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To,
The Executive Engineer
(Construction Division)
PWD Baijro

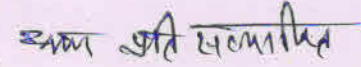

Subject: Submission of Geological Site assessment report of .0 Km long Danda Gween (Gram Sabha Gween) Motor Road from CH 0.0 to 4.0 Km.


Dear Sir,

In response to your request of making a site visit for the assessment of .0 Km long Danda Gween (Gram Sabha Gween) Motor Road from CH 0.0 to 4.0 Km near Tandola village, in district Pauri (Garhwal), a site visit was made on 14/06/2017 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: 15/07/2017

Yours Faithfully



सहायक अभियन्ता
निर्माण खण्ड लोहाचिठिया
Smt. वैजरा (महोदय)


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

Geological Assessment of 4.0 Km long Danda Gween (Gram Sabha Gween) Motor Road Alignment corridor between Chainage 0.0 to 4.0 Km.

Baijro Division, Pauri (Garhwal)

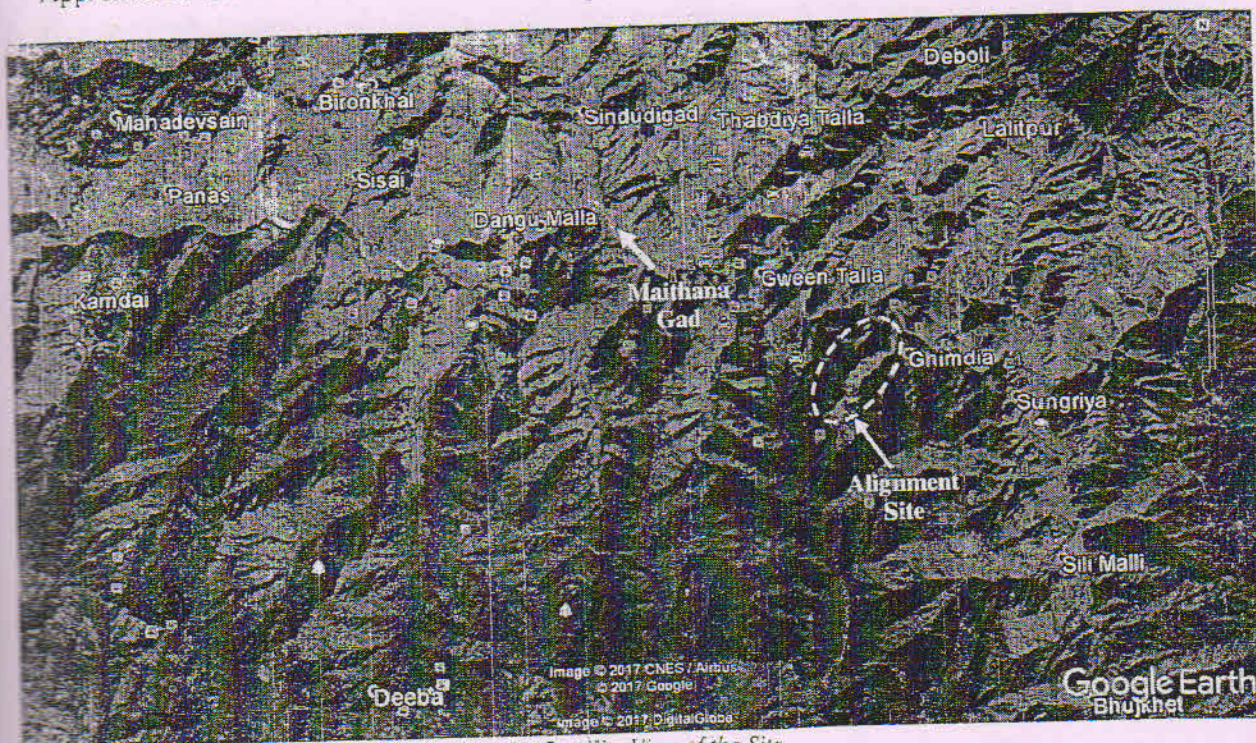
Tushar Sharma

15/07/2017

1- **Introduction:** The Construction Division, Baijro, has been entrusted for the construction of 4.0 Km long Danda Gween (Gram Sabha Gween) Motor Road from CH 0.0 to 4.0 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. R.P. Singh (Executive Engineer) Construction Division, PWD, Baijro asked for a geologist to make a site visit. Consequent to their request a visit to the proposed bridge site was made on 14/06/2017; Er. Yogesh Kumar (Junior Engineer) CD, PWD, Baijro was present during the site visit.

2- **Topographical Information/Location:** The site proposed for the construction of 4.0 Km long Danda Gween (Gram Sabha Gween) Motor Road from CH 0.0 to 4.0 Km diverts from CH 4.0 Km of Maithanaghat-Gween-Bawansa-Rasiyamahadev Motor Road near Tandola village, Baijro Division in district Pauri (Garhwal). The co-ordinates along with elevation, masl of the site at CH 0.0 Km are as follows-

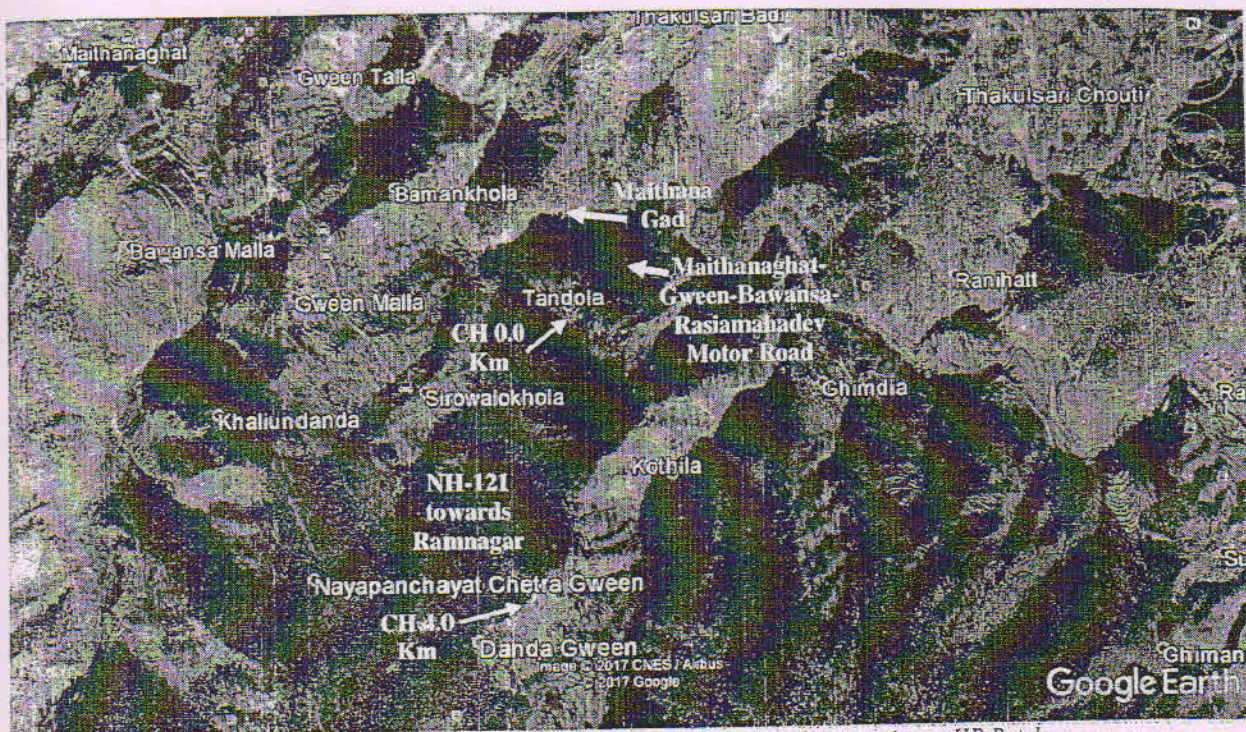
Latitude	:	29° 48' 54.96"
Longitude	:	79° 04' 57.78"
Approximate Elevation	:	1543 M



Broader Satellite View of the Site

Photo copy attached

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बैजरो (महाराष्ट्र)



Closer Satellite View of the Road Alignment Site with approximate HP Bends

- 3- **Geological Assessment:** Geologically, the road alignment site area falls under the Meta-Sedimentaries of Lesser Himalaya. The area lies in the vicinity of junction between Nagthat Formation Jaunsar Formation and Ramgarh Group. The rocks exposed in the area consist of Quartzite, Phyllitic Quartzite and Phyllite which belong to Nagthat Formation and Ramgarh Group respectively. The rocks exposed in the area are jointed and weathered especially phyllitic rocks but on the hill slope of the road alignment site rock outcrop is covered under thin to thick veneers of overburden and slope wash material over which there are cultivation land/naap khet/banjar khet (~2.0 Km) and reserve forest lan (~2.0 Km). The approximate strength of exposed rock mass is around ~100 MPa and has undergone W_0 to W_3 weathering grade.

The hill slope angle at the road alignment site is ~30-45°. There are total five Hair Pin Bends on the alignment which are at CH 1.250, 1.700, 2.475, 2.850 and 3.375 Km. The road alignment has a rising grade between 1:17 to 1:40 with no falling grade.

- 4- **Seismicity of the area:** According to Indian Standard code the site falls in seismic zone IV of seismic zoning Map of India (IS 1893, part 1, 2002) which corresponds to intensity VIII 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

Photo copy attached

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देवरों (गढ़वाल)

and slope wash material.

2. Rock excavation must be carried out by the skilled manual workers as the rock slopes are prone to slide down in case of rapid.
 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 concrete 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 the BIS and MORTH.
 8. It is observed that the south eastern hill slopes of the alignment are slightly steep and are covered by slope wash material and debris/muck which at many places are naked therefore it is advised to plant soil binding vegetation like Didonia, Lemon grass or Ram Baans on the these patches.
- 6- **Conclusion:** On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the alignment site proposed for construction of 4.0 Km long Danda Gween (Gram Sabha Gween) Motor Road from CH 0.0 to 4.0 Km was found geologically suitable for road construction.

Letter No: 1339 / भू० वै०-12-पौड़ी / 2017

Date: 15/07/2017

Photocopy attached

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