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Geological assessment of the alignment corridor proposed for km 3.00 of Tefna motor road to Kandara motor road via-Chatingyal-Koti-Nauli-Hindoli motor road, Distt. Karanprayag.

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1- Introduction:- The Provincial Division, Public Works Department, Karanprayag has proposed the construction of 7.675 km long motor road namely Tefna motor road to Kandara motor road via-Chatingyal-Koti-Nauli-Hindoli motor road, Distt. Karanprayag. On the request made by Er. Adarsh Gopal Singh, Executive Engineer, I carried out the geological/geotechnical assessment of the proposed site on 12.11.2014. Er. Abhishek Rawat, the concerned Jr. Engineer was present at the site.

2- Location:- The alignment corridor proposed for the above said road is located in Ghat Block, Distt. Chamoli.

3- Geological Assessment:- Geologically the alignment corridor proposed for Tefna to Kandara motor road and its surrounding environs i.e, Sonla-Kandara-Chatingyal and Koti-Nauli Hindoli falls in the inner lands of Garhwal Lesser Himalayan Belt bounded by the Main Central Thrust (MCT) to the north and Srinagar Thrust (ST) to the south directions. Mostly the granites, granodiorites, quartz mica schists, quartz chlorite schists belonging to Almora Group along with the quartzites and phyllites of Garhwal Group are exposed along the proposed alignment corridor. The cross slopes of this alignment are inclined at various angles i.e, low, moderate and high angle. Largely the rock masses occupying the area along the alignment are enveloped by the thick cover of overburden material generated by the decomposition of the parent rocks. The quartzites exposed along the alignment slopes are comparatively strong than the granites and schists. The rock masses exposed along the alignment corridor are dissected by four prominent joint sets which sometimes forms adverse geometry for the slope stabilization if the slopes are excavated deeply. The composite soils exposed on the hill slopes across the alignment are naturally dense and the rock fragments are firmly embedded in these sandy-silty matrix.

The "Undrained Shear Strength" of the slope forming soils has been assessed between 300 K Pa to 400 K Pa and these were found "Stiff" to "Very Stiff" and theser are naturally well compacted and dense.

The slope forming composite material is semi dense in nature and they do not contain any alkari content to form cat ions.

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

On the basis of the geological inspection, 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 treated as cancelled automatically.

4- Reccomendations:-

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 rain 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 with 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, otherwise the slope will fail and threat the safety of the village on its lower slopes.
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. Any type of blasting by explosive is restricted geologically.
7. The HP Bends must be constructed on flatter and stable grounds and arrangements for disposal of run-off water around it must be made properly.
8. Protect the either side slopes of the road by bio-engineering methods especially by plantation of eco-friendly plants.
9. All the construction activity must be carried out as per the standard codes of practice laid by the BIS and MORTH.

2- 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 7.675 km long motor road namely Tefna motor road to Kandara motor road via-Chatingyal-Koti-Nauli-Hindoli motor road, Distt. Karanprayag.

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9/12/14

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