

प्रारूप-33

परियोजना का नाम :- जनपद टिहरी गढ़वाल के विधानसभा क्षेत्र देवप्रयाग के विकास खण्ड कीर्तिनगर में जैधार बैण्ड से माछनी तक मोटर मार्ग का नवनिर्माण कार्य।

भू-वैज्ञानिक की आख्या

(प्रस्तावित स्थल की भू-वैज्ञानिक द्वारा निर्गत अद्यतन निरीक्षण आख्या प्राप्त कर पृष्ठ सं० 95-99 पर संलग्न की गई है।)


अपर सहायक अभियन्ता
अ०ख० लो०नि०वि० श्रीनगर
मु० कीर्तिनगर।


सहायक अभियन्ता
अ०ख० लो०नि०वि० श्रीनगर
मु० कीर्तिनगर।


अधिसासी अभियन्ता
अ०ख० लो०नि०वि० श्रीनगर
मु० कीर्तिनगर।

To.
The Executive Engineer
(Temporary Division)
PWD, Kirtinagar

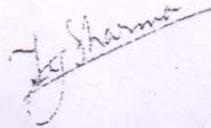
Subject: Submission of Geological Site assessment report of 3.0 Km long Jaidhaar Bend to Maachni motor road.

Dear Sir.

In response to your request of making a site visit for the assessment 3.0 Km long Jaidhaar Bend to Maachni motor road between CH 0.0 and 3.0 Km. in Kirtinagar block, district Tehri (Garhwal), a site visit was made on 08/07/2020 & 31/08/2020 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: 31/08/2020

Yours Faithfully



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

P.C. Attested

सहायक सहायक
अस्थायी वि.
वीनगर वि. वि.

Photo Copy Attested

Assistant Engineer
T.D. P.W.D. Srinagar
H.Q. - Kirtinagar

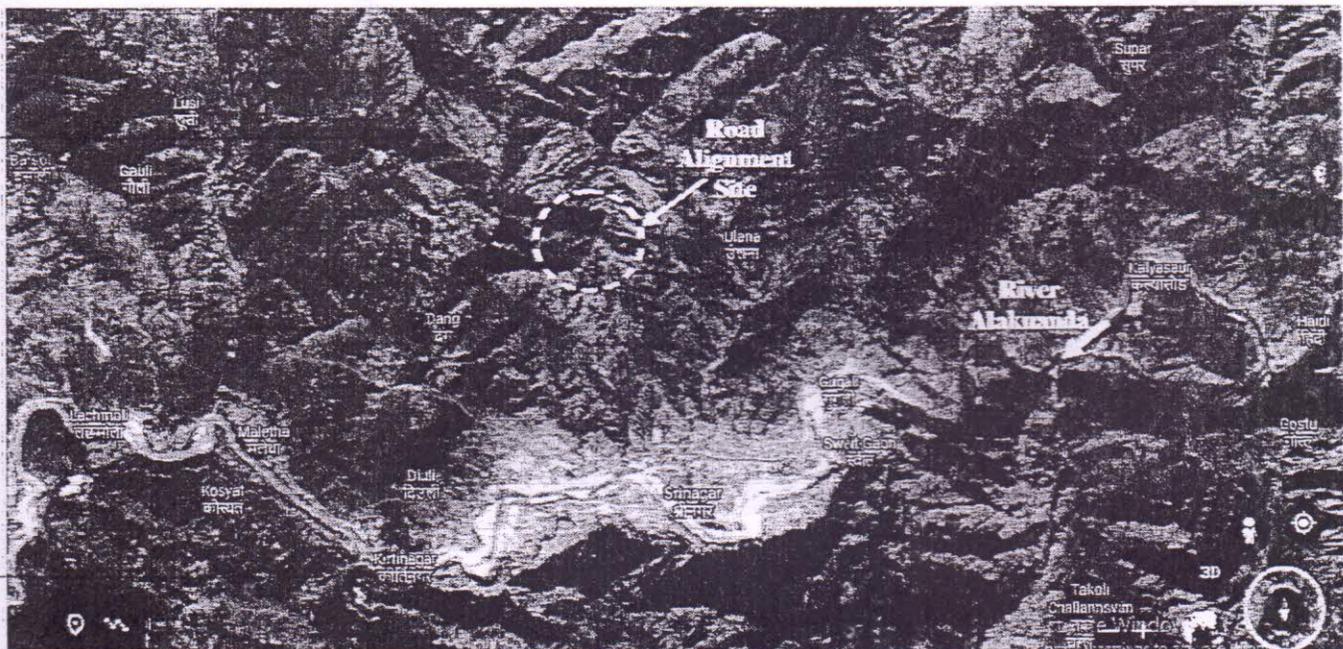
Geological Assessment of 3.0 Km long Jaidhaar Bend to Maachni Motor Road
Alignment corridor between CH 0.0 & 3.0 Km.
Kirtinagar Block, District Tehri (Garhwal)

Dr. Tushar Sharma

31/08/2020

- 1- **Introduction:** The Temporary Division, Kirtinagar, has been entrusted for the construction of 3.0 Km long Jaidhaar Bend to Maachni motor road between CH 0.0 & 3.0 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. S.C. Bhatt (Executive Engineer) Temporary Division, PWD, Kirtinagar asked for a geologist to make a site visit. Consequent to his request a visit to the proposed road alignment site was made on 08/07/2020 & 31/08/2020; Er. Kuldeep Arya (Junior Engineer) TD, PWD, Kirtinagar was present during the site visit.
- 2- **Topographical Information/Location:** The above mentioned motor road alignment site diverts from Km 14 hectometer 8-10 of Kilkilleshwar-Silkakhaal motor road connecting Mahendragoon, Daanda and Maachni villages of Kirtinagar block, district Tehri (Garhwal). The co-ordinates along with elevation, masl of the site at CH 0.0 Km are as follows:-

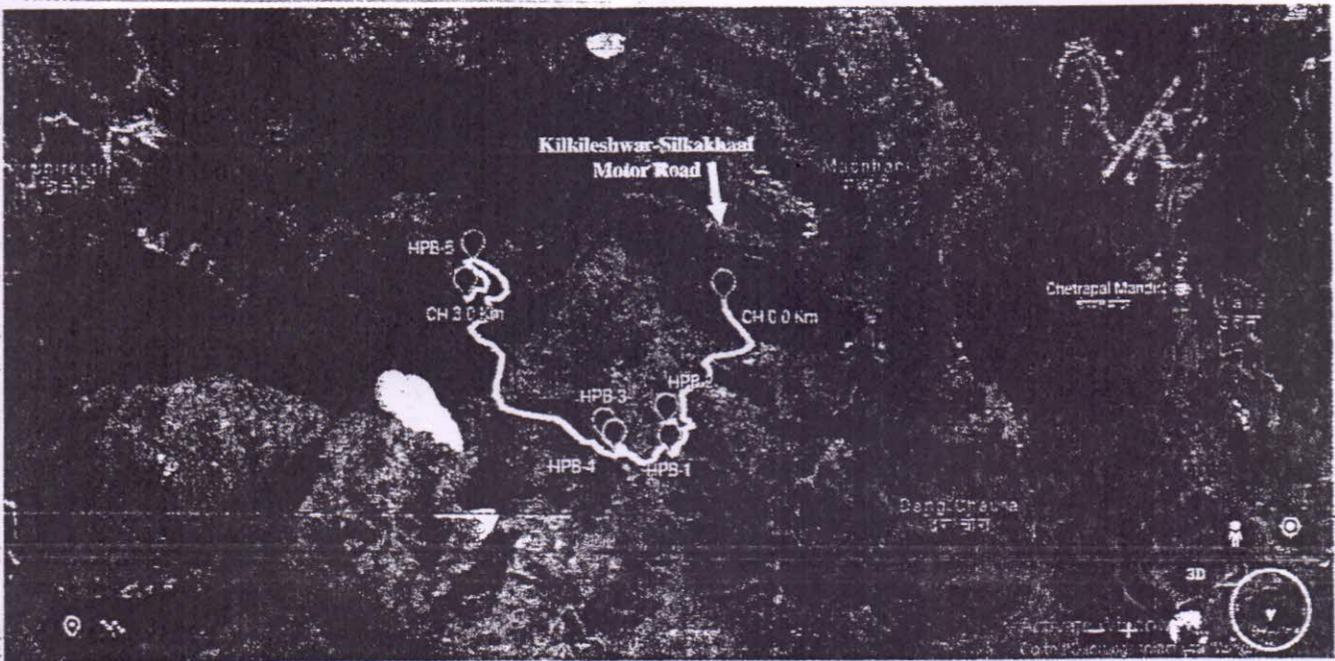
Latitude : 30°15'40.90"
 Longitude : 78°47'12.22"
 Approximate Elevation : 1433 M



Broader Satellite View of the Site

Photo Copy Attested

Assistant Engineer
 T.D. PWD, Srinagar
 H.Q. - Kirtinagar



Closer Satellite View of the Road Alignment Site with Approximate Hairpin Bends

3- **Geological Assessment:** Geologically, the site falls under the Meta-sedimentaries of Garhwal Himalayas (Lesser Himalaya) in the vicinity of a regional thrust known as North Almora Thrust (NAT) which separates Jaunsar group (Chandpur/Nagthat Formation) with Damtha group (Rautgara Formation). The rocks exposed in the area consist of white Quartzite, Pink Quartzite with Shale belonging to Nagthat & Chandpur Formations of Jaunsar Groups respectively. However, the slope around the site is covered with overburden/slope wash material (SWM) along with patches of Quartzite bed rock over which there is cultivation land and trees (Naap Khet, Civil land & Reserve Forest land).

The approximate strength of exposed rock mass in the vicinity of the site is around ~50-100 MPa and has undergone W_0 to W_2 weathering grade. The hill slope of the site is gentle to moderate ($\sim 20^\circ - 40^\circ$). There are five hairpin bends on the road alignment which are at CH 0.675, 0.900, 1.350, 1.500 and 2.800 Km respectively. The road alignment has 1:20 of both rising gradient and falling gradient with 1:40 gradient at the hairpin bends.

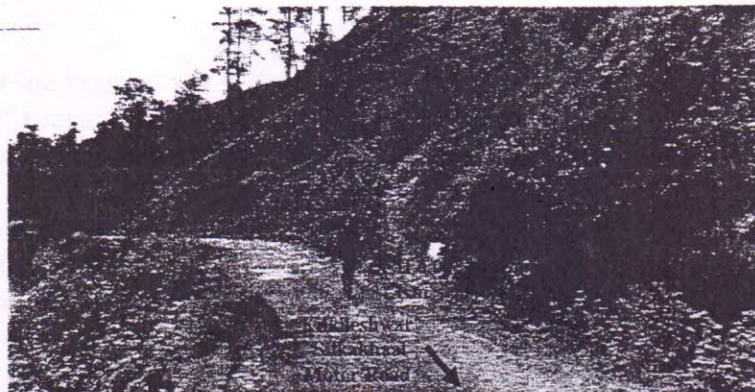
4- **Seismicity of the area:** According to Indian Standard code the site falls in seismic zone IV of seismic zoning Map of India (IS 1893, part 1, 2002) which corresponds to intensity VIII on MM scale.

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 motor road failing to these recommendations this report will be automatically treated as cancelled.

Photo Copy Attested

Assistant Engineer
T.D. P.W.D. Srinagar
H.Q. - Kirtinagar

P.C. Asth
सहायक अभियन्ता
अस्थाई खण्ड लो.नि.वि.
कीर्तिनगर-मु. कीर्तिनगर टि. ६०



View of motor road site at CH 0.0 Km

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 generally slope consists of overburden and 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. Steep, debris covered and unstable 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.
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. Doing so will help in decreasing the chances of subsidence/slide during rainy season.
5. Construct the road by half cut and half fill techniques and compact the fill material properly by dynamic compaction.
6. Construct causeway/culvert/scupper at places where the motor road alignment passes through a couple of small streams/nallas; as these nallas may damage the motor road especially during rainy season.
7. 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.
8. All the construction activities ought to be carried out as per the standard codes of practice laid by the BIS and MORTH.

Photo Copy Attested
je
 Assistant Engineer
 T.D. P.W.D. Srinagar
 H.Q. - Kirtinagar

P.C. Attested
je
 सहायक अभियन्ता
 अस्पाईं जपड लो.नि.वि.
 कोनगर - मु. कोननगर दि. २०

6- **Conclusion:** On the basis of the geological studies/observations carried at the site and with the above recommendations. the site proposed for 3.0 Km long Jaidhaar Bend to Maachni motor road between CH 0.0 and 3.0 Km was found geologically suitable for construction.

Note: On the basis of the geological studies carried at the site with limited accessibility to the hill slopes this is a generalized report. The conditions of the site are liable to change during/after the construction work, in case any opinion is required during or post construction then the geologist should be separately communicated.

Place: TD PWD Kirtinagar

Date: 31/08/2020

Tushar Sharma

Dr. Tushar Sharma
(Assistant Geologist)
Office of the Chief Engineer
PWD, Pauri (Garhwal) Zone

P.C. Attested

HP

सहायक अभियंता
असतोई नगरपालिका
कीर्तिनगर-सुनार काठमाडौं टि. १०

Photo Copy Attested

HP
Assistant Engineer
T.D. P.W.D. Srinagar
H.Q. - Kirtinagar