

कार्यालय प्रमुख अभियन्ता
लोक निर्माण विभाग, देहरादून।

मौलिक निरीक्षण आख्या एस0जी0 -322/सड़क/पुल समरेखण/गढ़वाल/2012

**Geological Assessment of the Alignment proposed for
Narayan bagad- Chopta motor road to Paithani,
District- Chamoli, Uttarakhand.**

16- जून-2012

(1)

Geological Assessment of the Alignment proposed for
Narayan bagad- Chopta motor road to Paithani, District-
Chamoli, Uttarakhand.

Vijay Dangwal

16-06-2012

1. **Introduction:** - The Temporary Division, PWD, Tharali has proposed the construction of 2 km long Narayan bagad – Chopta motor road to Paithani village in Tharali Sub Division, District- Chamoli. On the request of Er. Kutiyaal the Executive Engineer, PWD Tharali, I carried out the geological inspection of the proposed alignment on 15-05-2012 in presence of Er. Jagdesh singh, Asst. Engineer and Er. Arun Kumar, Jr. Engineer, P.W.D, Tharali.
2. **Location:-** The alignment proposed for the above said road originates from km 3.00 of Narayanbagad- Chopta motor road and passes on the downhill slopes of it. Four H.P. Bend has been proposed for the construction of this road.
3. **Geological Assessment:** - Geologically the area of the proposed road is located in the Upper Lands of Garhwal Lesser Himalaya, tectonically bounded by the Main Central Thrust (MCT) in the north and Main Boundary Thrust (MBT) in the south. Mostly the quartzites of Garhwal Group are exposed around the area which are partially weathered and oxidized, sheared/ shattered and tectonized, highly jointed and are traversed by the minor shears having clay gauge of < 2 cm thick. Most of the alignment passes across the barren land and rest through the cultivated fields of village Paithani. The slope comprising barren land is steep and overburden material is comprised of angular boulders, cobbles, pebbles embedded in clay-sand- silt matrix. The slopes of the alignment are inclined at 56° to 70° in N 200 to N 240 direction and the area is precipitated by small gullies draining on the right bank of river Pindar.

The material forming barren land exhibits high angle of internal friction ($\tan \phi$), this is mostly due to the presence of angular fragments and particles in the slope forming material. The Undrained Shear Strength of this material has been assessed between 300 k Pa to 500 k Pa this value corresponds to stiff/ very stiff consistency of the soil. Any wide cut on the lower slope may threat the stability of this road.

By and large the slopes are stable under natural condition and presently free from any ground deformation/ slides except the failure of sheared rock slopes.

On the basis of the geological / geotechnical studies carried at the site and the facts mentioned above the following recommendations are being made which strictly needs to be incorporated in the construction of the proposed structure.

4. Recommendation:-

- (i) Form the road mostly by walling or half cut half- fill.
- (ii) Reduce the HP Bends to 2 Nos.
- (iii) Do not dispose the cut/ excavated material into valley side otherwise dispose the waste on topographically suitable dump yards.
- (iv) Excavate the hill side slope manually from top to bottom order to maintain overall stability of the slope. Cut slope should be rendered stable throughout the designed life of the road.
- (v) Blasting on the rock is prohibited.
- (vi) Design standards and specification laid down by IRC for similar category roads should be strictly followed.
- (vii) The road must have adequate long and cross drainage pattern.

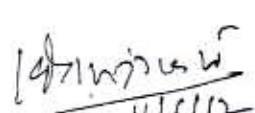
5. Conclusion:- On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the site was found geologically suitable for the construction of 2 km long Narayan bagad – Chopta motor road to Paithani village in Tharali Sub Division, District- Chamoli. Uttarakhand.

Photo copy attached

सहायक अभियन्ता
मस्यार्ड वण्ड नो. नि. वि.
नवाली (चमोली)

Photo copy attached

सहायक अभियन्ता
लोक निर्माण विभाग थराली


16/5/12

(Vijay Dangwal)

Sr. Geologist

Office of the Engineer in Chief,
PWD Dehradun