



WEBINAR INVITATION

BGC Squared – Mallkuchusi Suspended Bridge Project

NAME: Natalia Skomorowski

DATE & Tuesday, 18 January 2022

TIME: 1730 hrs PST (Vancouver)

Presentation Abstract:

During the summer of 2019, Notre Dame Students Empowering through Engineering Development (NDSEED), a student chapter of Engineers in Action (EIA), constructed a suspended footbridge in the rural community of Mallkuchusi, Bolivia. As part of the bridge design, they partnered with BGC to consult on the geotechnical conditions of the bridge site.

NDSEED began the Mallkuchusi Bridge Project in the spring of 2018. Upon arrival to site during the 2018 Build Season, the team realized that excavations of the in-situ rock would be exceedingly difficult and posed significant design and construction challenges. Due to the remote site conditions and limited ability to communicate with stateside resources, the team was unable to redesign the bridge abutments to reduce the excavations in during the 2018 Build Season. They proceeded to excavate a standard gravity abutment on the right side of the bridge, which took six weeks with the help of a local Bolivian miner utilizing both dynamite and manual excavations.

Having more time and resources during the 2018-2019 Academic year, the team proposed a new bridge abutment design, utilizing nonstandard rock anchors to reduce the necessary excavations from 65 m³ to 10 m³. As the abutment design relied upon the strength of the in-situ bedrock, NDSEED partnered with BGC to analyze the site's geotechnical conditions. BGC engineers consulted for the team on a variety of issues, from safe abutment location to excavation feasibility and construction safety and monitoring practices. In January 2019, two BGC engineers conducted a site assessment trip to Mallkuchusi with one of the 2019 NDSEED team members to collect geotechnical data and assess the rock conditions exposed by the completed excavations on the right side, as well as to assess the rock stability on the left side. BGC provided NDSEED with the geotechnical information that was vital to redesign the bridge's rock-anchored abutments.

During the 2019 build season, NDSEED was able to construct the non-standard anchor and the rest of the bridge superstructure with the assistance of the local community. The completed pedestrian bridge has a span of 96.2 meters. The bridge now serves the 63 people of Mallkuchusi as well as the 80 people of Cobre Villa and Janco Marca. They now have access to schools, groceries, and a community centre without having to cross the river on foot.

Speaker Bio:

Natalia Skomorowski is a geological engineer with a background in rock mechanics and geohazard assessment. She received her Bachelor of Applied Science in 2012 and Master of Science in 2016. Her thesis work was focused on stress/strain modelling and behaviour of fractured rock masses using numerical methods. Ms. Skomorowski has worked on various mining and exploration sites throughout Canada, the USA, and South America. She has experience in design of open pits and underground workings, rock slope stability assessment and mitigation design, landslide and rockfall mapping and evaluation, tailing storage facility design, foundation investigations, and hazard inspections for linear infrastructure. Her practical field experience includes geotechnical soil and rock mass classification from core and outcrop, discontinuity characterization, hydrogeological testing and modelling, borehole imaging and interpretation, instrument installation and interpretation, and geohazard mapping and classification.