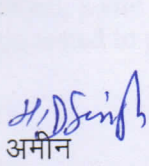


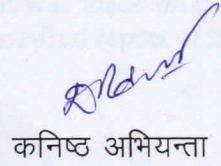
परियोजना का नाम:-

राज्य योजना के अन्तर्गत जनपद चमोली के विधानसभा क्षेत्र कर्णप्रयाग में कर्णप्रयाग-नौटी-पैठाणी मोटर मार्ग से कोली-भटोली तक मोटर मार्ग के नवनिर्माण हेतु 0.210 हे० सिविल वन भूमि, 0.350 हे० वनपंचायत भूमि एवं मक डिस्पोजल हेतु 0.040 हे० कुल 0.600 हे० सिविल/ वन पंचायत भूमि का लो०नि०वि० को हस्तान्तरण।

भू-वैज्ञानिक की आख्या

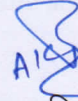
भू-वैज्ञानिक की आख्या संलग्न है।


अमीन


कनिष्ठ अभियन्ता

अस्थाई खण्ड लो०नि०वि०

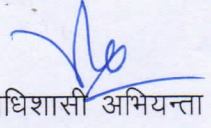
गौचर


A/D

सहायक अभियन्ता

अस्थाई खण्ड लो०नि०वि०

गौचर


अधिशाली अभियन्ता

अस्थाई खण्ड लो०नि०वि०

गौचर

Geological Assessment of 4.0 Km long Karanprayag-Nauti-Paithani Motor Road to Koli-Bhatoli Motor Road Alignment corridor between Chainage 0.0 to 4.0 Km, Gauchar Division, District Chamoli (Garhwal)

Tushar Sharma

26/04/2018

1- Introduction: Temporary Division, Gauchar, has been entrusted for the construction of 4.0 Km long Karanprayag-Nauti-Paithani Motor Road to Koli-Bhatoli Motor Road between CH 0.0 to 4.0 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. Karan Singh Rana (Executive Engineer) Temporary Division, PWD, Gauchar asked for a geologist to make a site visit. Consequent to his request a visit to the proposed road alignment site was made on 09/03/2018; Er. Mohit Mishra, Er. Deepak Rawat and Er. Amit Thapliyal (Junior Engineers) PWD, Pokhri were present during the site visit.

2- Topographical Information/Location: The above mentioned motor road alignment diverts from CH 17.90 Km of Karanprayag-Nauti-Paithani Motor Road and connects Villages Koli, Bhatoli and will terminate near the school of Gairoli village in Gauchar Division, district Chamoli (Garhwal). The co-ordinates along with elevation, masl of the site are as follows-

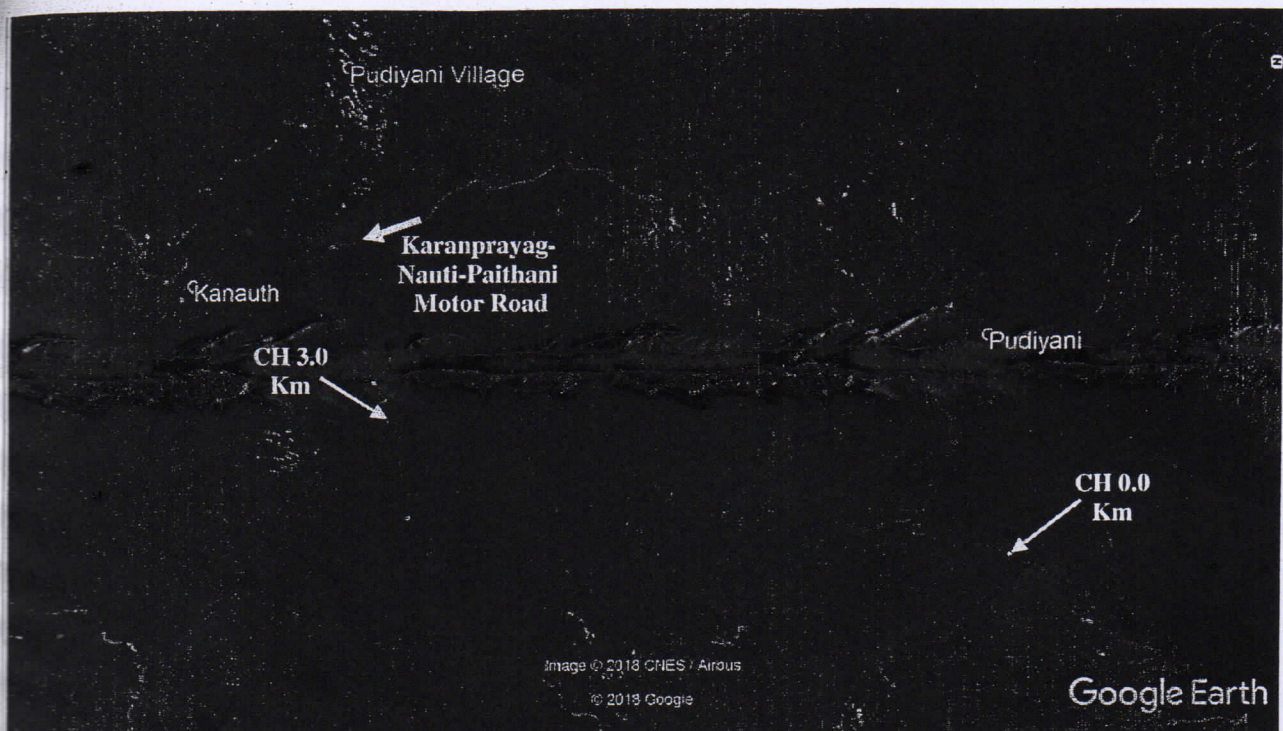
Latitude : 30°13'07.94"

Longitude : 79°14'06.73"

Approximate Elevation : 1588 M



Broader Satellite View of the Site

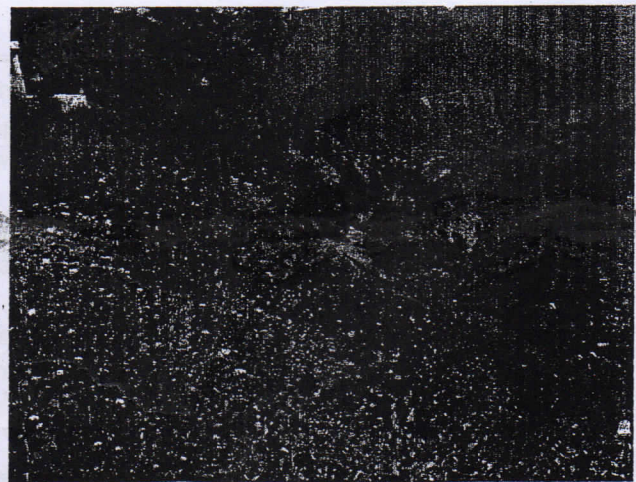


Closer Satellite View of the Road Alignment Site

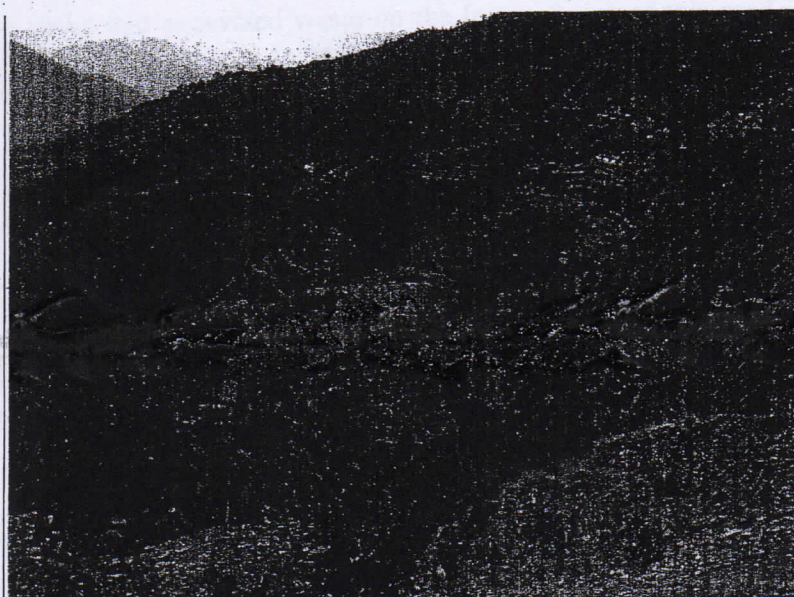
- 3- **Geological Assessment:** Geologically, the road alignment site area falls under the Meta-Sedimentaries of Lesser Himalaya. The rocks exposed in the area consist of jointed and weathered Hard Quartzite, which belong to Nagthat/Berinag Formation of Jaunsar Group. However, the road alignment passes through overburden and slope wash material cover having vegetation (Van Panchayat land) cultivation land (Naap khet) with patches of hard Quartzitic bed rock. The hill slope of the road alignment site is gentle moderately steep which declines at $\sim 25-35^\circ$ roughly towards East direction. The approximate strength of exposed rock mass is around ~ 100 MPa and has undergone W_0 to W_2 weathering grade.



View of site at CH 0.0 Km



View of hill slope at the site below KNP motor road



View of hill slope of the site around village Gairoli

There are three hairpin bends on the road alignment which are at CH 0.150, 0.400 and 1.400 Km respectively. The road alignment overall has 1:20 of falling and 1:20 to 1:60 of rising gradient with 1:60 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 and 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.

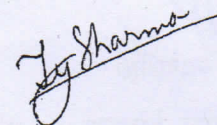
5- **Recommendations:**

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 jointed/ fractured rock mass and overburden/slope wash material.
2. Excavation work must be carried out by skilled manual workers as the rock slopes are prone to slide down in case of rapid disturbance.
3. The slopes on either sides of the 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.
3. Construction of large U-shaped longitudinal concrete lined drain all along the hill side of the road with adequate provision of cross drains is necessary.
4. Construct the road by half cut and half fill techniques and compact the fill material properly by dynamic compaction.

5. 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.
 6. All the construction activities ought to be carried out as per the standard codes of practice laid by the BIS and MORTH.
- 6- **Conclusion:** On the basis of the geological/geotechnical studies carried at the site and with the above recommendations, the site proposed for 4.0 Km long Karanprayag-Nauti-Paithani motor road to Koli-Bhatoli motor road alignment between CH 0.0 to 4.0 Km was found geologically suitable for construction.

Letter No: 942/भू० वै०-7-पौड़ी /2018

Date: 26/04/2018



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