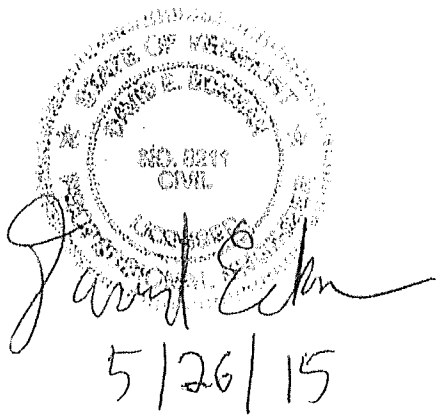
ECKMAN Engineering, LLC

May 26, 2015

Marc Boudreau
J.A. McDonald, Inc.
585 Gilman Road
Lyndon Center, Vermont 05850

Re: Wingwall Bearing Capacity
Proposed Culvert Replacement Project
VT Route 58
Bridges #6 and #7
Project No. STP CULV(30)
Irasburg, Vermont



Dear Marc:

As requested, the following is in regards to the required and allowable bearing capacity of the wingwalls per the design completed by CSI, Inc. on the above referenced project.

For Bridge #6, the calculations provided CSI, Inc. specify a maximum required bearing capacity of 2.87ksf for Wingwalls 1, 2, 3, & 4. Per Figure 5.3 of the Geotechnical Report completed by VTrans, the Strength I bearing capacity is approximately 2.90ksf. As the required bearing capacity is less than the Strength I bearing capacity, the wingwalls as shown in the precast shop drawings completed by CSI, Inc. are acceptable.

For Bridge #7, the calculations provided by CSI, Inc. have a maximum required bearing capacity of 2.92ksf for Wingwalls 1 and 2. Per Figure 5.6 of the Geotechnical Report, the Strength I bearing capacity is approximately 2.40ksf. The required bearing capacity is larger than the Strength I bearing capacity, therefore, we propose to install 12" of crushed stone on a medium weight filter fabric under the proposed footing. The bearing pressure at the bottom of the footing will further distribute through the crushed stone and will therefore be lower at the bottom of the crushed stone. The load will distribute through the crushed stone at 45 degrees which equates to a bearing width at the bottom of the stone of 4'-6" (2'-6" +12"+12"=4'-6"). This equals an approximate required bearing capacity of 1.62ksf which is well below the Strength I bearing capacity of 2.40ksf provided in the Geotechnical Report.

If you have any questions or require additional information please feel free to contact me.

Yours truly,

David Eckman

David E. Eckman, P.E.
Principal Engineer

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