

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

A-2.28

(89)

भू - गर्भीय निरीक्षण आख्या एस0जी0- 672/सड़क/पुल समरेखण/ गढ़वाल/2014

**Geological Assessment of the alignment  
corridor proposed for Malai to Bhatkwali  
motor road, Distt. Chamoli.**

29-दिसम्बर-2014

# Geological Assessment of the alignment corridor proposed for Malai to Bhatkwali motor road, Distt. Chamoli.

Vijav Dangwal

29.12.2014

**1- Introduction:-** The PMGSY, RES, Karanprayag has proposed the new construction of 4.925 km long motor road namely Malai to Bhatkwali, Distt. Chamoli. On the request made by Er. V.S Rawat, Executive Engineer, I carried out the geological/geotechnical assessment of the proposed alignment corridor on 12.11.2014. Er.T.S. Bagdi Bisht, Asst. Engineer, Er. Shivraj Singh, Bisht, the concerned Jr. Engineer was present at the site.

**2- Location:-** The alignment corridor of the proposed road originates from km 2 of Adibadri-Nauti motor road located in Gairsain block, Distt. Chamoli.

**3- Geological Assessment:-** Geologically the alignment corridor of the proposed road lies in the inner lands of Garhwal Lesser Himalayn Belt bounded by the Main Central Thrust (MCT) to north and Shrinagar Thrust (ST) to south direction respectively. Mostly the rock belonging to Garhwal Group and Almora Group are exposed in the area of this alignment which are represented by the sequence of quartzites, granites, granodiorites, augengneisses and varieties of schists and terrain containing this alignment is rugged and dissected and drained by the cross drainages of river Pinder. The rock masses exposed along the alignment corridor are massive to thinly foliated, sheared, shattered, tectonized and deformed in nature. The rock masses have been traversed by many linear discontinuities which are linear, widely to closely spaced open and in-filled by crust rock mass and occasionally sealed by secondary inclusion like quartz veins. These rocks have undergone slight to partial exogenic alteration and at places completely decomposed into the residual soils.

The rock masses exposed along the alignment corridor exhibits moderate values of physical competency and according to the estimation made at the site their "Uniaxial Compressive Strength" were found ranging between 20 M Pa to 100 M Pa.

The cross slopes of the alignment corridor are largely covered by the thick envelope of overburden material i.e. slope wash/hill wash. This overburden material is comprised of angular rock fragments which are firmly embedded in the clayey matrix. The Undrained Shear Strength of the soils exposed on the alignment slopes has assessed ranging between 300 K Pa to 450 K Pa. Largely these soils are cohesive and do not contain any dispersive/soft soils.


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


On the basis of the geological / geotechnical studies carried at the site and the facts mentioned 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. Any type of loose filling will allow the water to percolate inside and aggravate the road and slope to fail.
2. The hill side slopes of the entire road must be protected by suitably designed retaining walls/ breast walls, this work shall be carried out simultaneously to the advancement of the road cutting. This is very important for the stability of the hill side slopes.
3. 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.
4. Construct extra large lined drain all along the hill side of the road and make adequate cross drainage arrangements. The rain water run-off from the upslope catchment should not allow to flow on or along any weak strata, otherwise it must be disposed on the safe/ stable ground.
5. Do not dispose the excavated waste on the down hill slopes.
6. Do not blast on the rocks.
7. All the HP Bends must be constructed on flatter and stable grounds and arrangements of any type of run-off water around it must be made properly.
8. Protect the slopes of the road by bio-engineering methods especially by plantation of eco-friendly plants and vetiver grass planted, by expert agencies only.
9. 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 of 4.925 km long motor road namely Malai to Bhatkwal, Distt. Chamoli.

  
कनिष्ठ अभियन्ता  
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पी.एम.जी.एस.वाई  
प्रखण्ड, कर्णप्रयाग

  
सहायक अभियन्ता  
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पी.एम.जी.एस.वाई  
प्रखण्ड-कर्णप्रयाग

  
28/12/14  
(Vijay Dangwal)  
Sr. Geologist  
Office of the Engineer in Chief,  
PWD, Dehradun.

  
आपशासी अभियन्ता  
ग्रामीण अभियन्त्रण सेवा विभाग  
समर्पित पी.एम.जी.एस.वाई  
प्रखण्ड कर्णप्रयाग