

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष
उत्तराखण्ड लोक निर्माण विभाग,
देहरादून

भू-गर्भीय निरीक्षण आख्या ए0जी0- 15/सड़क/पुल/सम्प्रेषण/उत्तराखण्ड/गढ़वाल-2016

**Geological assessment of the 1 Km long alignment corridor
proposed for the construction of Jakhni-Tendwal motor road,
near Mayali, Distt.Rudraprayag**

15 अक्टूबर.2016

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proposed for the construction of Jakhni-Tendwal motor
road, near Mayali, Distt. Rudraprayag**

Shiv Kumar Rai

15.10.2016

1- Introduction:- The Provincial Division, Public Works Department, Rudraprayag has been entrusted for the construction of 1 Km long motor road namely Jakhni to Tendwal, near Mayali, Distt. Rudrapryag. On the request made by Er. Indrajeet Bose, Executive Engineer I carried out the geological assessment of the proposed alignment corridore of this road 25-09-2016 in presence of Er. Yogesh Kumar, Junior Engineer, PWD, Rudraprayag.

2- Location:- The alignment corridor of this road originates from the end point of the already constructed road upto Jakhni to Village Tendwal, Distt. Rudrapryag.

3- Geological Assessment:- Geologically, the 1 km long alignment corridore of the motor road stretches within the single lithotectonic unit of the Jaunsar Group. On and across the alignment slopes, massive dolomite is widely exposed and largely overlain by the thin cover of overburden material are exposed. The terrain containing this alignment bears mild topography with the gentle slopes and the wide stream valleys. Most of the alignment slopes are covered by the thick cover of the overburden material which is comprised of the residual soils and the material generated from the upslopes. The overburden material is formed of the angular rock fragments of phyllites and rock chips embedded in the silty clay matrix. The dolomitic rock exposed on and across the alignment corridor are puckered and massive in nature. These rock masses have undergone slight to partial exogenic alteration and the residual soils disposed on the alignment slopes is formed due to the weathering of these parent rocks.

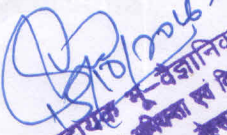
The overburden material deposited on the alignment slopes is naturally dense, compact and hard in nature and it contains plastic clays in abundance. according to the assessment made at the site, "Undrained Shear Strength" of these were evaluated ranging between 250 K Pa to 320 K Pa and the soils exhibits very high binding properties.

The dolomite rock on the alignment slopes exhibits low to moderate values of physical competencies and their "Uniaxial Compressive Strength" has been estimated ranging between 50M Pa to 70 M Pa determined manually by hammer blow method.

The joints / rock defects in the rock masses are almost tight and sometimes these are sealed by the secondary inclusion of quartz.

The slope forming soils across which the alignment passes can undergo deformation in wet/ saturated conditions. Therefore, it will be necessary to make adequate arrangements in order to check the water infiltration into the subsurface material.

By and large the alignment slopes are stable and presently free from any landslide/mass wasting ground subsidence activities.


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On the basis of the geological studies carried at the site and the facts given above, the following recommendations are being made for the construction of the proposed road failing to these this report will be automatically treated as cancelled.

4- Recommendations:-

1. Construct the road by half cut and half fill techniques and compact the fill material properly by dynamic compaction.
2. The either side slopes of the entire road must be protected by suitably designed retaining walls/breast walls, this work shall be carried out simultaneously with the advancement of the road cutting. This is very important for the stability of the hill side slopes and the subsidence located down slope, below the proposed alignment corridor.
3. The entire section of this road passing through the villages premises i.e, through and on the either side slopes must be constructed without excavation as any deep cut or excavation may lead slope instability. It is advised that the roads through these section shall be constructed by walling only.
4. The entire surface of the road from outer edge to inner edge must be sealed immediately after the excavation, this is so as to check the water infiltration into the sub soil, otherwise the slope will fail.
5. 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.
6. Do not dispose the excavated waste on the lower slopes, it will damage the entire down hill slopes.
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, above mentioned alignment corridor was geologically found suitable for construction of 1 km long Jakhni-Tendwal motor road, near Mayali, in Jakholi block, Distt. Rudraprayag.

(Shiv Kumar Rai)

Astt. Geologist

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