परियोजना का नाम :– जनपद चमोली के विधानसभा क्षेत्र बद्रीनाथ के विकास खण्ड पोखरी के अन्तर्गत मैठाना–स्यालतरी मोटर मार्ग के नव निर्माण हेतु 1.631 है० सिविल वन भूमि हस्तान्तरण प्रस्ताव।

भू–वैज्ञानिक की आख्या

भू–वैज्ञानिक की आख्या संलग्न है।

अमीन	कनिष्ठ अभियन्ता	सहायक अभियन्ता	अधिशासी अभियन्ता
नि०ख०,लो०नि०वि०	निर्माण खण्ड लो०नि०वि०	निर्माण खण्ड लो०नि०वि०	निर्माण खण्ड लो०नि०वि०
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Geological Assessment of 4.0 Km long Maithana-Syaaltari Motor Road Alignment corridor between Chainage 0.0 to 4.0 Km, Pokhri Division, District Chamoli (Garhwal)

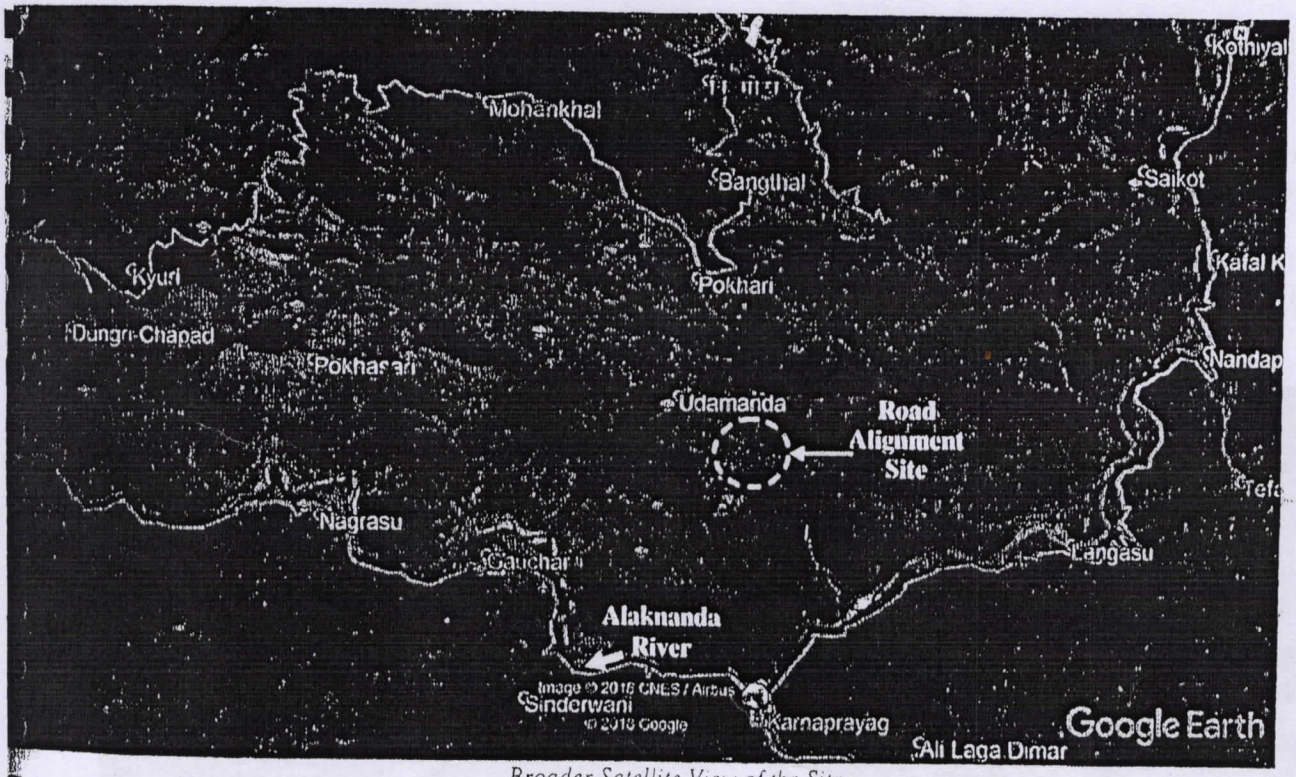
Tushar Sharma

30/12/2017

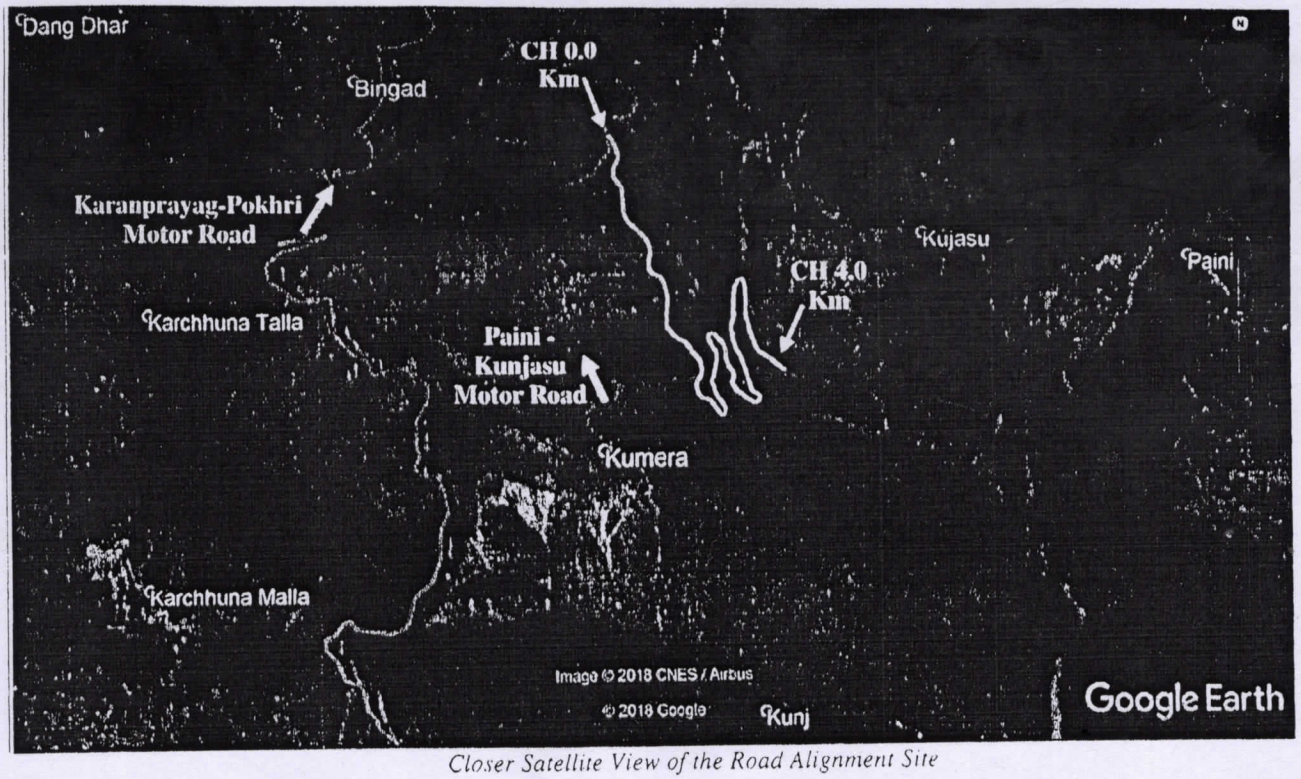
1- **Introduction:** The Construction Division, Pokhri, has been entrusted for the construction of 4.0 Km long Maithana-Syaaltari Motor Road between CH 0.0 to 4.0 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. Rajesh Chandra (Executive Engineer) Construction Division, PWD, Pokhri asked for a geologist to make a site visit. Consequent to his request a visit to the proposed road alignment site was made on 13/10/2017; Er. Ashok Tamta and Er. Kuldeep Singh Rawat (Junior Engineers) PWD, Pokhri were present during the site visit.

2- **Topographical Information/Location:** The alignment site proposed for the construction of above mentioned Motor Road diverts from CH 5.0 Km of Paini-Kunjasu (PMGSY) Motor Road and will connect Maithana with Syaaltari village like of Pokhri Division, district Chamoli (Garhwal). The co-ordinates along with elevation, masl of the site are as follows-

Latitude	:	30°18'46.0"
Longitude	:	79°11'25.60"
Approximate Elevation	:	1610 M

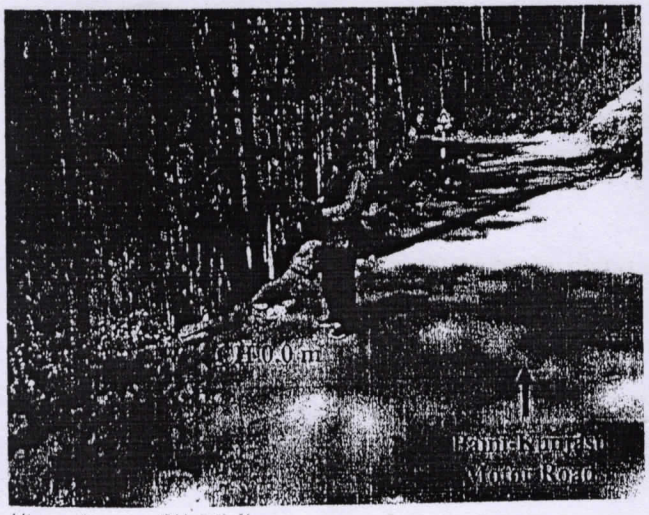


Broader Satellite View of the Site



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 Talc-Serisite Schist, Chlorite Schist & Quartzite which belong to Bhatwari and Barkot units of Ramgarh Group. The hill slope of the site area is moderately steep which declines at ~ 30°-50° more or less towards East direction. The road alignment passes through cultivation land (Naap Khet and Civil Land), vegetation/oak trees/shrubs (Forest Land)along with patches of jointed/weathered bed rock. The approximate strength of exposed rock mass is around ~60-100 MPa and has undergone W_1 to W_3 weathering grade. There are total 4 hairpin bends on the road alignment which are at CH 1.850, 2.000, 2.400, and 3.325 Km respectively.



View of site at CH 0.0 Km

Broader view of the site

The road alignment overall has level to 1:20 of falling and no rising 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 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 Maithana-Syaaltari Motor Road alignment was found geologically suitable for construction.

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Date: 30/12/2017

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