

Additional Attachment -2.28


परियोजना का नाम— जनपद नैनीताल के अन्तर्गत तल्ला रामगढ़ रातीघाट मोटर मार्ग के किमी 0 6 किमुपानी थानदेव से सैमधार के सैममन्दिर तक मोटर मार्ग का नव निर्माण ।

भू-वैज्ञानिक की आख्या

(प्रस्तावित स्थल की भू-वैज्ञानिक द्वारा निर्गत अद्यतन निरीक्षण आख्या प्राप्त कर संलग्न किया गया है)


कनिष्ठ अभियन्ता


सहायक अभियन्ता,
नैनीताल
नि. नि. वि.
नैनीताल.


अधिरासी अभियन्ता
निर्माण खण्ड, लो० नि० वि०
नैनीताल

Geological Assessment of 5.0 Km long motor road from Kimupani Thandev to Sem mandir of Semdhar District- Nainital.

Priya Joshi

14/12/2016

1- Introduction- Construction Division, Public Works Department, Nainital entrusted in construction of 5.0 Km long motor road from Kimupani Thandev to Sem mandir of Semdhar District- Nainital. On the request of Shri D. S. Kutiyal, Executive Engineer, Construction Division, Nainital I carried out geological assessment of the above said motor road on dated 05/11/2016. Junior engineer Shri. Hem Chandra accompanied during the site visit.

2- Location- The 5.0 km long motor road starts from km 6 of Talla Ramgarh-Ratighat motor road. The road consists of 11 HP bends at 0.200, 0.750, 1.225, 1.475, 1.775, 2.00, 2.300, 2.725, 3.075, 3.350, and at 3.575 chainage respectively. The proposed road passes through Pokhradhar, Kimupani, Thandev, and Semdhar villages.

The co-ordinates of starting and taken from hand held GPS are as follows-

Starting Point

Latitude- N29°27'19.02"

Longitude- E79°31'27.33"

3- Geological assessment:- Geologically, the alignment corridor proposed for the above said motor road lies in part of Kumaun Lesser Himalayan Belt lies in close vicinity of Ramgarh Thrust. Ramgarh thrust separates the underlying autochthonous sedimentaries of inner and outer lesser Himalaya from the overlying low grade metamorphic unit of Ramgarh group. These autochthonous sedimentaries comprises of Quartzite of Nagthat Formation, which belongs to Jaunsar Group stratigraphically. Ramgarh Group comprises of Phyllite, Schistose Quartzite, and Carbonaceous Phyllite of Nathuwakhan Formation and Porphyroid of Deb guru Formation. The rocks i.e Phyllitic Quartzite of Ramgarh Group occupies this area.

Topography of the area overall is gentle to moderately steep. Area is covered with dense forest. Some manmade terraces were also observed which are mostly cultivated. Starting portion of the area is much steeper and is mostly covered with forest than the rest of the km's which falls on the terraces from where the alignment has been proposed (Fig. 2). Majority of area passes through forest and barren land. Slope angle varies from place to place. Slope angle ranges from 25°-65° and slope direction varies from N50°-360°. Hydrological conditions are mainly dry, except in rainy season. Largely the rocky strata along this alignment are capped by thin overburden material which varies in thickness from place to place and overall less than 1m. The soil material has micaceous content and

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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. Some rolled boulders are also observed along the hill slope. Weathering grade ranges upto W_3 grade.

Rock type in the area is quartzite (Fig. 3), which is hard and compact in strength. At some places the rock is highly sheared and weathered. High grade of deformation is there and near to the starting point phyllitic nature of rock is also observed. Four sets of joints have been observed at the site. The opening in-between the joints are close to 2mm in nature.

Table I

S. No.	Feature	Azimuth	Direction
1	B/J1	25°	N180°
2	J2	42°	N0°
3	J3	70°	N80°
4	J4	75°	N260°
5	Slope	45°	N50°

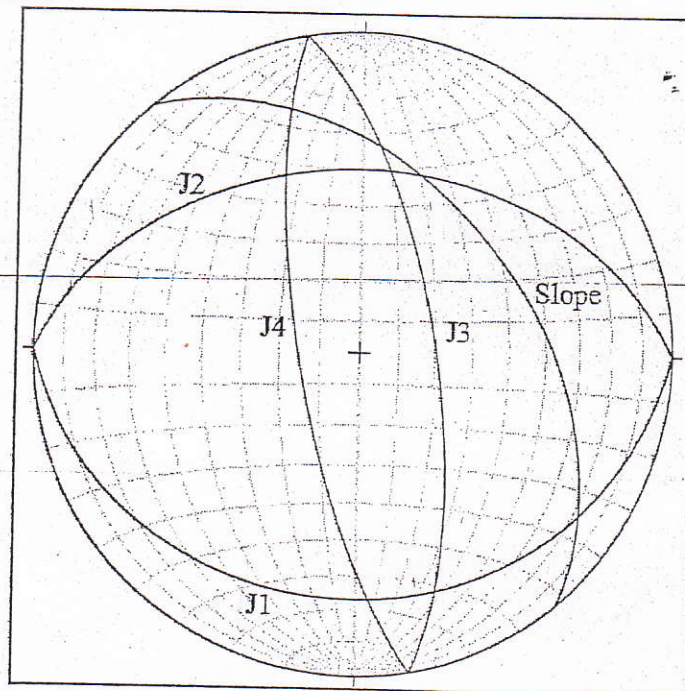


Figure 1 Stereographic projection of joints and slope data observed in quartzite outcrop

From the above stereographic projection (Fig 1) it is clear that a small wedge is form in the slope direction due to the intersection of joint J_3 and J_2 but it does not create much

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impact on the stability of the area. The site looks stable and quite competent from the stability point of view.



Figure 2 General topography of the area

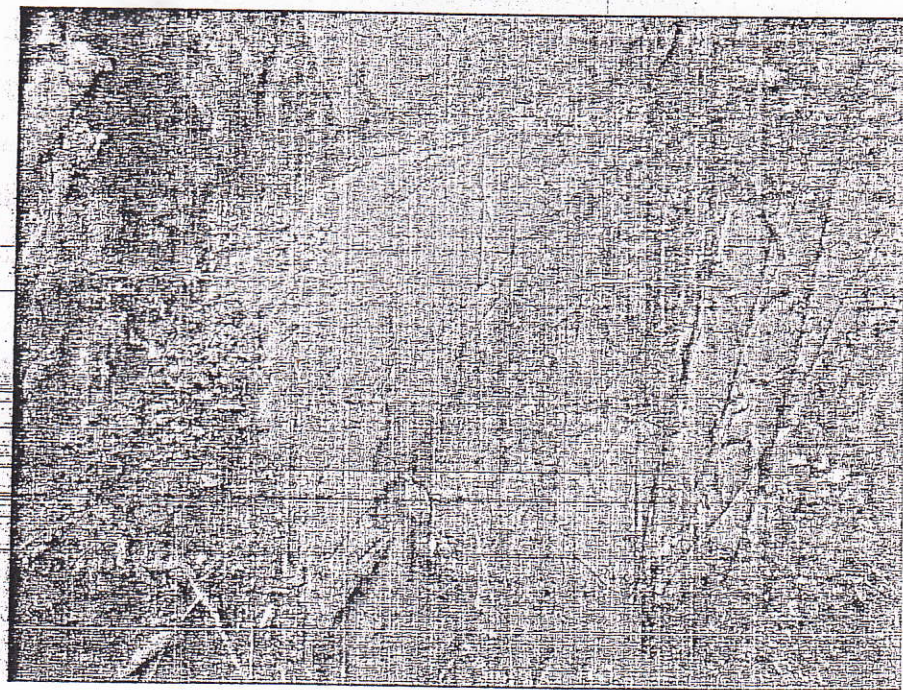


Figure 3 Quartzite rock outcrop observed at site

On the basis of the geological/geotechnical studies carried at the site and the fact mentioned above the following recommendations are being made for the construction of

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the proposed road, failing to these recommendations this report will be treated as cancelled.

4- Recommendations-

- 1- Do not blast heavily by explosives. It is recommended that the blasting shall be carried out by controlled method i.e. by leaving large volume of dummy holes.
- 2- The entire hill and valley side slope along the whole length of the road must be protected by suitably designed retaining/ breast walls. This work should be done simultaneously with the advancement of the road cutting. It is advised to leave sufficient weep holes in the walls; this is so as to facilitate the subsurface drainage.
- 3- Properly designed culvert/bridges/causeway must be constructed over the nala whichever is suitable.
- 4- Construct U shaped lined drain all along the hill side of the road and made adequate cross drainage arrangements. The accumulated rain water from upper reaches of the hill must not allow to flow freely over the road constructed and its lower hill slopes.
- 5- Disposal of muck and excavated waste on the lower slopes of this road is to be strictly avoided. It is advised to dispose the muck on the identified site for muck disposal.
- 6- The portion of the road which passes through the cultivated field where water seepage from the ground is high; RCC should be done.
- 7- 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.

Letter No: ⁶³⁴⁰ / 08 संभूवै/16

Date: 14/12/2016

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14/12/16

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