



**THURBER** ENGINEERING LTD.



October 18, 2017

File: 13161

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**RESPONSE TO MINISTRY COMMENTS ON  
REPLACEMENT OF STRUCTURAL CULVERT No. 41S-138/C  
McKENZIE CREEK CROSSING OF HIGHWAY 17  
TOWNSHIP OF SOUTHWORTH  
G.W.P. 6369-14-00  
AGREEMENT NUMBER: 4015-E-0015**

Dear Ms. Donaldson:

We have reviewed the comments received from MTO foundations Office dated June 2, 2017, regarding the draft Foundation Investigation and Design Report for the replacement of the McKenzie Creek Culvert in the Township of Southworth, Ontario. Our responses are documented below in italics following MTO's comments.

1. MTO GEOCRES No. 52F-56 has been assigned to the Final Report and Foundation Drawings (BH Locations and Soil Strata). Please update the GEOCRES number on the report to reflect this number. *The GEOCRES Number has been added to the final report and drawings.*
2. General – Please update the report to include recommendations for twin box culverts. *The final report has been updated to include recommendations for the proposed twin box culverts.*
3. Section 8.1.2 – Please clarify why a 450 mm thickness was used for the culvert. This seems thick for a box culvert. *The assumed thickness of the culvert base was selected based on the sizing provided in the MTO Concrete Culvert Design and Detailing Manual for a 3.5 m span, rigid frame box culvert and approximate fill height at the site. A thicker size is generally required due to the high-fill section the culverts are to be installed within.*
4. Section 9.2 – This section describes that the native subgrade materials will be easily disturbed and should be protected. Please add an NSSP and further reference to the report detailing how the subgrade shall be protected. *A new NSSP – Protection of Sensitive Foundation Soils” has been added to Appendix F of the final report. Reference to this NSSP has been also added to the final report.*
5. Section 10.4 – Reference is made to using both a cutoff wall and a clay seal. Since these both provide the same function consider clarifying that only one is required. *A clay seal has*

*been recommended in conjunction with the cut-off wall in order to reduce the potential for erosion and piping around the culvert near the inlet and outlet areas to 0.3 m above the design highwater line.*

6. Record of Borehole Sheets – No groundwater is noted on the borehole logs, please confirm that no ground water was noted in any of the borehole upon completion of drilling. *The Record of Borehole Sheets provided in the final report have been updated to indicate the groundwater conditions encountered.*
7. The Final Foundation Investigation Report and Foundation Drawings must be signed and stamped by two Professional Engineers licensed by PEO, one of which shall be Thurber's Designated Principal Contact identified for MTO Foundation Engineering Projects. *The final report drawings have been signed as required.*

## Closure

We trust that these revisions fully address the Ministry's comments. If you have any questions or require further information, please contact us at your convenience.

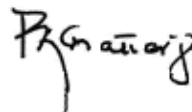
Yours truly,  
Thurber Engineering Ltd.



Kenton Power, M.A.Sc., P.Eng.  
Geotechnical Engineer



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Principal, Senior Geotechnical Engineer



P.K. Chatterji, P.Eng., Ph.D.  
Review Principal, Designated MTO Contact