

Geological Assessment of 3.0 Km long Nandkesri-Poorna to Dhara Motor Road
between Chainage 0.0 to 3.0 Km, Dewal Block,
District Chamoli (Garhwal)

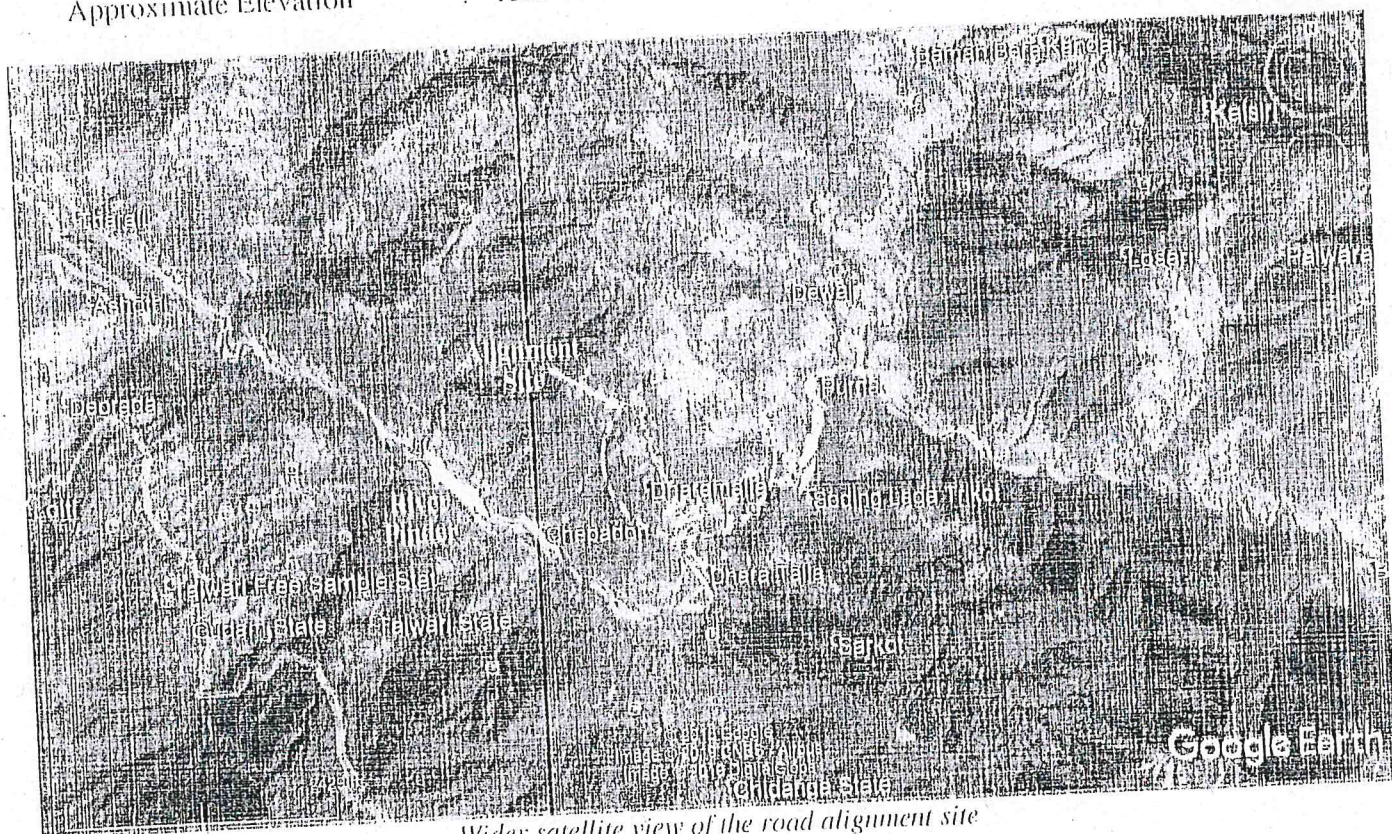
Tushar Sharma

23/01/2019

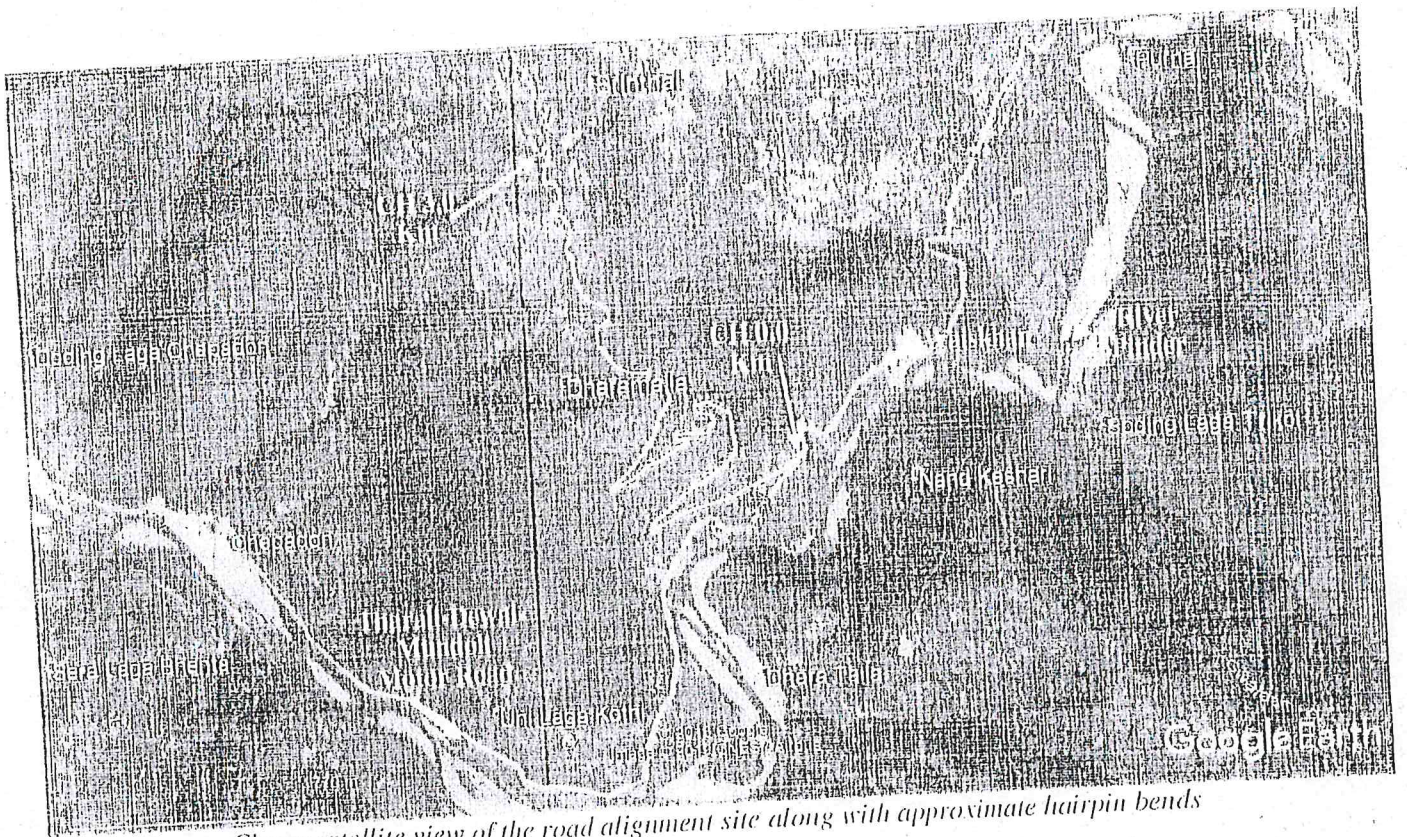
1- Introduction: The Construction Division, Tharali, has been entrusted for the construction of 3.0 Km long Nandkesri-Poorna to Dhara motor road between CH 0.0 and 3.0 Km. In order to assess the geological conditions of the site of road construction for its feasibility, Er. Vijay Kumar (Executive Engineer) 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. Chandi Prasab Bhatt (Junior Engineer), CD PWD, Tharali were present during the site visit.

2- Topographical Information/Location: The above mentioned road alignment site diverts from CH 11.0 Km of Tharali-Dewal-Mundoli motor road and will connect Dhara Malla and Dhara Talla villages in Dewal Block, district Chamoli (Garhwal). The co-ordinates along with elevation, masl of the site at CH 0.0 Km are as follows-

Latitude	: 30°02'30.80"
Longitude	: 79°34'07.58"
Approximate Elevation	: 1329 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 in the vicinity of thrust contact between crystallines of Baijnath-Gwaldam Nappe and Berinag formation of Almora and Jaunsar groups respectively. Lithologically, the site and its surrounding area consists of banded Granitic gneiss, Quartz Biotite gneiss, augen gneiss, amphibolite. However, the road alignment passes through Overburden and slope wash material over which there trees and shrubs (Forest land ~ 1.540 Km) and cultivation land (Naap land 1.460 Km) along with a few patches of Granitic and Gneissic bed rock. The approximate strength of exposed rock mass is around ~100 MPa and has undergone W_0 to W_3 weathering grade.

The hill slope around the road alignment is moderately steep ($30-40^\circ$). There are six hairpin bends on the road alignment which are at CH 0.625, 1.100, 1.275, 1.425, 1.675 and 2.925 Km respectively. The road alignment has level to 1:18-1:20 of rising gradient and no 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.

Photocopy Attest

सहायक अभियन्ता
निर्माण खण्ड लो० नि० वि०
थराली (चमोली)

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.
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.
5. Construct the road by half cut and half fill techniques and compact the fill material properly by dynamic compaction.
6. Disposal of muck and excavated waste on the lower slopes of this road is to be strictly avoided; failing to which will increase the weight of the lower slope resulting in the increase in driving forces. It is advised to dispose the muck on the identified site for muck disposal.
7. All the construction activities ought to be carried out as per the standard codes of practice laid by BIS and MORTH.

6- Conclusion: On the basis of the geological studies carried at the site and with the above recommendations, the site proposed 3.0 Km long Nandkesri-Poorna to Dhara motor road between CH 0.0 to 3.0 Km was found geologically suitable for road construction.

Letter No: 182/अ० वै०-07-पौड़ी/2019

Date: 23/01/2019

Photocopy Attested

सहायक अभियन्ता
निर्माण खण्ड लो० नि० वि०
थराली (चमोली)

Tushar Sharma

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

To.
The Executive Engineer
(Construction Division)
PWD Tharali

Subject: Submission of Geological Site assessment report of 3.0 Km long Nandkesri-Poorna to Dhara motor road.

Dear Sir,

In response to your request of making a site visit for the assessment of 3.0 Km long Nandkesri-Poorna to Dhara motor road between CH 0.0 to 3.0 Km, a site visit was made on 30/10/2018 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: 23/01/2019

Yours Faithfully



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

3.0 Km CD / A-E D
23/1/19

कन्द्य प्रति सलरपित

सहायक अभियन्ता
निर्माण खण्ड लो० नि० वि०
थराली, (चमोली)
Bm