

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष
उत्तराखण्ड लोक निर्माण विभाग,
देहरादून

भू-गर्भीय निरीक्षण आख्या ए0जी0- 34/सड़क/पुल/सम्प्रेषण/उत्तराखण्ड/गढ़वाल-2016

**Geological assessment of 2.5 km long alignment corridor
proposed for the construction of motor road joining village
Gorudh with the Chinyalisaur-Jagoth motor road, Chinyalisaur
block, Distt. Uttarkashi**

25 फरवरी .2017

**Geological assessment of 2.5 km long alignment corridor
proposed for the construction of motor road joining village
Gorudh with the Chinyalisaur-Jagath motor road, Chinyalisaur
block, Distt. Uttarkashi**

Shiv Kumar Rai

25.02.2017

1-Introduction:- The Construction Division, Public Works Department, Chinyalisaur vide G.O. no. 549/III(2)/14-49/प्रगो/2013 dated 29.01.2014 has been entrusted for the construction of motor road joining village Gorudh with the Chinyalisaur-Jogath motor road, Chinyalisaur Block, Yamnoutri Constituency, Distt. Uttarkashi. On the request made by Er. D.K. Bisht, Executive Engineer I carried out the geological assessment of the proposed alignment corridor on 13.01.2017. Er. P.K. Aggarwal, Asstt. Engineer also accompanied the site visit.

2- Location:- The proposed alignment corridor of the above said motor road is situated on the left bank of the Bhagirathi river and joins the Gorudh village with the Chinyalisaur-Jogath motor road. It comprises 4 HP bends at 0/22, 0/32, 1/80 and 1/40 of 0/0 to 2/20 km length.

3- Geological Assessment:- Uttarkashi and its surrounding area falls in the inner land of Lesser Himalaya. The proposed site is few km away from Chinyalisaur and lies in a part of Garhwal Lesser Himalayan Belt. This area is represented by the rocks quartzites, phyllites, shales/slates belonging to Nathuakhan and Rautgara formation of Ramagarh Group and Damta Group respectively. The terrain containing this alignment is characterized by the hill slopes inclined gently between 30°-35°. Most of this alignment corridor comprised the thick cover of overburden material and scant outcrops of bed rocks. The rocky slopes are exposed in isolated stretches of irregular pattern. The rock quartzites of Rautgara group are highly massive but slightly fractured. Generally the rocks exposed along the alignment are slightly weathered, moderately hard and dissected by many numerous joint sets. The joint planes are linear and tight. According to the estimation made manually at the site, the "Uniaxial Compressive Strength" of the rock masses exposed on the cross slopes of this alignment was found ranging between 120 M Pa to 150 M Pa. At places where the rock masses are sheared, shattered, tectonized and distressed in nature, the UCS values is lower comparatively. This may due to the affect of the Srinagar Thrust (ST) which passes from few km from the proposed site.

The overburden material deposited on the cross slopes of this alignment is naturally dense, hard, compact in nature and it is comprised of the isolated rock fragments embedded in the sandy-silty to clayey matrix. The soils are mostly clayey and good cohesive in nature. The overburden material deposited on the cross slopes of this alignment do not contain any soft/dispersive soils. These soils exhibits good physical competence in dry state. According to the assessment made at the site the "Undrained Shear Strength" of the composite soils exposed along this alignment was found ranging between 250 K Pa to 340 K Pa.

The terraces developed on these slopes which are adjacent to the corridor are undeformed and do not manifest signatures related to the downward and outward movements. The entire visible ground in and around this alignment corridor do not bear signatures related to the ground subsidence and no where sink/pot holes were encountered during the walkover geological assessment.


By and large the cross slopes of this alignment are stable and free from any recent landslides and any other mass wasting activities.

On the basis of above geological inspection, study carried at the site following recommendations are being made for the construction of the proposed motor road failing to these recommendations this report will be treated automatically as cancelled.

4- Recommendations:

- 1- Form the road by half cut and half fill technique and compact the fill material by dynamic compaction.
- 2- Do not blast the rock mass because huge boulders which are scattered on the upslope side of the proposed alignment may become disturbed from it's temporary location may slide downslope towards the village.
- 3- Do not throw the excavated waste on the lower slope otherwise it will damage the houses located lower slope and lead hill slope instability.
- 4- In order to maintain the overall stability of the hill slopes and the road construct suitably designed retaining walls/ brest walls all along the road.
- 5- Construct large hill side lined/concrete drain all along the road and make adequate cross drainage arrangements.
- 6- Make adequate arrangements to dispose the waste water on the safe/ stable ground.
- 7- All the construction activity must be carried out as per the Indian standards codes of practice and norms prescribed by the BIS.

5- Conclusion: On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the proposed 2.5 km long alignment corridor was found suitable for the construction of motor road joining village Gorudh with the Chinyalisaur-Jogath motor road comprising 4 HP Bends Chinyalisaur Block , Yamnoutri Constituency, Distt. Uttarkashi.


(Shiv Kumar Rai)

Astt. Geologist

Office of the Engineer in Chief
PWD, Dehradun