

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष
उत्तराखण्ड लोक निर्माण विभाग,
देहरादून।

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Geological Assessment of the alignment corridor
proposed for Aadichaura to Sinni motor road, Distt.
Pithoragarh.

07-अक्टूबर-2014

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07-10-2014

1- Introduction:- The PMGSY Division, Didihat has proposed the construction of 13.00 km long motor road, namely Aadichaura to Sinni motor road in Munisiyari Block, Distt. Pithoragarh. The undersigned carried out the geological assessment of the proposed alignment corridor of this road on 06.07.2014 on the request made by M/S Shyam Designers and Consultants. The stretch of the present alignment between CH 00/00 to CH 2/0 encompasses already constructed LVR while the remaining CH 2/0 to CH 13/0 proposed new construction.

2- Location:- The alignment corridor proposed for Aadichaura to Sinni motor road is located in Munisiyari Block of Distt. Pithoragarh.

3- Geological Assessment:- Geologically the proposed alignment corridor of Aadichaura to Sinni motor road lies in the Inner Lands of Kumaon Lesser Himalaya, which falls in the close vicinity of Main Central Thrust (MCT). The area containing the proposed alignment is occupied by the dolomites of Doban and Mandhali formation (Tejam), quartzites of Berinag formation and varieties of schists belonging to Almora Group. As the area very close to the Thrust zones the rocks exposed in it got highly deformed sheared, shattered and tectonized. The grade of metamorphism has also increased due to the affect of the thrust plane. The cross slope facets of the proposed alignment are inclined at moderate to steep angle and these are marked by the scanty outcrop of in-situ rock masses largely the alignment slopes are covered by the thin cover of overburden comprised of residual soils, slope wash and hill wash material. The rock masses exposed along the alignment corridor are hard, compact and slightly weathered in nature on the one hand and weak, fragile and highly weathered on the other hand Interbedded bands bearing least competent talcose and sericite substantially bring down the physical competency of hard rock masses. The dolomites exposed on the cross slopes of alignment are very frequently jointed in nature and their Rock Quality Designation (RQD) percentage has been calculated ranging between 60% to 80% . The granites, granodiorites and varieties of schists belonging to Almora group largely contains minerals susceptible for weathering alterations. It has been observed that at places the alignment slopes are prone to underfo deformation under the alteration of slope geometry. The rock masses exposed along the alignment corridor exhibits wide range of physical competencies and their "Uniaxial Compressive Strength" has been estimated ranging between 20 M Pa to 150 M Pa, The talcose, quartzites and schists are least competent rocks in the area of alignment while the massive, blocky bands of quartzites were found most competent. The rock masses exposed across the

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alignment slopes have been dissected by numerous joint sets which are listed in the following Table.

TABLE

S.No	Feature	Dip angle	Azimuth
1	2	3	4
1	J ₁ joint	45	N210
2	J ₂ joint	28	N160
3	J ₃ joint	35	N 055
4	J ₄ joint	78	N115 (random set)
5	J ₅ joint	54	N350

All the joint sets are linear close to widely spaced and at places they are opened and infilled by the soils and crushed rock material.

The nature of the composite soils forming the cross slopes of the present alignment changed very frequently from place to place. Sometimes these are hard, stiff and sometimes very soft and loose. By and large the soils are dense and naturally compact.

It has been noticed that the proposed alignment across some small areas prone to sliding, which needs stabilization during the construction of this road and for this frequent geological inspections will be required.

On the basis of the above and the study carried at the site the following recommendations are being made for construction of the proposed road failing to these the report will be treated as cancelled.

4- Recommendations:-

- 1- In order to form the road excavate the hill slopes as per the provisions, standards, codes of practice adopted by PMGSY.
- 2- In the area deprived of vegetational cover old/ historical slides the surface of the road must be sealed in order to check the water infiltration.
- 3- In order to form the road any type of blasting by explosives on the rocks is geologically restricted.
- 4- The entire road and the slopes must be stabilized by constructing suitable designed retaining/brest walls.
- 5- Blasting by explosives on the rocks is geologically restricted.

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- 6- The entire road and the slopes must be stabilized by constructing suitably designed retaining/brest walls.
- 7- The road must have adequate provisions of long cross drains and the drained water must be disposed on the stable ground.
- 8- The entire exposed surface of the road must be sealed by black top in order to check the water infiltration into the subsurface material.
- 9- All the construction activities must be carried out as per the codes of practice, laid by the IRC/MORTH.

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