February 24, 2021

Gordon Maki, P.Eng.
VP Engineering Services
TBT Engineering Limited
1918 Yonge Street
Thunder Bay, ON
P7E 6T9

Spring Drain Treatment for Peat Subgrade

Dear Mr. Maki:

As requested, this letter serves as a testimonial for the Spring Drain Peat Subgrade treatment developed by TBT Engineering (TBTE).

The formation of peat boils has become increasingly problematic for CP Railway and its operations. Peat boils lead to increased risks of track instability, creates ongoing track maintenance issues and disruption on train traffic. Past remedial options such as peat removal and reconstruction of the tracks is costly in terms of construction and disruption to train traffic. The Spring Drain treatment provides us with a cost effective alternative.

It is understood that in 2012 CP approached TBTE to develop a remediation system that could be implemented without track removal and disruption to train traffic. To date, we have successfully treated seven peat boils with the Spring Drain treatment. Limited data obtained by TBTE indicates that the treatments completed to date are highly effective in reducing excess porewater pressures. CP currently holds inventory at TBTE for timely installation in emergency situations. We have recently provided CP Divisional Engineering Managers within Canada and USA information about the Spring Drain treatment with direction to consider the use of Spring Drains for their peat boil issues. CP has approx. 8400 miles of track within Canada and approx. 4100 miles of track within the USA. CP has significant sections of track constructed over a peat subgrade which would be a potential candidate for treatment in the future. With the effects of climate change, we may experience an increase in peat boil activity.

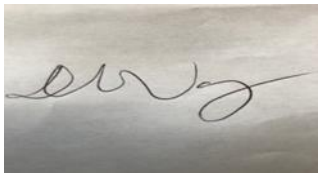
Given the flexibility of the treatment, a staged approach to the implementation of the treatment is being considered to further improve cost effectiveness of the treatment. To this end we are currently considering a major trial section with varied levels of treatment.

While the Spring Drain treatment has proven to be a cost effect solution to peat boil remediation, CP encourages TBTE to further explore the benefits of the Spring Drain treatment with respect to the following:

- Given the high level of excess porewater pressure reduction, optimisation of the treatment should be considered. Instead of placing 6 Spring Drains per tie spacing, the effectiveness of reduced numbers of drains should be explored.
- Alternative installation techniques and methods should be explored to expedite installation times/costs.
- The improvement in subgrade stiffness should be studied to identify improvements in rail bed stiffness as this can provide improvements in rail fatigue.
- It is anticipated that the Spring Drain treatment will also improve load transfer through the peat subgrade and significant improvements in the overall shear resistance through the peat subgrade. These effects should be studied to identify improvements in stability and bearing capacity of the rail bed. Currently, we typically install flanking berms with the Spring Drain treatment in order to improve stability of the railbed. However, we expect that the load transfer and shear resistance provided by the Spring Drains may reduce and/or eliminate the flanking berm requirements.
- As TBTE has patented the Spring Drain system within Canada and the USA, we encourage TBTE to identify means to distribute this product and the engineering capabilities to all of our Contractors / Consultants providing services to CP.

CP is encouraged by the progress made so far in the development of the Spring Drain treatment and look forward to working with TBTE to advance the development of this innovative product.

Yours truly,



Danny J Wong, P.Eng.
Director Geotechnical Engineering
CP