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

भू – गर्भीय निरीक्षण आख्या एस0जी0– 699/सड़क/पुल समरेखण/ गढ़वाल/2014

Geological assessment of the alignment corridor for Malkot Kalimati-Sera-Tiwakhark motor road, Distt. Chamoli.

23–जनवरी–2015

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Vijay Dangwal

23.01.2015

1-Introduction:- The Construction Division ,Public Works Department Gairsain has proposed the construction of 3.00 km long motor road namely Kalimati-Sera-Tiwakhark motor road in Gairsain Sub Division, Distt. Chamoli Garhwal. To connect village Tiwakhark additional 1 km long motor road needs to be constructed. On the request made by by Er. C.S. Arya, Executive Engineer a joint visit to the proposed site was made on 10.11.2014 and I carried out the geological assessment of the site proposed alignment corridor. Er. Kishore Kumar, Astt Engineer and Er.Prem Pant, Jr. Engineer also accompanied the site visit.

2-Location:- The alignment corridor proposed for the construction of above said motor originates from cross section 29/16 of Bungidhar-Mehalchauri-Bachuwavaan motor road located in Gairsain Sub Division ,Distt, Chamoli .

Three HP Bends have been provided in this alignment which falls at cross sections 0/31, 0/36-37 and 3/22. A bridge of 36 m span needs to be constructed between cross section 0/3-0/5.

3-Geological Assessment:- According to the geological situation the alignment corridor of the proposed motor road lies in the inner belt of Garhwal Lesser Himalaya bounded by the Main Central Thrust (MCT) in the north and the Srinagar Thrust (ST) in the south direction. The terrain containing the alignment corridor is characterized by the steep hill slopes, rugged and dissected topography and it is drained by river Ramganga. In this part of Ramganga valley thick succession of dolomites belonging to Tejam Group are exposed on the either side of the river and these rock masses are well exposed on the cross slopes of the alignment corridor of Malkot-Kalimati Sera-Tiwakhark motor road. The rock masses exposed on the proposed alignment are massive, hard compact and blocky in nature and these exhibits slight to partial exogenic alteration. All along the alignment corridor of the proposed road extreamely large blocks of dolomites are exposed on the left bank of Ramganga which are partially embedded in the overburden material. The cross slopes of the alignment are inclined at moderate to steep angle in a general direction towards south and these are largely exposed with the overburden material.

The rock masses exposed along the alignment are extremely hard, compact, widely dissected by the joints and are Extremely strong in physical

competency. Their "Unixial Compressive Strength" has been estimated ranging beyond 250 M Pa. The road excavation by explosives in the rocky parts additional safety, as uncontrolled blasts may lead to the release of large pockets of dolomites and may result in slope failure. The soils deposited across the alignment are stiff and heavy (soil mixed with boulders) and prone to release the boulders if excavated uncontrolled/unscientific.

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

On the basis of the geological inspection of the site studies carried 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- Do not explode the rock by explosives otherwise excavate these manually.
3- 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.
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 Highway and obstruct the communication.
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, the site was found geologically suitable for the construction of 3.00 km long motor road namely Kalimati-Sera-Tiwakhark motor road in Gairsain Sub Division, Distt. Chamoli Garhwal.

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23/11/15

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