



TECHNICAL MEMORANDUM

To: R.F. Binnie and Associates Ltd. **Date:** February 15, 2024
From: BASIS Engineering Ltd. **File No.:** 20240215 – BCH Impact
Memo_Draft
Subject: F RTP Advanced Works – COR Richmond Additional SB Lane Phase 1 Geotechnical
Impact Assessment of BCH Infrastructure

1 INTRODUCTION

The BC MoTI has delegated management of the project to the Transportation Investment Corporation (TI Corp). TI Corp has retained RF Binnie and Associates (Binnie) to provide Owner’s Engineering services for the Highway and onshore Civil Works aspects of the project. Binnie has retained BASIS Engineering Ltd (BASIS) to provide geotechnical and structural engineering services for the onshore works for the project.

To prepare for the main contract work on the Project, TI Corp has decided to proceed with advanced works which is split into two packages. Package 1 is the initial surcharge work for the Highway 99 Additional southbound lane between Blundell Road and Steveston Highway. Package 2 is the Highway and Civil work between Westminster Highway and Steveston Highway. BASIS is providing detailed geotechnical design in support of this surcharge work for Package 1.

BASIS has been retained by RF Binnie and Associates (Binnie) to evaluate the potential impact to two BC Hydro poles along Highway 99 between Blundell Road and Steveston Highway from the surcharge in Package 1.

A site plan is shown on Figure 1.



Figure 1 – Site Plan

2 BC HYDRO POLE LOCATIONS

The two BC hydro poles under investigation are as follows:

Table 1 - BH Hydro Pole Infrastructure

BC Hydro Pole	Northing	Easting	Approx. Stationing
Distribution pole, wood, TAG 2058162	5444738	493648.4	4020+88
Transmission Pole, No TAG	5442627	493602.7	4042+00

3 SURCHARGE IMPACTS

3.1 TYPICAL SURCHARGE SECTIONS

Typical geometries of the surcharge in close proximity to the distribution and transmission poles are discussed in Table 2. It is proposed that the surcharge be comprised of Fraser River Sand and in both locations the surcharge will be retained by lock blocks to avoid the surcharge encroaching on the ditch. This will ultimately limit the surcharge to the existing highway shoulder and embankment. A typical section is shown in Figure 2.

Table 2 - Surcharge dimensions

BC Hydro Pole	Nearest Surcharge Stationing	Height	Width
Distribution pole, wood, TAG 2058162	4021+30	2.50m	6.30m
Transmission Pole, No TAG	4041+32	2.50m	7.50m

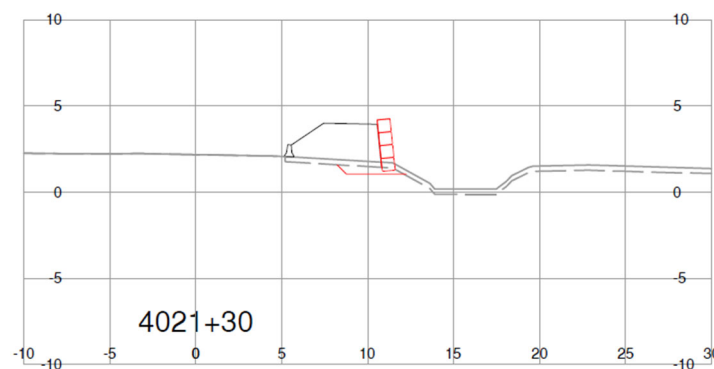


Figure 2 - Typical section at STA 4021+30. Final configuration is to be confirmed.

3.2 STA 4020+88 – Distribution Pole

At STA 4020+88, a wooden BC Hydro distribution pole is present approximately 40m to the south of the existing Blundell Road structure. The Package 1 surcharge is proposed to commence at STA 4021+30. At this stationing the start of the preload is approximately 40m from the distribution pole. At this distance any settlement impacts from the surcharge are expected to be negligible. A settlement analysis was performed using Settle (developed by Rocscience to estimate the settlements of the underlying soils) to confirm that no ambient settlements would be experienced by the power pole. The settlement parameter used are as detailed in the BASIS “20240212_HWY99 Additional SB Lane Geotechnical Report_Draft 0_100%_RevC” report. At 40m from the start of the surcharge, less than 1mm will be experienced by the distribution pole (Figure 4).

The zone between the existing highway structure at Blundell Road and the start of the proposed surcharge at STA 4021+30 will need to be surcharged as part of Package 2. At this time the settlement analysis should be reviewed as the proximity of the surcharge will be closer than 40m.



Figure 3 - Location of the Distribution Pole

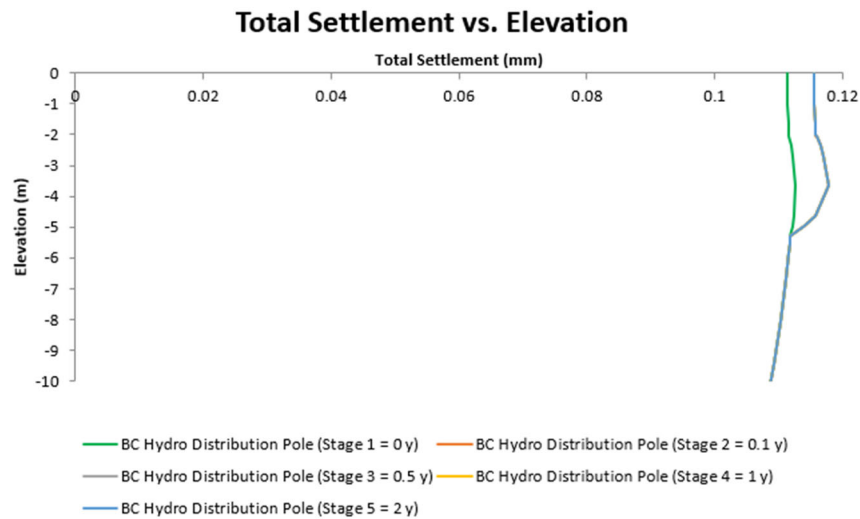


Figure 4 -Distribution Pole Total Settlement from GL to -10m elevation

3.3 STA 4042+00 – Transmission Pole

At STA 4042+00, a transmission pole is located at the eastern edge of the Fantasy Gardens property. The Package 1 surcharge is proposed to finish at STA 4041+32. At this stationing the transmission pole is approximately 85m from the end of the surcharge and the settlement impacts from the surcharge will be negligible. As part of Package 2 the surcharge will come in closer proximity to the transmission pole and the surcharge is still expected to be approximately 50-60m from the pole. At this distance the settlement that could be experienced by the transmission pole is still expected to be negligible (Figure 6), but this should be confirmed once the final surcharge configuration has been confirmed as part of Package 2.

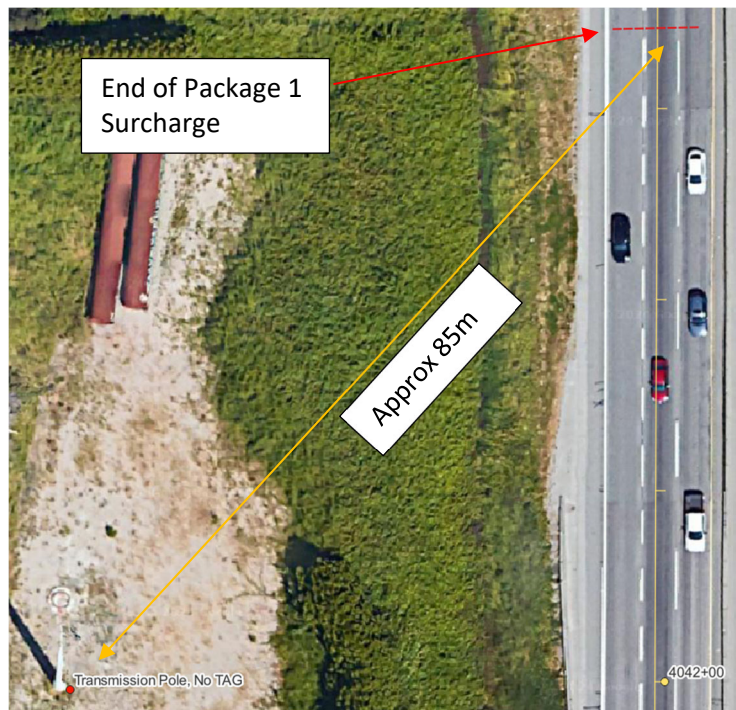


Figure 5 - Location of Transmission Pole

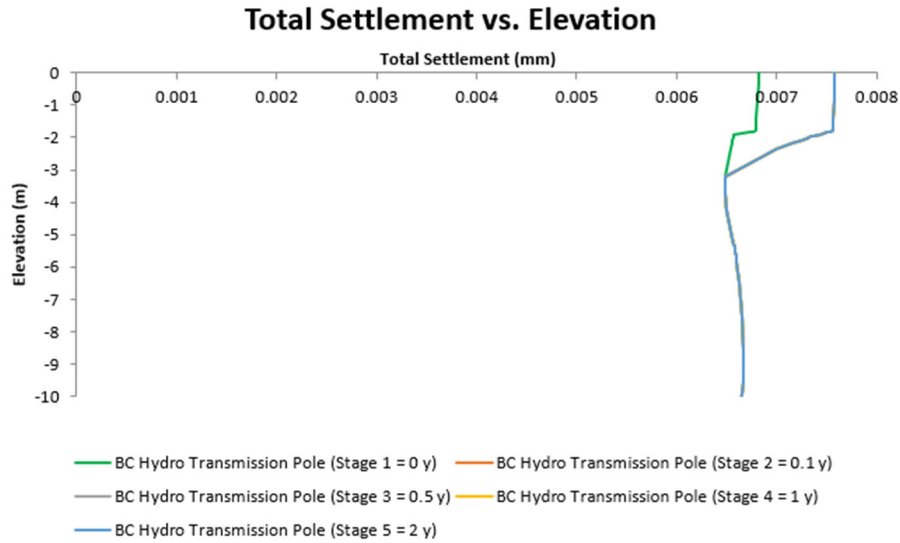


Figure 6 - Transmission Pole Total Settlement from existing GL to -10m elevation

4 RECOMMENDATIONS

BASIS recommends the following:

- Prior to placement of surcharge near the power poles in surcharging in Package 2, settlement analyses should be performed to confirm the power poles will not be subject to excessive settlement.
- Limits of the surcharge and the proximity to the power poles should be communicated to the contractor to ensure that no construction activities occur within the limits presented in this memo.

5 CLOSING

This report is an instrument of service of BASIS Engineering Ltd (BASIS). The report has been prepared for the exclusive use of RF Binnie and Associates (Client) for the specific application to the Highway 99 Additional Southbound Lanes Project (Part of the Fraser River Tunnel Project), and it may not be relied upon by any other party without BASIS's written consent.

BASIS has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. BASIS makes no warranty, express or implied.

Should you have any questions regarding the contents of this report, please call us.

BASIS Engineering Ltd.

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