MACCAFERRI

ROCKFALL MITIGATION WORKS ON HILLSIDE - HELANG, UTTARAKHAND

ALONG NH-58, CHAMOLI DISTRICT, UTTARAKHAND, INDIA

Simple Drapery

Problem

Helang site is located along NH 58 in Joshimath Tehsil in Chamoli District of Uttarakhand State, India. The surface morphology shows that the moderately fractured weathered rock with vegetation over the slope. The Main Central Thrust (MCT) also passes from this area hence forming the area vulnerable and unstable. The site falls under a highly active seismic zone i.e. zone V and heavy rainfall is usually expected during monsoons. The exposed slope is formed with weathered rock strata that were subjected to rainfall during the monsoon seasons. These rainfall when accompanied by the erosion factors and the steepness, trigger the rock detachment which affects the movement of traffic along this route. The site has been witnessing various slope instability, rockfall and erosion problems and there was a requirement of road widening as well.

Solution

The selection of system had to be resilient to subsurface water, high seismic forces, and steep topography. On the hillside, where there is a rocky strata stretch comprising of fractured rock and bedding planes inclined towards the valley, a simple drapery system is proposed with deep top anchors. Also, at the natural drain locations a rockfall cum debris flow barrier is proposed over the cascade structure. The purpose of providing a barrier is to provide protection against debris flow / rockfall which may happen during rain and thereby mitigating the risk of rock detachments from upslope locations from affecting the infrastructures below. The dynamic rockfall barrier installed is EAD certified. The

meshes used in simple drapery system are conforming to existing Indian and international codal guidelines. Additional measures such as erosion control, road side retention, bank side slope protection works etc are adopted separately. **Client:** National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)

Designer / Consultant: MAGOT ENGINEERING CONSULTANTS PVT. LTD.

Contractor: RG BUILDWELL ENGINEERING LTD.

- Products used (Qty.)
- HEA Panels SQ-2993 Sq.m
- DT Mesh
- 2993 Sq.m
- Dynamic barrier RB 100-UAF 20 RM

Date of construction: 11/2016 - 01/2020





Figure-2 Mesh installation (part of simple drapery system)







Figure-4 Installation of debris flow cum rockfall barrier



SOLUTION SCHEME

MACCAFERRI ENVIRONMENTAL SOLUTIONS PVT. LTD D40, MIDC Ranjangaon, Tal-Shirur, Dist. Pune - 412 220 Tel: +91 2138 393000 , Email: info.in@maccaferri.com