

Geological Assessment of the alignment proposed for Lata to Lata temple motor road in Joshimath Block Distt. Chamoli.

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1- Introduction:- The Provincial Division, Public Works Department Gopeshwar has proposed the construction of the 1.50 km long motor road from Lata to Lata Temple in Joshimath Block Distt. Chamoli. On the request of Er. R.C. Pal, Executive Engineer, I carried out the geological assessment of the proposed alignment on 03.09.2013 in presence of Er. V.S. Barthwal, Astt. Engineer and Er. Harendra Rana, Jr. Engineer, PWD camp office Joshimath, Distt. Chamoli.

2- Location:- The alignment proposed for Lata to Lata temple motor road originates from km 27 of Joshimath-Malari State Highway No. 54 located in Joshimath Sub Division Distt. Chamoli and it connects Lata Temple in 1.5 km length.

3- Geological Assessment:- Geologically the alignment corridor proposed for Lata to Lata Temple motor road lies in the Inner Himalayan Belt occupied by the rocks of Central Crystalline group comprised of high grade metamorphic rocks. The alignment of the proposed road passes across the left bank slopes of river Dhauliganga.

The slope across which the alignment corridor of Lata to Lata temple road passes is inclined at low to moderate angle in N 280 to N 320 direction. Most of the alignment slope is occupied by the thick cover of glacial material containing large erratic boulders embedded in the clay-silt matrix. The entire slope forming material contains clay minerals in abundance therefore, it exhibits atypical characteristics of physical competency under dry and wet/saturated conditions its shear strength decreases proportionally to the saturation. In case of construction of the road the entire top of the bench needs to be sealed in order to maintain the intact properties of the slope forming material and to check the infiltration of water into the ground forming material.

The "Undrained Shear Strength" of the slope forming soils have been estimated ranging between 200 K Pa to 400 K Pa and these values correspond to the 'Stiff' and 'Very Stiff' soil consistencies.

The soils comprising the slope material do not contain any soft/dispersive soils.

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By and large the alignment slope of the proposed road is inclined at moderate angle which presently looks stable and free from mass wasting activities.

On the basis of the above and the study carried at the site the following recommendations are being made for the construction of the proposed road.

4- Recommendations:-

1. Form the road by half cut-half fill technique and compact the fill material properly.
2. Construct extra wide hill side drain in order to collect the run-off from the upslope and the road.
3. The road must have adequate provision of cross drainage arrangements and the drained water must be disposed on the safe/stable ground preferably through the lined cross drains.
4. Do not dispose the excavated waste on the lower slopes. The muck must be disposed on the pre-identified suitable dump yard.
5. The road and its either side slopes must be protected by the suitably designed retaining / breast walls.
6. The entire top of the roadway, inner to outer edge must be sealed by the black top, this is so as to check the infiltration of water into the sub surface material.
7. All the constructions activities should be carried out as per the norms and standard laid by the IRC/MORTH, for the similar structure constructed in the Himalyas.

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 of the 1.50 km long motor road from Lata to Lata Temple in Joshimath Block Distt. Chamoli.

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