTO Local Operations & TPM Team of commencement of fieldwork.	Notifications	RWSCU & RFP	Review Notifications	Initials	K. Power, P.Eng.	Apr 1, 2016 KTP
2.6	Site Investigation Plan	Develop site investigation plan.	Fieldwork Plan	Design Criteria, MTO Foundation Investigation Guidelines	Review Plan	Initials	K. Power, P.Eng.	Apr 4, 2016 KTP
2.7	Brief Technical Staff	Meet with all field staff plus key office and laboratory staff.	Field Instructions Briefing Notes	N/A	Review Briefing Notes	Initials	K. Power, P.Eng.	Apr 5, 2016 KTP
2.8	Engage Specialist Contractors	Provide written instructions regarding project requirements, schedule and site specific issues to contractors (drilling, traffic control, etc.)	Instructions to drillers	RFP, Thurber Field Manuals	Review Instructions	Initials	K. Power, P.Eng.	Apr 6, 2016 KTP

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2.9	Site Investigation and Field Testing	Drill boreholes at prescribed locations and to prescribed depths. Conduct SPT sampling and install piezometers. Protect integrity of samples through appropriate handling and transportation procedures. Restore site as far as is practicable.	Field logs.	MTC Soils Classification Manual, ASTM Methods, CFEM	Review field documentation.	Initials	K. Power, P.Eng. 	Apr 11, 2016
2.10	Laboratory Testing	Record incoming samples and conduct visual identifications (VI). Conduct routine/medium complexity testing in accordance with Proposal.	Lab work sheets.	MTO Laboratory Manual, ASTM Methods, Terms of Reference	Review results and conduct random re-calculations	Initials	K. Power, P.Eng. 	May 2, 2016
Milestone Quality Review No:1			Initials		Review process table		P.J. Branco, P.Eng.	July 20, 2016

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3.0 Geotechnical Analysis								
3.1	Prepare graphical borehole logs, Plans, Profiles and Cross-sections	Obtain base plan from Prime Consultant, plot borehole locations and draft profiles and cross-sections. Prepare borehole logs on gINT software.	Borehole logs, plans and profiles.	MTO Drafting Standards for Foundations	Review logs, plans and profiles for accuracy, completeness & conformance to MTO Standards	Initials PA Site CV-0252-0400-0075 (NB) PA Site CV-0252-0400-0076 (SB)	P.K. Chatterji, P.Eng.	July 4, 2016 May 24, 2016
3.2	Engineering analysis	Perform calculations for: i) foundation resistance ii) settlement iii) stability iv) earth pressures other calculations as required by the project specifics	Calculation sheets.	CHBDC, CFEM, RFQ	Review for soundness of engineering judgement, review calculation sheets	Initials PA Site CV-0252-0400-0075 (NB) PA Site CV-0252-0400-0076 (SB)	P.K. Chatterji, P.Eng.	July 7, 2016 May 26, 2016
3.3	Selection of Alternatives	Review foundation alternatives against project requirements. Select geotechnically preferred alternative.	Draft Foundation Design Report	RFP, Design Criteria, project drawings	Review selection	Initials Pre Site CV-0252-0400-0075 (NB) PA Site CV-0252-0400-0076 (SB)	P.K. Chatterji, P.Eng.	July 7, 2016 May 24, 2016

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4.0 Technical Reports								
4.1	Draft Report Preparation	Complete DRAFT Foundation Investigation and Design Report signed by 2 P.Eng's one of whom is the Designated Principal Contact Prepare report in two sections i) Foundation Investigation Report ii) Foundation Design Report Check report contains appropriate content and recommendations Check report documents appropriate range of alternative recommendations with pros, cons, risks and cost estimates	Draft Foundation Investigation and Design Report	Terms of Reference, Codes, CHBDC, CFEM	Critical technical review. Check report contains appropriate content and recommendation Check report documents appropriate range of alternative recommendations with pros, cons and risks presented	Initials PM Site CV-0252-0400-0075 (NA) PM Site CV-0252-0400-0076 (SA)	P.K. Chatterji, P.Eng.	July 15, 2016 July 12, 2016
Milestone Quality Review No: 2			Initials		Review process table P. Branco		P.J. Branco, P.Eng.	July 20, 2016

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4.2	Final Report Preparation	Review and incorporate comments received from MTO and the TPM Team.	Final Foundation Investigation and Design Report	Terms of Reference, Codes, CHBDC, CFEM	Review final report for incorporation of comments.	Signature on Report Site CV-0252- 0400-0075 Site CV-0252- 0400-0076	P.K. Chatterji, P.Eng.	<i>DM</i> Sep 2/16 <i>DM</i> Sep 2/16

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5.0 Design Consultation								
5.1	Contract Package Review	Review 60 & 90% contract packages.	Written Comments	Technical report(s) and addenda	Activity Checklist	Initials	P.K. Chatterji, P.Eng.	
5.2	Report Addendum	Prepare addenda as necessary based on design changes, or outcome of Constructability Review.	Addendum, Transmittal Records	N/A	Review addenda	Initials	P.K. Chatterji, P.Eng.	
Milestone Quality Review No: 3			Initials		Review process table		P.J. Branco, P.Eng.	

CHBDC – Canadian Highway Bridge Design Code

CFEM – Canadian Foundation Engineering Manual