

135/10  
18/01/2019

To,  
The Executive Engineer  
(Construction Division)  
PWD Tharali

Subject: Submission of Geological Site assessment report of 2.0 Km long Chopta link motor road to Dudwa Gad motor road.

Dear Sir,

In response to your request of making a site visit for the assessment of 2.0 Km long Chopta link motor road to Dudwa Gad motor road between CH 0.0 to 2.0 Km, a site visit was made on 31/10/2018 of which a report has been prepared. Therefore it is requested to please find report of the above mentioned site attached with this letter.

Date: 14/01/2019

Yours Faithfully

*Tushar Sharma*

Tushar Sharma  
(Assistant Geologist)  
Office of the Chief Engineer  
PWD (Pauri Zone)

3. E (1) / AE-I

*CE-1*  
*18/1/19*

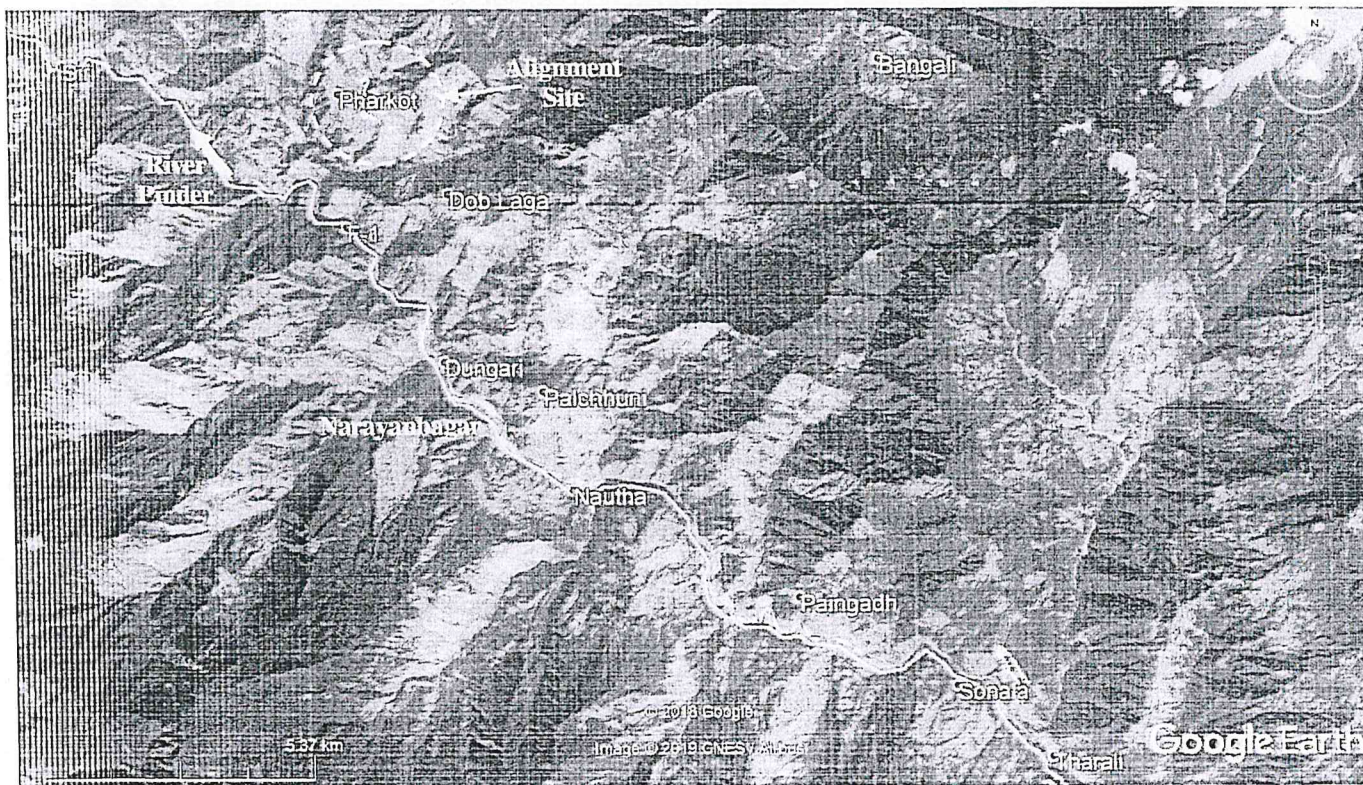
*P.A. Attended*

*[Signature]*  
सहायक अभियन्ता  
निर्माण ग्रुप (निर्माण विभाग)  
थराली सदरमुकाम

Geological Assessment of 2.0 Km long Chopta Link Motor Road to Dudwa Gad Motor  
Road between Chainage 0.0 to 2.0 Km, Narayanbagar Block,  
District Chamoli (Garhwal)  
Tushar Sharma  
14/01/2019

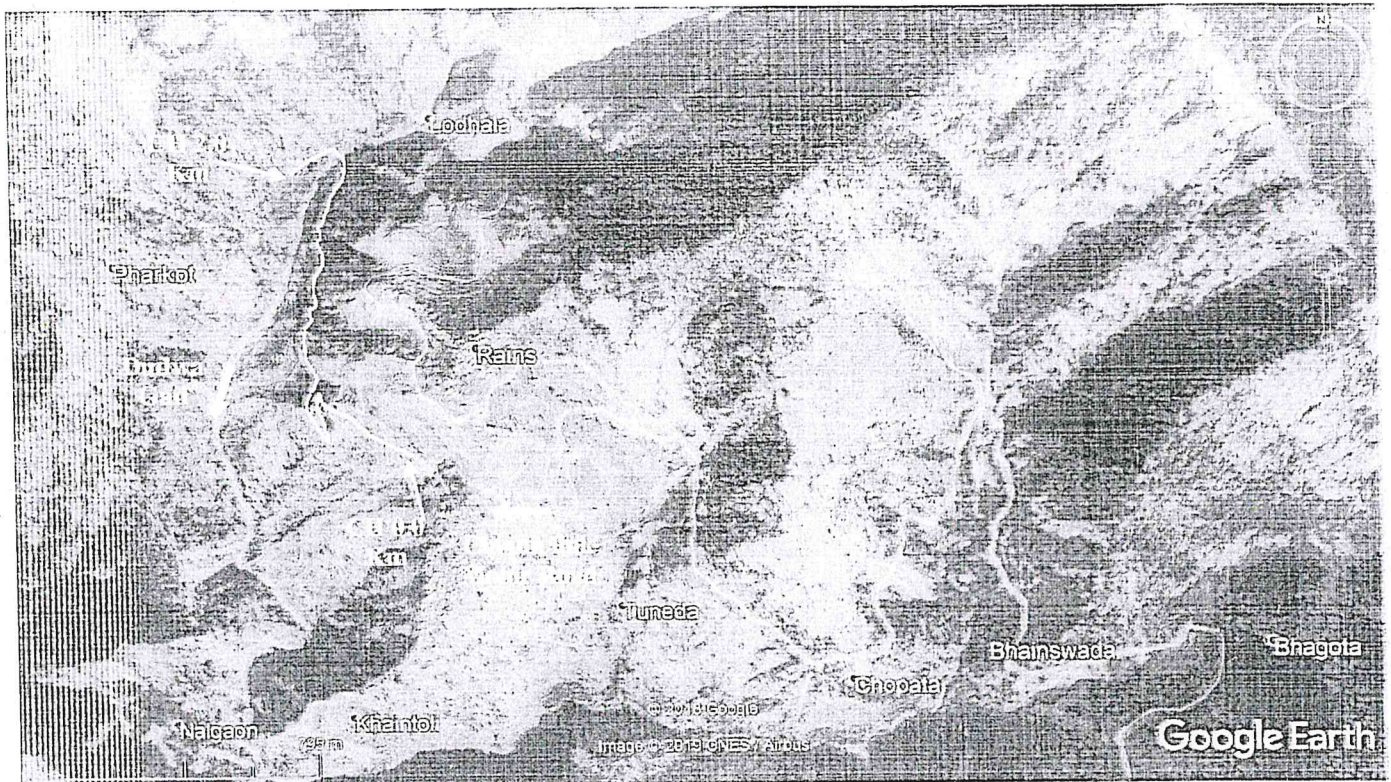
- 1- **Introduction:** The Construction Division, Tharali, has been entrusted for the construction of 2.0 Km long Chopta link motor road to Dudwa Gad motor road. In order to assess the geological conditions of the site of the road alignment site for its feasibility; Er. Vijay Kumar (Executive Engineer) Construction Division, PWD, Tharali asked for a geologist to make a site visit. Consequent to his request a visit to the proposed site was made on 31/10/2018; Er. Jeetendra Kumar (Assistant Engineer) and Er. Jagmohan Mehra (Junior Engineer), CD PWD, Tharali were present during the site visit.
- 2- **Topographical Information/Location:** The above mentioned road alignment site extends from CH 2.0 Km (end point) of Chopta link motor road and will connect Dudwa Gad, Lodla, Solta and Suneda villages in Narayanbagar Block, district Chamoli (Garhwal). The co-ordinates along with elevation, masl of the site at CH 0.0 Km are as follows-

Latitude	: 30°10'59.65"
Longitude	: 79°22'01.21"
Approximate Elevation	: 1452 M



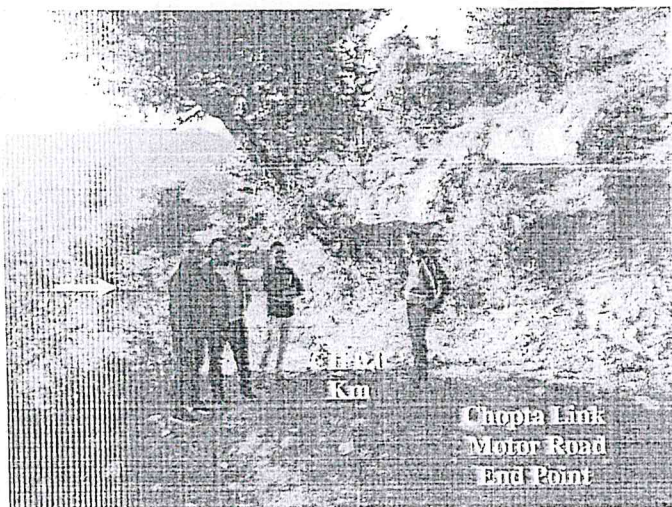
*Wider satellite view of the road alignment site*





*Closer satellite view of the road alignment site along with approximate hairpin bends*

**3- Geological Assessment:** Geologically, the road alignment corridor around the site falls under the crystallines of Baijnath-Gwaldam Nappe which consist of banded Quartz Biotite gneiss, augen gneiss, Mica schist and amphibolite. However, the road alignment passes through Overburden and slope wash material over which there is cultivation land (Naap/Civil land) along with a few patches of Mica Schist and Gneissic bed rock. The approximate strength of exposed rock mass varies between ~50-100 MPa and has undergone  $W_0$  to  $W_3$  weathering grade.

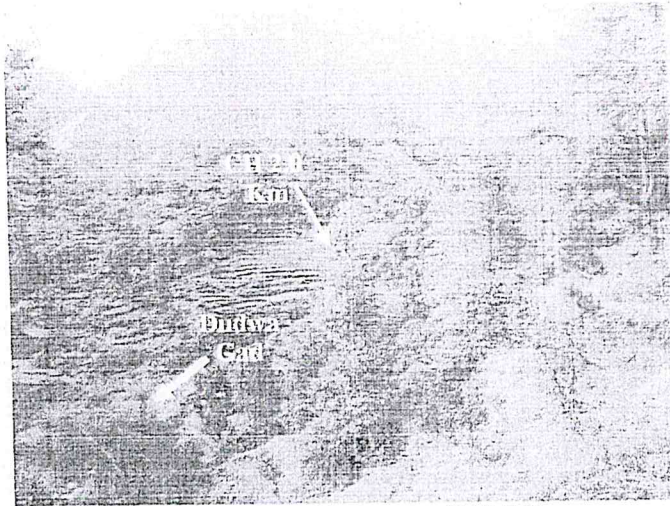


*View of site at CH 0.0 Km of the site*



*View of hill slope of the site*





*View of hill slope of the site near CH 2.0 Km*

The hill slope around the road alignment is gentle to moderately steep which declines at 20-30° towards South-East to East direction. There are 2 hairpin bends on the road alignment which are at CH 0.750 and 1.150 Km respectively. The road alignment has level to 1:20 of both rising and falling gradient with 1:40 gradient at the hairpin bends.

- 4- **Seismicity of the area:** According to Indian Standard code the site falls in seismic zone V of seismic zoning Map of India (IS 1893, part 1, 2002) which corresponds to intensity IX or above on MM scale.

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 recommendations this report will be automatically treated as cancelled.

#### **5- Recommendations:**

1. Blasting by explosives for the road construction is to be avoided as far as it is possible. Use of explosives will render the slope highly unstable as the slope consists of both rock and slope wash material. Rock excavation must be carried out by the skilled manual workers.
2. Rock excavation must be carried out by the skilled manual workers as at a few places slopes are prone to slide down in case of rapid disturbance.
3. The slopes on either sides of entire road must be protected by the construction of suitably designed retaining wall/ breast wall with proper weep holes, 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. Construction of large U-shaped longitudinal lined drain all along the hill side of the road with adequate provision of cross drains is necessary.