

Tulloch Engineering Inc.

Burgess 1 Dam

Bala, ON

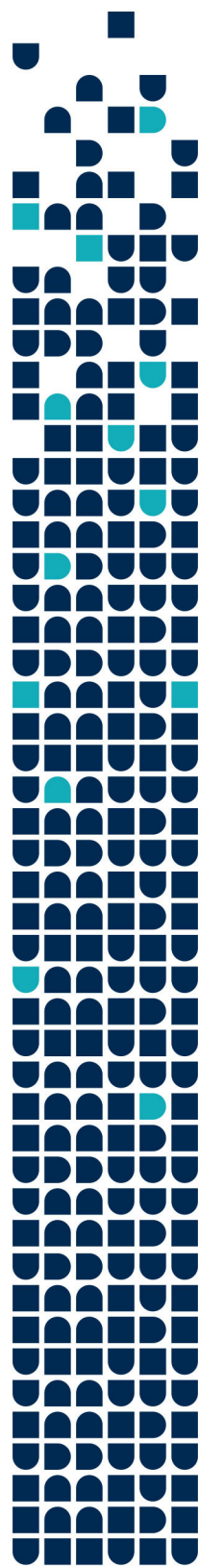
Letter Report

Grounding Recommendation

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FINAL



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Dear Mr. Giles,

Burgess 1 Dam is located north of the North Bala Falls Dam and west of Muskoka Road 169 between Portage Street and River Street. Based on our understanding, the dam is in need of rehabilitation to enhance its generation capacity. Tulloch has tasked BBA to provide grounding recommendations for the rehabilitation project, particularly focusing on backfill of the grounding wire and its penetration through concrete walls.

Grounding wire backfill depth

Ontario Electrical Safety Code (OESC) 36-302 specifies that the ground grid conductor should be buried to a maximum depth of 600 mm below grade and a minimum depth of 150 mm below grade.

Surface covering layer

OESC 36-304 specifies a ground surface covering such as crushed rock or asphalt which shall be existed throughout the station grounding electrode area. This is including all area in which metallic structures electrically connected to the station are to be found and shall extend at least 1 m beyond the station grounding electrode area on all sides.

Minimum thickness of the crushed rock layer shall be 150 mm with minimum resistivity of 3000 Ωm . Granite stone typically will meet this resistivity. Rip rap can be considered as the surface cover if the material resistivity meets the requirement.

Conductor through concrete retaining wall

The ground conductor can either pass directly through the concrete retaining wall or to be routed a flexible PVC conduit. Considering the conduit length is less than 1 m, which is a fraction in length compared to the entire existing ground grid, this installation method will not significantly impact the overall ground grid resistance.

Regards,

A handwritten signature in black ink, appearing to read 'Byron Ma', is written over a light blue horizontal line.

Byron Ma, P.Eng.

BBA E&C Inc.