

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

ग. निर्माण निरीक्षण आख्या एस0जी0- 534/सड़क/पुल समरेखण/गढ़वाल/2014

Geological Assessment of the alignment proposed  
for Bhatwari-Sunar-Chandrapuri motor road,  
Distt. Chamoli Garhwal.

01-मार्च-2014



# Geological Assessment of the alignment proposed for Bhatwari-Sunar-Chandrapuri motor road, Distt. Chamoli Garhwal.

Vijay Dangwal

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**1. Introduction:-** The Construction Division, Public Works Department Ukhimath has proposed the construction of 2.00 km long motor road namely Bhatwari-Sunar-Chandrapuri motor road, under the State Sector. The proposed alignment of the road originates from km 23 of Rudraprayag-Gaurikund, National Highway No. 107 located within the boundary of Distt. Chamoli Garhwal. On the request of Er. Praveen, Executive Engineer I carried out the geological assessment of the proposed alignment on 12.01.2014 in presence of Er. Y.P. Joshi Asst. Engineer and Er. Ashish Kumar, Jr. Engineer, PWD, Ukhimath.

**2. Geological Assessment:** Located in the Garhwal Lesser Himalayan Belt, the entire area of the proposed alignment corridor is occupied by the quartzites of Garhwal Group. The alignment slopes of the proposed road are inclined at low to moderate and are exposed partially with the rock masses and overburden material. The quartzites comprising the slope forming material are massive, hard and compact in nature and these have been traversed by many linear discontinuities. All the joints traversing the rock masses are widely spaced tight, linear in nature and occasionally sealed by the secondary silica. These rock masses exposed in and around the alignment corridor have attained (slightly weathered)  $W_1$  grade of exogenic alterations. The quartzites exposed on the alignment slopes are physically hard and measures the estimated "Uniaxial Compressive Strength" ranging between 75 MPa to 150 MPa. The overburden material deposited along the alignment corridor is comprised of rock fragments embedded in clay-silt matrix and its consistency has been assessed ranging between "Stiff to Very Stiff Soils".

By and large the alignment slopes are stable and free from any sliding activities.

On the basis of the geological / geotechnical studies carried at the site it is geologically recommended to construct causeway in place of bridge at this site. It is recommended to do adequate energy dissipating arrangement in the downstream of the causeway.

## **3. Recommendations:-**

- 1- Form the road by half cut- half fill techniques and the loose fill material must be compacted by dynamic compaction.
- 2- The rock defects present in the rock mass may form deep plastic zones therefore, avoid blasting on the rocks.



- 3- The road must have large size lined long hill side drain with adequate arrangements of cross drainage. The drained water must be disposed on the stable ground.
  - 4- The top of the road must be sealed shoulder to shoulder by cement concrete this is so as to check the infiltration of water into the sub surface material.
  - 5- The road and the overall stability of the slope must be protected by constructing suitably designed retaining walls/ brest walls all along the road.
  - 6- Do not dispose the excavated waste on the downhill otherwise it will damage the lower arm and the slope bearing the road.
  - 7- All the construction activity must be carried out as per the standards and norms following the BIS codes prescribed for the similar civil construction in Himalayan Zone.
5. Conclusion:- On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the proposed alignment was found geologically suitable for the construction of 2.00 km long motor road namely Bhatwari-Sunar-Chandpuri motor road, under the State Sector. Distt. Chamoli Garhwal.

*Vijay Dangwal*  
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 11/2/2014

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