

**RE: Spray River Pedestrian Bridge  
Banff National Park, Banff, AB**

Pursuant to your authorization, a geotechnical survey investigation was carried out by Surface Search Inc, (geophysical company) at the site of the pedestrian bridge at Spray River, Banff National Park, Alberta. The purpose of the investigation was to determine the depth of the bedrock and profile of subsoils above the bedrock strata. Based on the results of the geophysical survey investigation, the subsoils beneath the north and south abutments are detailed below.

**1. North Side Bridge Crossing – Interpreted Subsurface Conditions**

Below the north side of the crossing, near the proposed abutment location, sediment conditions overlying bedrock are interpreted as follows:

- a. Approximately 0-3.0 metres: Coarse granular fill (used for construction for pathway embankment leading up to original pedestrian bridge crossing).
- b. Approximately 3.0 – 7.0 metres: Fluvial gravel deposits likely containing sand layer/lens, mixed sand and gravel, cobbles and possibly large boulders.
- c. The upper bedrock surface
- d. At the proposed north side abutment location, it is estimated that the depths to the upper bedrock surface to be approximately 8.5 – 9.5 metres below existing ground surface levels.

**2. South Side Bridge Crossing – Interpreted Subsurface Conditions**

Below the south side of the crossing, near the proposed abutment location, sediment conditions overlying bedrock are interpreted as follows:

- a. Approximately 0 – 3.0 metres: Fine grained overbank silt and sand deposits.
- b. Approximately 3.0 – 11.0 metres: Fluvial gravel deposits likely containing sand layer/lens, mixed sands and gravel, cobbles and possibly large boulders.

- c. The upper bedrock surface.
- d. At the proposed south side abutment location, it is estimated that the depths to the upper bedrock surface to be approximately 10.0 to 12.0 metres below existing ground surface levels.

### **3.0 Soil Parameters for Design of Micropiles**

Based on the results of the geophysical survey investigation, the following soil parameters may be used for design of micropiles based in bedrock strata.

Soil Type	Skin Friction (KPa)		End Bearing (KPa)	
	Ultimate	Allowable	Ultimate	Allowable
Gravel	90	30	-	-
Upper 2.0m of Bedrock	240	80	1800	600
Below 2.0m of Bedrock	450	150	3600	1200

Specifications already issued for design of micropiles for scour depth, frost jacking, etc. should be followed. It is recommended that the micropiles should be designed to withstand the design loads using the soil parameters given above. Design of piles should be reviewed by [REDACTED]. The piles should be installed under the supervision of [REDACTED] personnel to verify the soil parameters used in design and to confirm the capacity of the installed piles.

We trust that the above is sufficient for your requirements. Should you need further information, please call.

