

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष

उत्तराखण्ड लोक निर्माण विभाग,

देहरादून।

भू - गर्भीय निरीक्षण आख्या एस0जी0- 689/सड़क/पुल समरेखण/ गढ़वाल/2014

Geological Assessment of the Alignment corridor
Proposed for the extension of Bonga-Bheluda
motor road upto Ghandiyaldhar, Distt.
Uttarkashi.

17-जनवरी-2015

**Geological Assessment of the Alignment corridor Proposed
for the extension of Bonga-Bheluda motor road upto
Ghandiyaldhar, Distt. Uttarkashi.**

Vijay Dangwal

17.01.2015

1- Introduction:- The Provincial Division, Public Works Department Bhatwari has been entrusted for 3.575 km long extension of Bonga-Bheluda motor road upto Ghandiyaldhar under the Hon. Chief Minister's notification G.O No. 5129/III(2)/14-06 (मु० मु०घो०)/2014 dated 17th October 2014. On the request made by Er. Rajnesh Kumar Saini, Executive Engineer I carried out the geological assessment of the proposed alignment corridor of this road on 09.01.2015 in presence of Er. I.A. Khan, Astd. Engineer and Er. Vineet Chamoli, Jr. Engineer, PWD, Bhatwari.

2- Location:- The alignment corridor of the above said motor road originates from km 6.00 of Bonga-Bheluda motor road and it extends in 3.575 length upto village Ghandiyaldhar. It ends at CH.9/21. In all 5 HP Bends located at cross section 6/3, 7/25, 8/11, 9/9 and 9/15 has been proposed for its construction. The entire alignment corridor passes on the left bank slopes of Indrawati Nadi.

3- Geological Assessment:- Geologically the alignment corridor and its surrounding area falls in the Garhwal Lesser Himalayan Belt located between the Main Central Thrust (MCT) and Srinagar Thrust located in its north and south directions respectively. Mostly the quartzites of Garhwal Group comprise lithological unit in the segment of alignment which are mostly these rock masses are fresh, hard and compact in nature. No in-situ rock mass is exposed along this alignment corridor otherwise the entire slope facets are covered by the overburden material. The cross slopes of the alignment corridor are located on the left bank of Indrawati Nadi and these inclined at low to moderate angle oriented in N 360 to N 020 direction. The overburden material exposed on the alignment slopes is comprised of the river born material (RBM) at lower level and hill/slope wash material near village Ghandiyaldhar. It is contained of boulders, cobbles, pebbles of varying shapes and the boulders are firmly embedded in clay silt matrix. The slope forming material on which the road will pass has attained natural

compaction with the time and space and its "Untrained Shear Strength" has been estimated ranging between 200 k Pa (RBM) to 500 k Pa (slope wash material) . Presently part of this alignment slopes are altered into stepped like fields which are being cultivated by the local farmers. The retaining walls constructed on these fields looks intact and do not manifests any signature of vertical and lateral subsidence.

The slope forming soils are semi dense, non-dispersive and clayey in nature and these are devoid of soft soils.

Prima facie; the cross slopes of this alignment are stable and free from any land slide/ground deformation 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.
- 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.
- 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 villages adjoining it.
- 4- 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.
- 5- Do not dispose the excavated waste on the lower slopes otherwise, it will threat the hill slope stability.
- 6- 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 3.575 km long motor road namely Bonga-Bheluda motor road upto Ghandiyaldhar under the Hon. Chief Minister's notification

V. Dangwal
17/11/15

(Vijay Dangwal)

Sr. Geologist

Office of the Engineer in Chief,
PWD, Dehradun.