

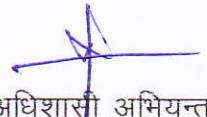
Additional Attachment -2.28

परियोजना का नाम :- राज्य योजना के अन्तर्गत जनपद नैनीताल के विधानसभा क्षेत्र नैनीताल के विकास खण्ड बेतालघाट के अन्तर्गत पोंगकटारा से खलाड़ तक मोटर मार्ग का नव निर्माण।

प्रारूप-33

भू-वैज्ञानिक की आख्या

(प्रस्तावित स्थल की भू-वैज्ञानिक द्वारा निर्गत अद्यतन निरीक्षण आख्या प्राप्त कर भू-वैज्ञानिक हस्ताक्षरयुक्त प्रतियाँ संलग्न की गयी है।)


अधिशायी अभियन्ता
निर्माण/खण्ड, लो०नि०वि०
नैनीताल।



Add. Att. 2-28

कार्यालय मुख्य अभियन्ता
लोक निर्माण विभाग, अल्मोड़ा

Ph. No. 05962-230294 Fax No. 05962-230011

E-mail-cepwdkumaon@rediffmail.com

पत्रांक- ३००/०८स०भू०वै०-२०१८

दिनांक- ३०/०१/२०१९.

सेवा में,

अधिशाली अभियन्ता
निर्माण खण्ड लो०नि०वि०,
नैनीताल।

विषय :- संशोधित पांग कटारा से खलाड़ तक मोटर मार्ग के भू-गर्भीय निरीक्षण किये जाने के सम्बन्ध में।

सन्दर्भ:- आपका पत्रांक- ११७८/सी० दिनांक- २४.०४.२०१८।

महोदय,

उपरोक्त विषयक के क्रम में अद्योहस्ताक्षरी द्वारा राज्य योजना के अन्तर्गत नैनीताल के विकास खण्ड बैतालघाट के अन्तर्गत संशोधित पांग कटारा से खलाड़ तक मोटर मार्ग के नव निर्माण की भू-गर्भीय सर्वेक्षण आख्या संलग्न कर प्रेषित की जा रही है।

संलग्न:- उक्तानुसार

भवदीया

Pritya Joshi
30/1/2019
(प्रिया जोशी)

सहायक भू-वैज्ञानिक
कार्यालय मुख्य अभियन्ता
लोक निर्माण विभाग
अल्मोड़ा

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प्रिया जोशी
सहायक भू-वैज्ञानिक
लोक निर्माण विभाग
अल्मोड़ा

Add-AH-2.28

Geological Assessment of 3.00 Km long Pangkatara-Khalad motor road District-Nainital.

Priya Joshi

30/01/2019

1- Introduction- Construction Division, Public Works Department Nainital entrusted in construction of 3.00 Km long Pangkatara-Khalad motor road Nainital District. On the request of Shri D. S. Kutiyaal, Executive Engineer, Provincial Division, Nainital again I carried out geological assessment of the above said motor road on dated 30/01/2019. Assistant Engineer Shri J. S. Kholiya accompanied during the site visit. Earlier a geological report of this road is given with reference no Letter No: 2199/08 संभूवै/18 Date: 23/05/2018. Due to changes in the alignment this is the amended report of the same motor road.

2- Location- The proposed motor road starts from end point of Gadhlket-Pangkatara motor road. Total length of the road is 3.00 km. 2 HP bend are proposed along the road which falls at 2/01 and 2/09 cross section respectively.

Gradient of the whole road at each cross section are as follows- 0/1-0/6 1:20F, 0/6-0/31 1:20F, 0/31-0/32 1:30F, 0/32-0/33 LEVEL, 0/33-0/34 1:40R, 0/34-0/35 1:24R, 0/35-0/36 1:22R, 0/36-0/40 1:20R, 0/40-1/6 1:20R, 1/6-1/14 1:22R, 1/14-1/18 LEVEL, 1/18-1/21 1:40R, 1/21-1/22 1:30R, 1/22-1/26 1:24R, 1/26-1/34 1:22R, 1/34-1/36 1:24R, 1/36-1/40 1:22R, 1/40-2/2 1:40R, 2/2-2/8 1:22R, 2/8-2/10 1:40R, 2/10-2/13 1:30R, 2/13-2/16 1:40R, 2/16-2/18 LEVEL, 2/18-2/22 1:40R, 2/22-2/23 1:30R, 2/23-2/26 1:24R, 2/26-2/29 1:40R, 2/29-2/30 1:60R, 2/30-2/32 1:30R, 2/32-2/40 1:60R. One prominent ephemeral nala falls across the alignment. The co-ordinates of starting and end points taken from hand held GPS are as follows-

Starting Point -

Latitude- 29°29'24.8"N

Longitude- 79°24'25.3"E

End Point

Latitude- 29°29'51.0"N

Longitude- 79°24'50.9"E

3- Geological Assessment- The alignment corridor proposed for the above said motor road lies in part of Kumaun Lesser Himalayan. Geologically the site in question lies in-between Ramgarh thrust and Main Boundary Thrust (MBT). It comprises rocks of Jaunsar Group. Jaunsar Group comprises of two different lithological formations which are Nagthar Formation and Chandpur Formation. The proposed location comprised of Phyllitic Quartzite and Quartzite of Chandpur Formation.

Topography of the area overall is gentle to moderately steep. Area is mostly barren. Rock type observed on the site is Phyllitic Quartzite and Quartzite. The quartzite is moderately hard and compact in strength while the Phyllitic Quartzite is moderately

11/1/2019

Photo copy AH-2
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AB 2

प्रमुख अधिकारी
नगरपालिका
नैनीताल

Geological Assessment of 3.00 Km long Pangkatara-Khalad motor road District-Nainital

Priya Joshi

10/01/2019

1- Introduction- Construction Division, Public Works Department Nainital entrusted in construction of 3.00 Km long Pangkatara-Khalad motor road Nainital District. On the request of Shri D. S. Kutiyal, Executive Engineer, Provincial Division, Nainital again I carried out geological assessment of the above said motor road on dated 07/01/2019. Assistant Engineer Shri J. S. Kholiya accompanied during the site visit. Earlier a geological report of this road is given with reference no Letter No: 2199/08 संभूवै/18 Date: 23/05/2018. Due to changes in the alignment this is the amended report of the same motor road.

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weak in strength. The strength of the rock is estimated by manual test. Some manmade terraces were also observed near to the villages which are mostly cultivated. Three prominent sets of joints were observed in Quartzite. Joints are closely spaced and the opening between the joint planes is close to open up to 1mm. In-between the opening clayey soil is filled. Largely the rocky strata along this alignment are capped by thin overburden material which varies in thickness from place to place. Phyllitic Quartzite outcrop were also observed in starting two km's having phyllitic content. The soil material has silty 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. Weathering condition is moderate to high in the Phyllitic Quartzite and moderately lower in Quartzite. Slope angle varies from 20° - 50° . One prominent ephemeral nala are observed in which flow is only during monsoon. Water level in the nala is only high during the rainy season. The joints data observed from quartzite and foliation of schist outcrop at the site is as follows-

Table I

S.No.	Feature	Dip angle	Azimuth
1	Bedding/J1	30°	N230°
2	Joint J2	35°	N 80°
3	Joint J3	50°	N 320°
4	Slope	35°	N100°

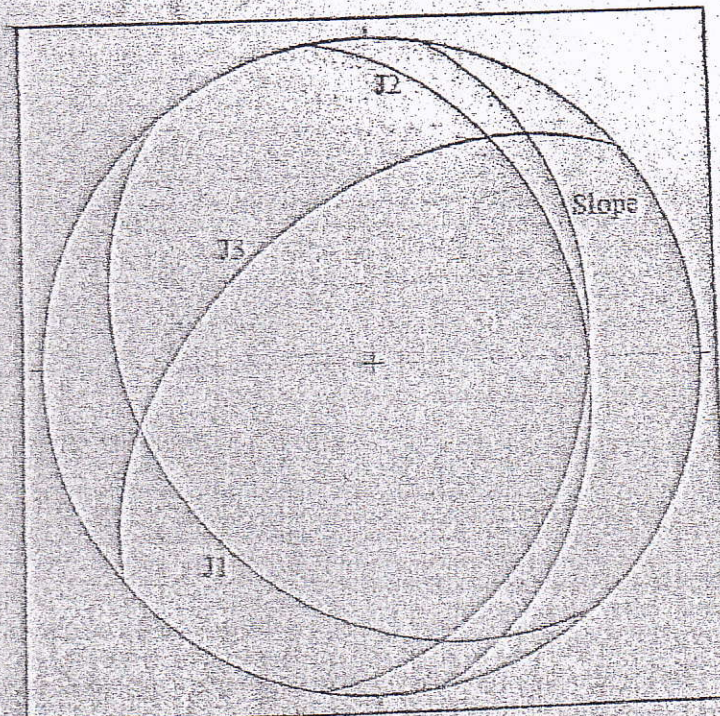


Figure 1: Stereonet plot showing the orientation of joints J1, J2, J3 and the slope. The plot is a Wulff net projection.

Q. no. 5 any A.K. 12

Q. no. 5

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निर्माण खाण्ड लोडिंग विभाग
कैनीताल

From the above stereographic projections it is clear that planar failure can occur along joint J2 as the joint J2 dips in the slope direction in case if any joint or tension crack acts as a releasing surface

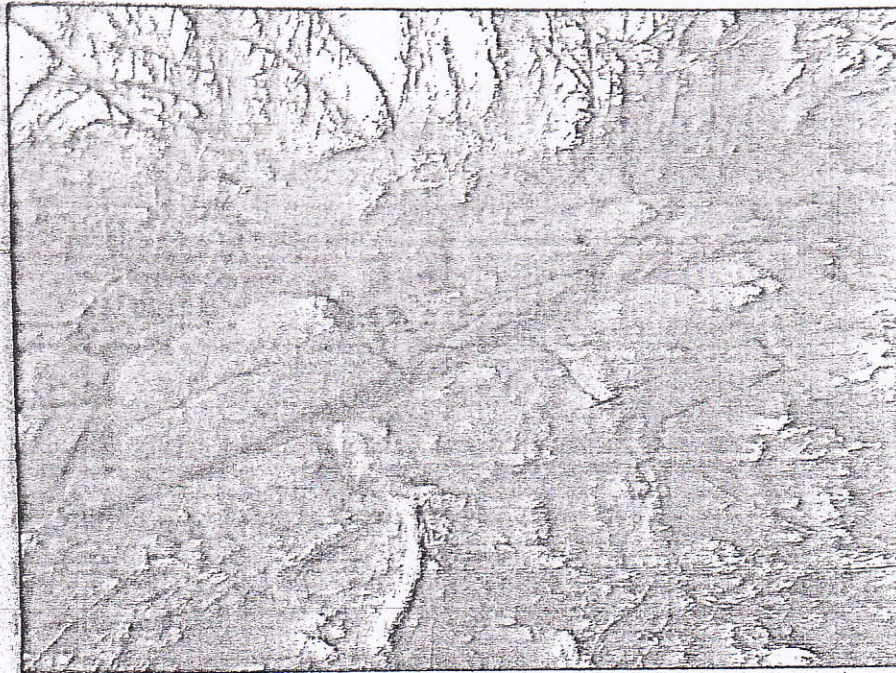


Figure 2 Micaceous Quartzite outcrop exposed at the site



Figure 4 General topography of the area

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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3/10/20

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निर्माण खाण्ड, लोहपिठा
देवीताल

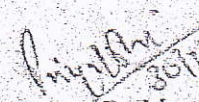
the proposed road, failing to these recommendations this report will be treated as cancelled.

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 and 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/bridge/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 HP bends must be constructed with standard gradient and protection must be given on the hill side to retain the slope.
- 8- 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: 200/08 स.भू.वै./19

Date: 30/01/2019


Priya Joshi
(Assistant Geologist)
Chief Engineer Office
PWD, Almora.

पुनः कॉपी धारित
3/2/19

प्रमुख अधिकारी
निर्माण उपडिवीजन
अल्मोरा