2.28

प्रपत्र– 33

परियोजना का नामः– जनपद बागेश्वर के अन्तर्गत स्व0 कारगिल शहीद श्री रमेश परिहार के गॉव डुंगरपुर हेतु अमतौड़ा से मोटर मार्ग निर्माण।

भू–वैज्ञानिक की आख्या

नोट– प्रयोक्ता ऐजेन्सी द्वारा भू–वैज्ञानिक की आख्या प्राप्त कर प्रस्ताव के साथ संलग्न की जायेगी।

(2)

7

कार्यालय मुख्य अभियन्ता
लोक निर्माण विभाग,अल्मोड़ा

"92सी
K36
17/11/16

UTTARAKHAND

o. 05962- 230294 Fax No.05962- 230011 E-mail-cepwdkumaon@rediffmail.com

-6021/05स0भू0वै0/16 दिनांक 15/11/2016.

में,

अधिशासी अभियन्ता
प्रान्तीय खण्ड,लो0नि0वि0
बागेश्वर।

:– **वित्तीय वर्ष 2016–17 में जनपद बागेश्वर में अन्तर्गत स्व0 कारगिल शहीद श्री रमेश परिहार के गॉव डूंगरगॉव हेतु अमतौड़ा से मोटर मार्ग के निर्माण कार्य हेतु प्रथम चरण की प्रशासकीय एवं वित्तीय तथा व्यय की स्वीकृति के सम्बन्ध में।**

:– **आपका पत्र संख्या 2553/92सी0 दिनांक 05.11.2016।**

य,

उपरोक्त संदर्भित पत्र के कम में अधोहस्ताक्षरी द्वारा जनपद बागेश्वर में अन्तर्गत स्व0 कारगिल श्री रमेश परिहार के गॉव डूंगरगॉव हेतु अमतौड़ा से मोटर मार्ग के निर्माण कार्य हेतु भूगर्भीय सर्वेक्षण की संलग्न कर अग्रिम आवश्यक कार्यवाही हेतु प्रेषित की जा रही है।

:–उपरोक्तानुसार।

दि0-17-11-16

Photo Copy Attested
Assistant Engineer
P.D.P.W.D Bageshwar

(प्रिया जोशी)
सहा0 भू0–वैज्ञानिक
कार्या0 मुख्य अभियन्ता
लो0नि0वि0,अल्मोड़ा।

eological Assessment of the alignment corridor proposed for the Construction of 4.0 Km long motor road for Kargil martyr Sri Ramesh Parihar village Dungargaon from Amtora village District-Bageshwer.

Priya Joshi
15/11/16

Introduction:-The Provincial Division, Public Works Department, Bageshwer has proposed the construction of 4.0 Km long motor road for Kargil martyr Sri Ramesh Parihar village Dungargaon from Amtora village District Bageshwer. On the request made by Shri. R. K. Punetha, Executive Engineer Provincial Division Bageshwer I carried out the geological assessment of the proposed alignment corridor of the above said motor road on 09.11.2016. Junior Engineer Smt. Deepika also accompanied during the site visit.

Location- The site in question starts from Amtora village. Total length of the motor road is 4 Km which consists of 2 HP Bend at 1.900 and 2.100 chainage respectively. 2 puliya of 18m span falls across the proposed alignment. The proposed motor road passes from Dungargaon, Majbe and Tarigaon villages.

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

Starting Point
Latitude- N 29°50'52.70"
Longitude- E 79°43'47.94"

Geological Assessment-The site in question is near to the Bageshwer Township and geologically it lies in between the Berinag Thrust in the south and Almora nappe in the north. It is an autochthonous unit of Precambrian sedimentary exposed in the vast window in the inner Kumaun Lesser Himalaya. This section is exposed by the Quartzite and Slate of Berinag Formation of Jaunsar Group.

Topography of the area overall is gentle to moderately steep. Area is covered with dense forest. At villages manmade terraces were observed which are mostly cultivated. Starting portion of the area is much steeper and is mostly covered with forest than the last few km's which falls on the terraces from where the alignment has been proposed (Fig.4&5). Slope angle varies from place to place. Slope angle ranges from 25°-75° and slope direction varies from N170°-30°. Hydrological conditions are mainly dry, except in rainy season. There are mainly two prominent nala's which will fall across the length of the road. Rock type in the area is micaceous quartzite and slate, Quartzite is hard and compact in strength while slate are weak as the deformation in the slates are high. At

ome places the rock is highly sheared and weathered. High grade of deformation is bserved near to the starting point; phyllitic nature of rock is also visible. Three sets of oints have been observed at the site in quartzite and slate which are as follows (Table I – Quartzite, Table II – Slate)

Table-1

S.No.	Feature	Dip angle	Azimuth
1	Joint J1	40°	N 310°
2	Joint J2	60°	N 120°
3	Joint J3	50°	N200°
4	Slope	60°	N110°

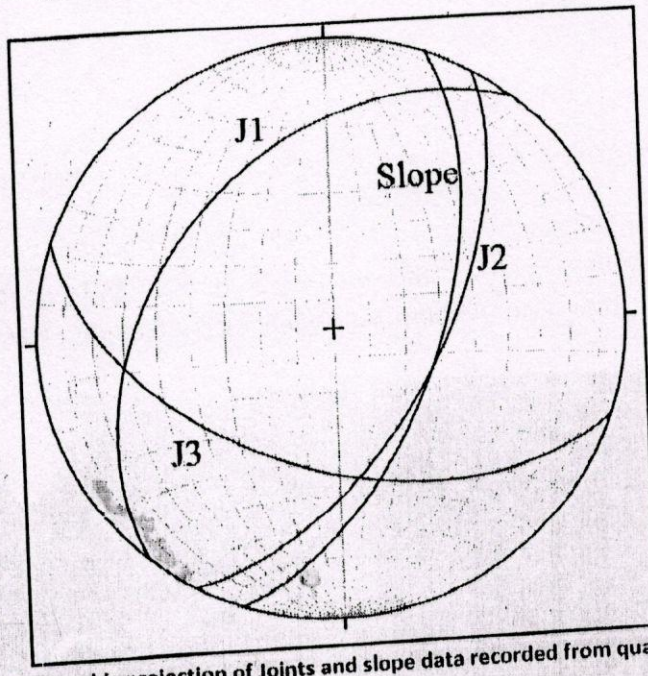

Figure 1 Stereographic projection of Joints and slope data recorded from quartzite outcrop

Table II

S.No.	Feature	Dip angle	Azimuth
1	Foliation/Joint J1	35°	N 30°
2	Joint J2	50°	N110°
3	Joint J3	35°	N300°

4	Slope	60°	N120°

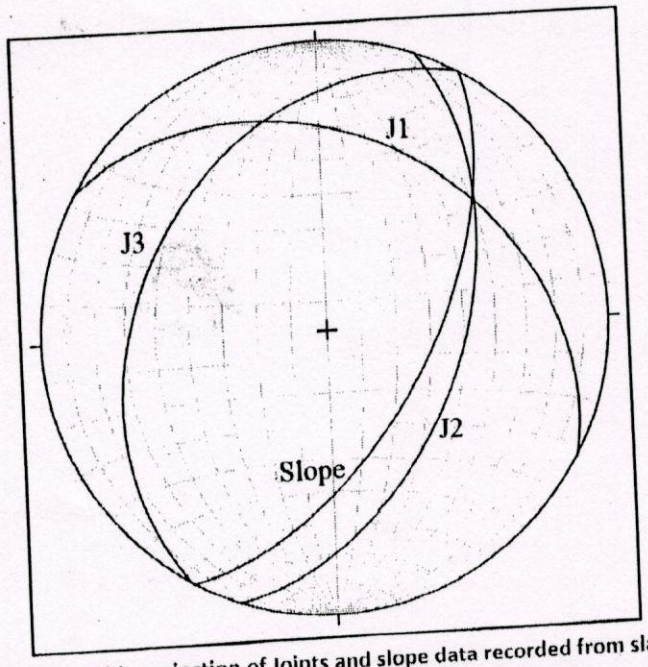

Figure 2 Stereographic projection of Joints and slope data recorded from slate outcrop

From the above stereographic projections (Fig 1&2) it is clear that on both the rock type planar failure is observed along joint J2. As the slates are weak in strength thus planar is more prominent in slate than quartzite and create much impact on the stability of the area.

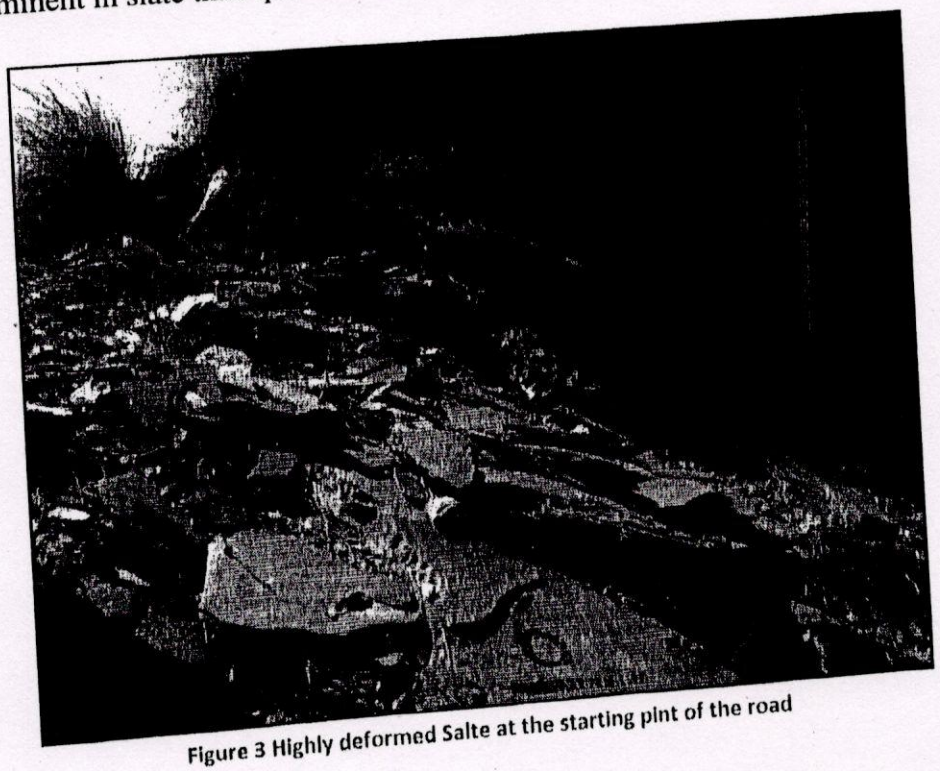

Figure 3 Highly deformed Salte at the starting pint of the road

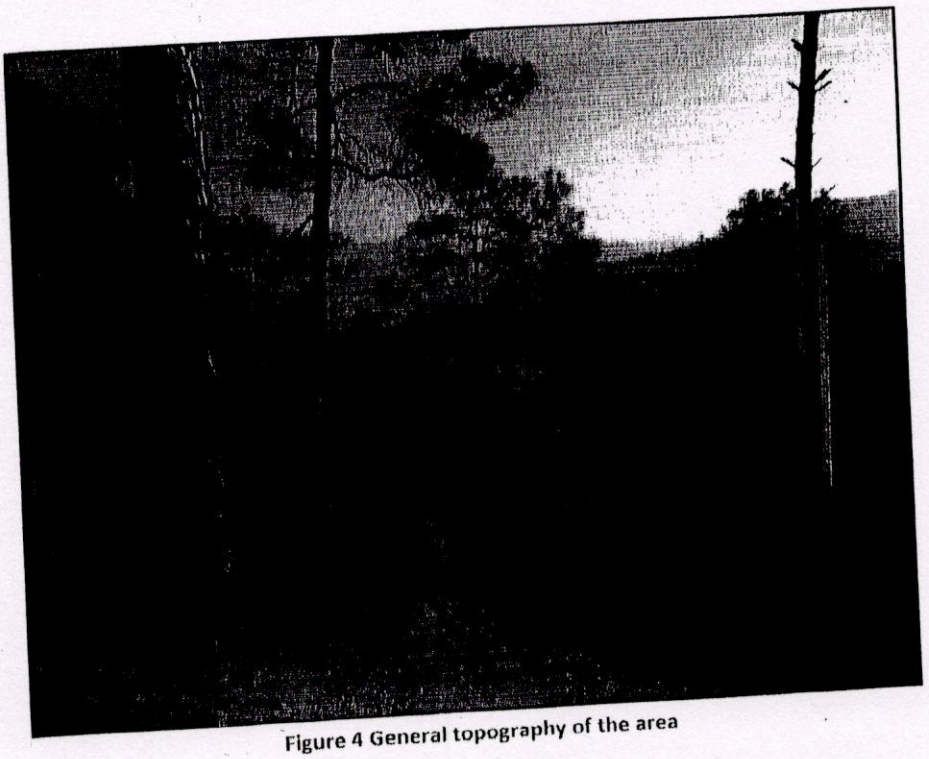

Figure 4 General topography of the area

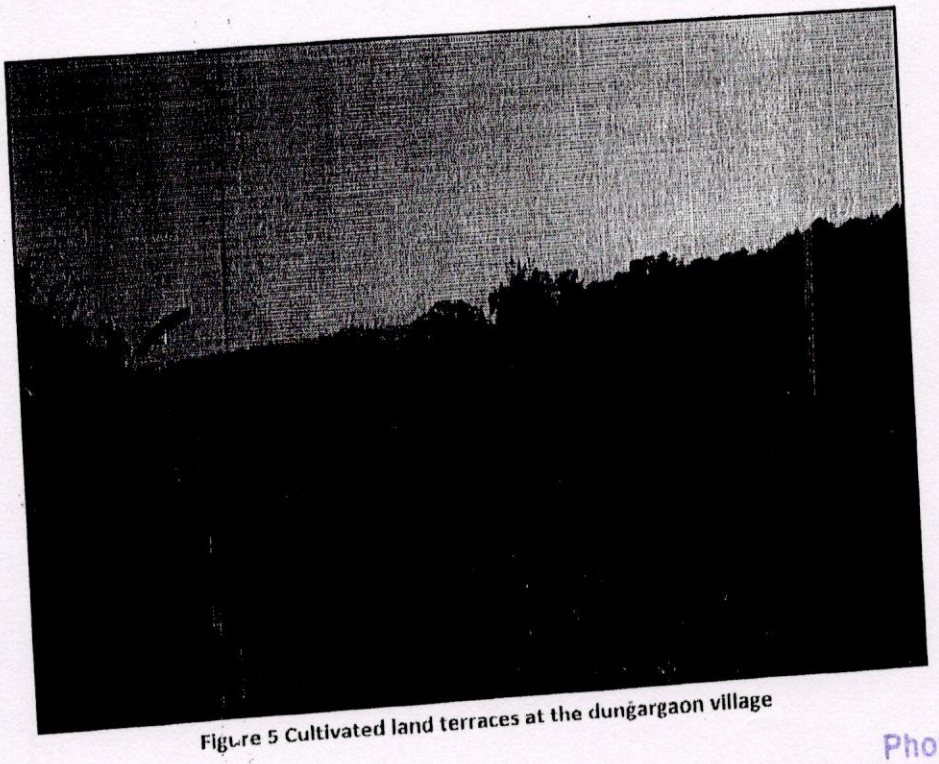

Figure 5 Cultivated land terraces at the dungargaon village

Conclusion-

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

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's whichever is suitable.
4. Construct extra-large 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. For bridge construction foundation of both the banks must be placed wisely on fresh, hard, compact and intact rock mass after removing weathered top portion.
7. Consolidated grouting can be done for making the RBM monolithic and homogeneous if bed rock is not found.
8. If any opening/cavities are developed or encountered during the site development and at bridge erection then they must be properly grouted and backfilled with the concrete of suitable strength.
9. Stream banks on the either side must be protected with the suitably design retaining wall and flood protection wall. Foundation of these walls must be placed below the scouring level.
10. As the proposed site falls in seismic zonation V, therefore the bridge must adopt proper earthquake resistant design as per the appropriate code of practice.

11. 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.

Date: 15/11/2016

Letter No:6012/ 05 स०भू०वै०/16

Priya Joshi 15/11/16

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

Photo Copy Attested

Assistant Engineer
P.D.P W.D Bageshwar