

Rockfall Mitigation Measures -Upper Trishuli HEP (UTHEP), Nepal

Upper Trishuli, Rasuwa District, Nepal

TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Dynamic Rockfall Barriers	2025	Doosan Enerbility	Ubuntu & Orenda Pvt.Ltd	-
PROD. RELATED				

Challenge

The Upper Trishuli-1 Hydroelectric Project (UTHEP), a 216 MW hydropower development located in the challenging terrain of Rasuwa District, Nepal has been facing frequent and unpredictable rockfall incidents during construction. Critical locations such as power intake access tunnel portal, Desander basin's upstream and downstream access tunnel portals were particularly vulnerable, posing serious safety risks to construction teams and delaying project timelines. Suitable rockfall mitigation measures were envisaged to address this issue.



Fig-1 Initial site condition-Top view



Fig-2 Rockfall Barrier installation

Solution

As per the site observations and previous history of rockfall events in this area, various temporary rockfall mitigation measures were proposed in the form of rockfall barriers in identified locations. 3 lines of dynamic Rockfall barriers of 3000kJ and 5m high, each of 30m long, have been installed in identified locations, to mitigate the effect of rock detachment from the hillside locations, from affecting existing infrastructure at the toe of hill side. Other temporary barriers were installed at site as indicated in Fig-7.

The dynamic rockfall barriers installed are EAD certified, with specifications conforming to national and international standards and comprise of a primary interception mesh of MacRing (Ring Net) and a secondary interception mesh of DT Mesh. These rockfall barriers have a braking system, which maintains performance throughout the entire design life of the structure and are easy to visually inspect by maintenance engineers as it progressively deforms once the barriers are impacted.



Fig-3 Initial site condition



Fig-4 Rockfall Barrier installation



Fig-5 Rockfall Barrier above Desander basin upstream access



Fig-6 Rockfall Barrier above Desander basin downstream



Fig-7 Rockfall Barrier above Desander basin upstream and



Fig-8 Rockfall Barrier above power intake access portal



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