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Geological Assessment of 2.8 km long alignment corridor proposed for the Construction of Karnatakhola to Raillapali adjoining Sarkar ki Aali upto Vikas Bhawan motor road in Almora, District Almora.

Priya Joshi
17/11/15

1- **Introduction:-**The Provincial Division, PWD, Almora vide Letter No. 2771/1सी dated 16.10.2015 as the Chief Minister's proclamation No. 969/2015 has been entrusted for the construction of 2.8 km long motor road namely Karnatakhola to Raillapali adjoining Sarkar ki Aali upto Vikas Bhawan motor road in Almora, District Almora. The Executive Engineer Shri. Chandan Singh Negi requested to the undersigned to carry out the geological assessment of the proposed alignment corridor of the above said proposed road. In the fulfillment of his request site visit was made by me on 06.11.2015. The concerned Junior Engineer Shri. P.C. Pant was present at the site during my site visit.

2- **Location:-**The present alignment corridor originates from Karnatakhola and ends at the Raillapali village. The total length of the road is 2.8Km which constitutes four HP bends at 0/13-0/15, 0/19-0/21, 1/38-1/39, and 2/6-2/8 respectively.
The co-ordinates and altitude at starting point of the alignment corridor as recorded from the mobile GPS are as follows-

Latitude: - N 29^0 36'35.39"
Longitude: - E 79^{0}39'43.2"
Altitude: - 1398 m

Fig. 1 Google Earth image showing expected orientation of the road.

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3- Geological Assessment:-

The alignment corridor proposed for the above said motor road lies in a part of Kumaun Lesser Himalayan Belt bounded by the North Almora Thrust (NAT) in the north and South Almora Thrust (SAT) in the south. The terrain containing it is characterized by the steep and moderately inclined hill slopes oriented towards N 310°-N 270° directions. The slopes of this alignment corridor are dissected by 5 drains cross cutting the alignment at different intervals. All these nala are charged by the waste water of Almora Township and as per the information gathered at the site these nalas remains full of waters during the rainy seasons. The either side banks of these nalas are intact and do not manifests signatures related to the scouring/bank erosion. The cross section of these nalas, along the alignment corridor are confined and remained unwidened by the nala action till today.

The site in question is a part of Almora town and represented by the materials belonging to Almora nappe. In this 2.8 km long section of the proposed alignment corridor scant outcrops of the bed rocks comprised of the schist which are garnetiferous in nature and micaceous quartzite belonging to Saryu Formation of Almora Group were encountered.

At the starting point from where the construction of road will start the outcrop of quartzite with intermediate schist bands were observed. The bands of quartzite are hard while these of the schist are weak in the physical competency. The bands of the schist have suffered high degree of deformation as these are highly sheared/shattered and deformed in nature. The exposed rock masses are weathered upto W_1-W_2 grade. Largely the rocky strata along this alignment are capped by thin overburden material which varies in thickness from place to place. The soil material has micaceous content and the matrix is fine to very fine. The soils are good cohesive, dense and hard in dry conditions but these converts into soft clays under the wet/saturated conditions.

The quartzite rocks are comprised of the massive bands while the schist are thinly foliated bedded in nature and these rock masses have been dissected by many linear discontinuities. The prominent joint sets recorded from the rock outcrops exposed at the starting point of the site are as follows-

Table-1

S. No.	Feature	Dip angle	Azimuth
1	Foliation/Joint J1	20°	N 310°
2	Joint J2	70°	N 180°
3	Joint J3	69°	N 280°
4	Joint J4	80°	N 215°
5	Slope	65°	N 270°

(15) (b) (66)

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6- All the construction activities must be carried out as per the prescribed norms and the standard codes of the practice laid by BIS and MORTH.

Priya 17/11/11

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