

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष
उत्तराखण्ड लोक निर्माण विभाग
देहरादून।

गर्भीय निरीक्षण आख्या एस0जी0- 826/सडक/पुल समरेखण/गढवाल/2015

Geological Assessment of the 15 km long alignment corridor
proposed for Naitwar to Kalaph motor road, Distt. Uttarkhashi.

29-जुलाई-2015

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proposed for Naitwar to Kalaph motor road, Distt. Uttarkashi.**

Vijay Dangwal
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- 1. Introduction:-** The PMGSY Irrigation Division, Purola, Uttarkashi has been entrusted for the construction of 15 km long motor road namely Naitwar to Kalaph in Mori Block, Distt. Uttarkashi. On the request made by Er. Daulat Singh Panwar I carried out the geological assessment of proposed alignment corridor on 26.07.2015. Er. D.P.Joshi, Asstt. Engineer and Er. Ankur Pal, Jr. Engineer accompanied the site visit.
- 2. Location:-** The proposed alignment Naitwar to Klaph motor road originates from km 1 of Naitwar Sewa motor road located in Mori block, Distt. Uttarkashi. The proposed alignment contains 12 HP Bends which are located on the safe and stable ground.
- 3. Geological Assesment:-** Located in the Inner lands of Garhwal Lesser Himalayan Belt the entire area containing this alignment is occupied by the rock masses belonging to Almora Group which are represented by the granites, granodiorites and varieties of schist's. The terrain containing this alignment is characterized by the rugged and dissected topography, steeply inclined hill slopes and deeply incised river valley. The rock masses exposed along this alignment corridor are largely massive, slight to moderately weathered, thickly bedded, hard and block in nature. These rock masses have been traversed by many linear rock defects such as joints, shears, fault and thrust. The grantiegneisses and gneisses are massive and very strong in physical competency while the schist's are thinly foliated and weak rock masses. The cross slopes along of this alignment corridor are oriented towards the SE and SW direction with the general angle inclined between 45° to 65° . It has been observed that these slope facets are overlain by the thick cover of overburden material ranging between 1m to 5m order.
- According to the assessment at various location of this alignment corridor the Uniaxial compressive Strength of the exposed rock masses was found ranging between 100 M pa to 200 M pa for the granitegneisses and granodiorites while for the schist's, chlorite schist these values was restricted below 20 M Pa. Likewise, the Rock Quality Designation (RQD) values was calculated ranging between 80% to 100% and 35% to 50% for the massive and thinly foliated rocks respectively. As many as four prominent joint sets has been recorded along the proposed alignment corridor. These are given in the following table.

Table

S.No.	Feature	Dip angle	Azimuth
1	2	3	4
j ₁	So bedding joint	60°	N100
j ₂	Joint	58°	N120
j ₃	Joint	45°	N215
j ₄	Joint	78°	N340

The soils deposited on and across this alignment corridor are naturally dense, hard in dry state and compact. It has been observed that the starting part of the alignment slopes are characterized by the scree, talus and debris cone material. The composite material deposited on the alignment slopes is comprised of the angular rock fragments of various shapes and sizes embedded in the sandy silty matrix.

The rock defects along the various slope facets of this alignment generally do not form any adverse geometrical relationship which severely threatens the stability of the hill slopes. The soils present on the slopes are free from any content related to the soft soils.

The entire visible cross slopes of this alignment do not contain any signatures of ground movement, presence of sink/pot holes.

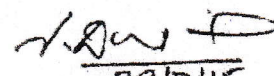
By and large the alignment slopes are stable and free from any prominent mass wasting/ landslides activities.

On the basis of the geological/geotechnical studies carried at the site and the facts mentioned above the following suggestions are being made for the construction of the proposed road failing to these report will be automatically treated as cancelled.

4. Recommendations:-

1. Form the road by part cut and part fill techniques and compact the fill by proper dynamic method.
2. Do not blast the rock by explosives, otherwise it will generate uncontrolled landslides.
3. Do not dispose the excavated waste on the lower slopes, otherwise it will threat the overall stability of the hill slope.
4. The entire stretch of the road must have adequate drainage arrangements, i.e. wide hillside lined drain with proper cross drainage arrangements.
5. Make proper arrangements for the disposal of waters on the down hill slopes. Flow of the accumulated water on the lower slope will threat the overall hill slope stability.
6. Protect the entire road by properly designed retaining/breast wall having aseismic design.
7. All the construction activity must be carried out as per the standard codes of practice laid by the BIS and MORTH.

5. Conclusion:- On the basis of the geological/geotechnical studies carried at the site and with the above recommendations, the site proposed was geologically found suitable for the construction of 15 km long motor road namely Natwar to Kalaph in Mori Block, Distt. Uttarkashi.


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