

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

भू - गर्भिय निरीक्षण आख्या एस0जी0- 214/सड़क/पुल समरेखण/कुमांऊ/2015

**Geological Assessment of the 2.5 km long alignment corridor
proposed for Garur-Binkholi motor road to Kothon motor
road in Garur Block, Distt. Bageshwar.**

30-मार्च-2015

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Vijay Dangwal
30.03.2015

1- Introduction:- The PMGSY Division, Bageshwar has been entrusted for the proposed the construction of 2.5 km long motor road namely Garur-Binkholi motor road to Kothon motor road in Garur Block, under the Pradham Mantri Gram Sadak Yojna (PMGSY) in response to the request made by Er. Rajendra Prasad, Executive Engineer, I carried out the geological assessment of the proposed alignment on 12.02.2015 in presence of Er. Vijay Krishna, Astd. Engineer and Er. Harendra Rana and Er. Anil Gururani both Jr. Engineer, PMGSY, Irrigation Division, Bageshwar.

2- Location:- Located in Garur Block of Distt. Bageshwar the alignment corridor of the above said proposed motor road originates from km 3.00 of Bajinath to Anyartoli motor road.

Two alternative alignments i.e Alignment No.1 and Alignment No.2 have been prepared by the concerned Division for the construction of the proposed road in question. On the basis of various geological, geotechnical, geo-morphological parameters and the comparative studies carried at the site the alignment No.1 was found suitable for the construction. The present report bears the details of the study carried out for the alignment No.1.

3- Geological Assessment:- Geologically the alignment corridor proposed for Garur-Binkholi motor road to Kothon motor road lies in a part of Kumaon Lesser Himalayan Belt bounded by two sympathetic thrust planes i.e, the North Almora Thrust to the North direction and South Almora Thrust to the South. The rock masses belonging to Almora Group are exposed in this area which are comprised of granites, granodiorites, varieties of schists containing plagioclase feldspars in abundance. The terrain containing this alignment bears a mild topography and the landforms are marked by small hillocks, shallow river valleys and very low lying terraces. The cross slopes containing this alignment are inclined at very low to low angle and these are oriented in N 080 N 260 direction on the right bank and left bank of Panchagarhi Nadi. The varieties of schists belonging to Almora Thrust Sheet are scantily exposed all along the alignment corridor which are largely overlain by the 0.5 m to 2.5 m thick cover of overburden material. The rock masses exposed along this alignment corridor are slight to partially weathered in nature and the overburden material deposited over these has been generated by the slow decomposition of the in-situ rock masses therefore, the soils covering these are largely residual in nature. The exposed in-situ rock masses are Weak to Fair in physical competency as the estimation of the "Uniaxial Compressive Strength" of these rocks was found ranging between 5 M Pa to 30 M Pa. These rock masses have been traversed by many linear discontinuities which are linear, tight and bears very long persistence. The rock masses contains clay-minerals in abundance which are sensitive for the exogamic alteration.

The overburden material deposited along this alignment corridor contains very large quantity of clays and it contains rock fragments in a small quantity. The soils comprising the overburden are naturally hard in dry condition, these well compacted and dense and the rock fragments are firmly embedded in these. If remained dry these soils are very hard and stiff but under the wet/saturated

conditions rapid change in their physical strength takes place therefore, if the road is constructed along this alignment corridor adequate arrangements to check the water infiltration into the subsurface material must be made to maintain their physical strength intact. The physical strength of these soils was assessed at the site and the "Undrained Shear Strength" of overburden material deposited along the alignment corridor was found ranging between 300 K Pa to 400 K Pa.

The overburden material deposited along the alignment corridor do not contain any dispersive soils. The entire slope containing this alignment is free from the ground subsidence and do not exhibits any signature related to the development of sink/pot holes.

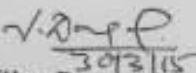
The low lying cross slopes of this alignment bears very low to low relief and the entire ground in and around it is free from any mass wasting/land sliding activities.

By and large the proposed alignment no.1 was found geologically feasible for the construction of 2.5 km long motor road provided the following recommendations made below are followed strictly.

4- Recommendations:-

- 1- Construct the road by half cut and half fill techniques and compact the fill material properly by dynamic compaction.
- 2- Form the entire road from outer edge to inner edge by cement concrete in order to seal the entire surface of the road.
- 3- Construct extra large lined drain all along the hill side of the road and make adequate cross drainage arrangements. The accumulated rain water run-off from this road and its upslope catchment should not allow to flow freely over the lower hills.
- 4- Do not dispose the excavated waste on the lower slopes, it will damage the lower hill slopes.
- 5- 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 was found geologically suitable for the construction 2.5 km long motor road namely Garur-Binkholi motor road to Kothon motor road in Garur Block, under the Pradham Mantri Gram Sadak Yojna (PMGSY), Distt. Bageshwar.


30/3/15
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