परियोजना का नामः– मा0मु0घो0 ग्रामीण सड़क योजना के अन्तर्गत गौचर–सिदोली मोटर मार्ग से ग्राम पनाई अनुसूचित जाति बस्ती मोटर मार्ग नवनिर्माण हेतु 0.210 हे0 वन पंचायत भूमि, 0.035 एवं मक डिस्पोजल हेतु 0.15 हे0 कुल 0.260 हे0 वन पंचायत/सिविल वन भूमि का लो0नि0वि0 को हस्तान्तरण।

भू–वैज्ञानिक की आख्या

भू–वैज्ञानिक की आख्या संलग्न है।

अमीन	कनिष्ठ अभियन्ता	सहायक अभियन्ता	अधिशासी अभियन्ता
	निर्माण खण्ड लो0नि0वि0	निर्माण खण्ड लो0नि0वि0	निर्माण खण्ड लो0नि0वि0
	गौचर	गौचर	गौचर

अधिशासी अभियन्ता
निर्माण खण्ड लो0नि0वि0
गौचर

Geological Assessment of 0.850 Km long Gauchar-Sidoli Motor Road to Panaai Link Motor Road Alignment corridor between Chainage 0.0 to 0.850 Km, Gauchar Division, District Chamoli (Garhwal)

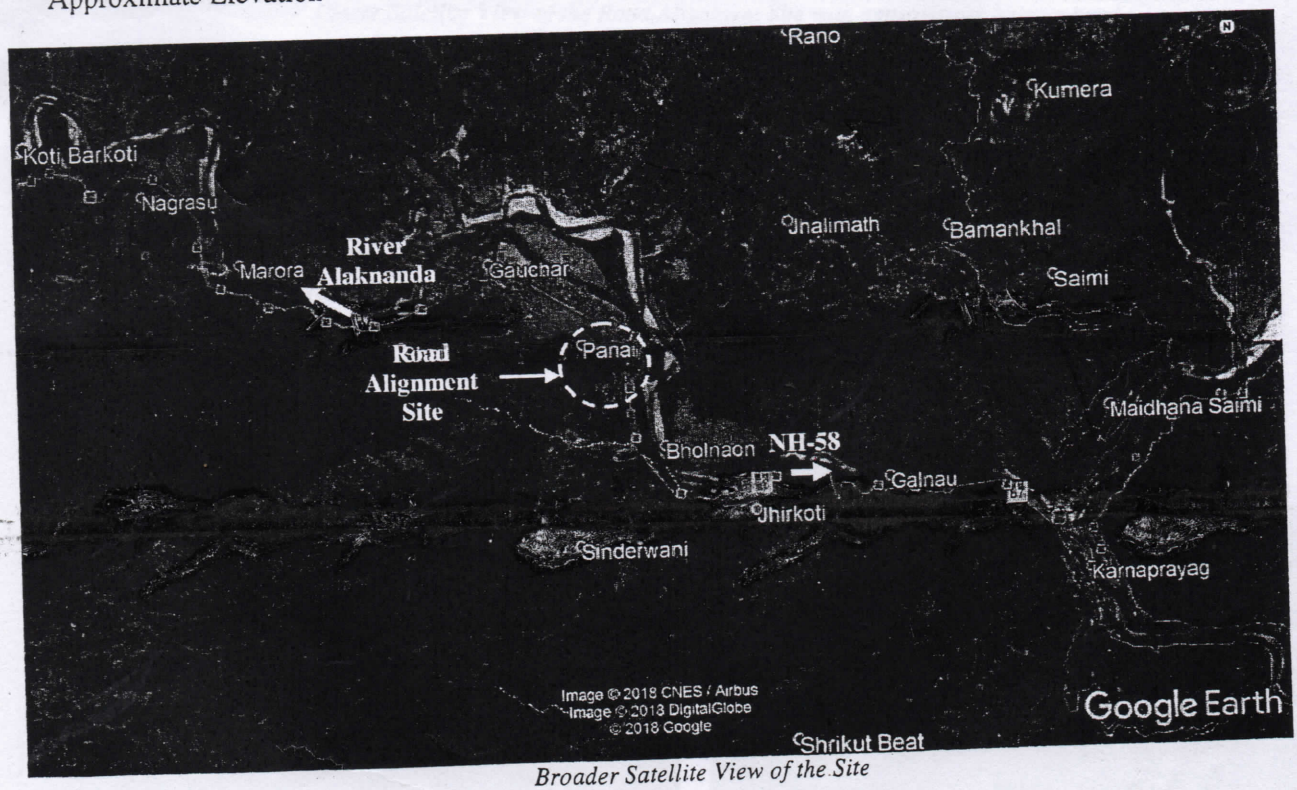
Tushar Sharma

26/04/2018

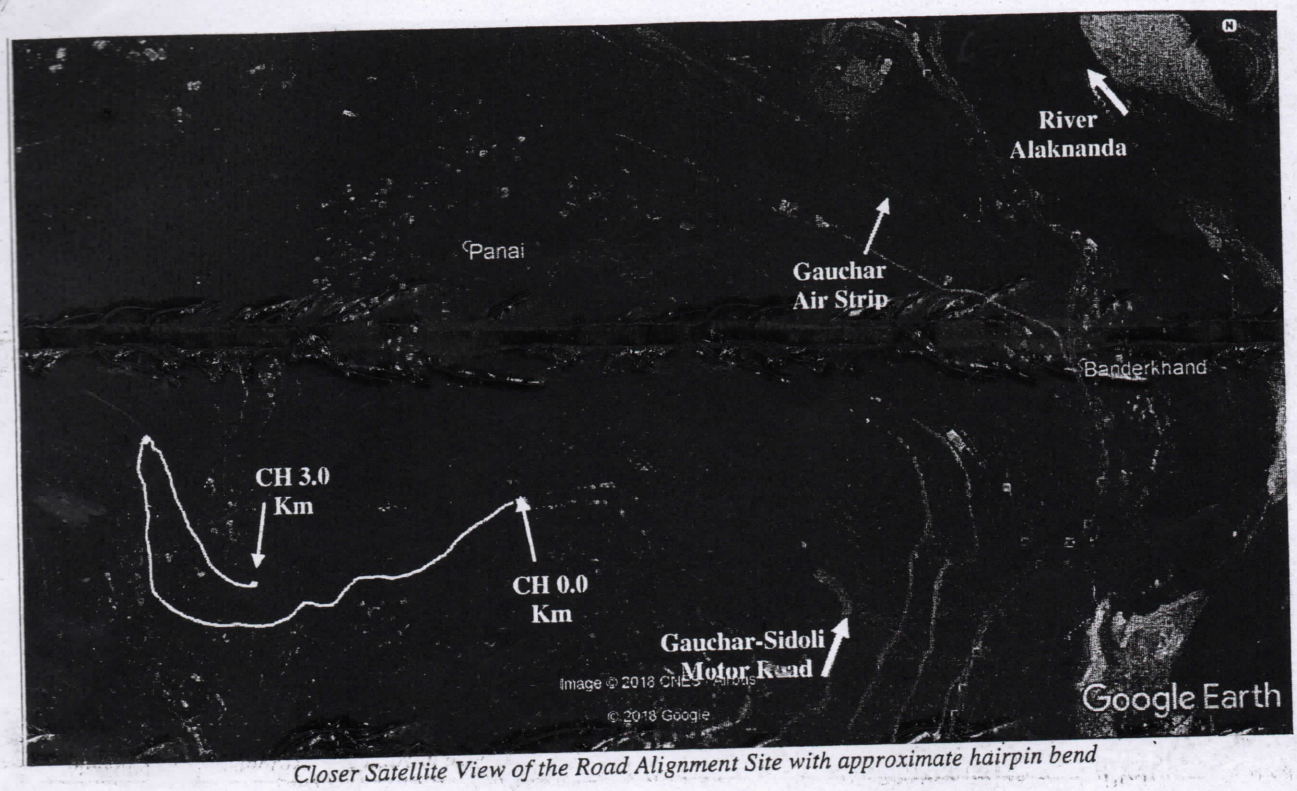
1- **Introduction:** The Temporary Division, Gauchar, has been entrusted for the construction of 0.850 Km long Gauchar-Sidoli motor road to Panaai link motor road between CH 0.0 to 0.850 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. Karan Singh Rana (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 08/03/2018; Er. Neha Mandolia, Er. Tajbar Gusain (Junior Engineers) PWD, CD Gauchar 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 4.0 Km of Gauchar-Sidoli Motor Road in Gauchar Division, district Chamoli (Garhwal). The co-ordinates along with elevation, masl of the site are as follows-

Latitude	:	30°16'46.20"
Longitude	:	79°09'42.60"
Approximate Elevation	:	985 M

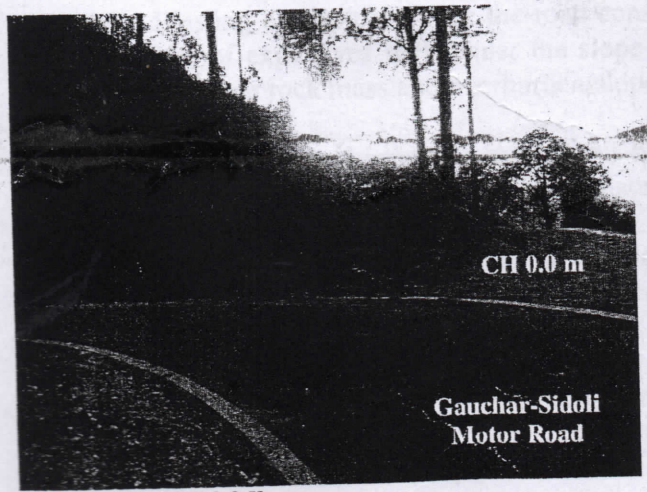


Broader Satellite View of the Site



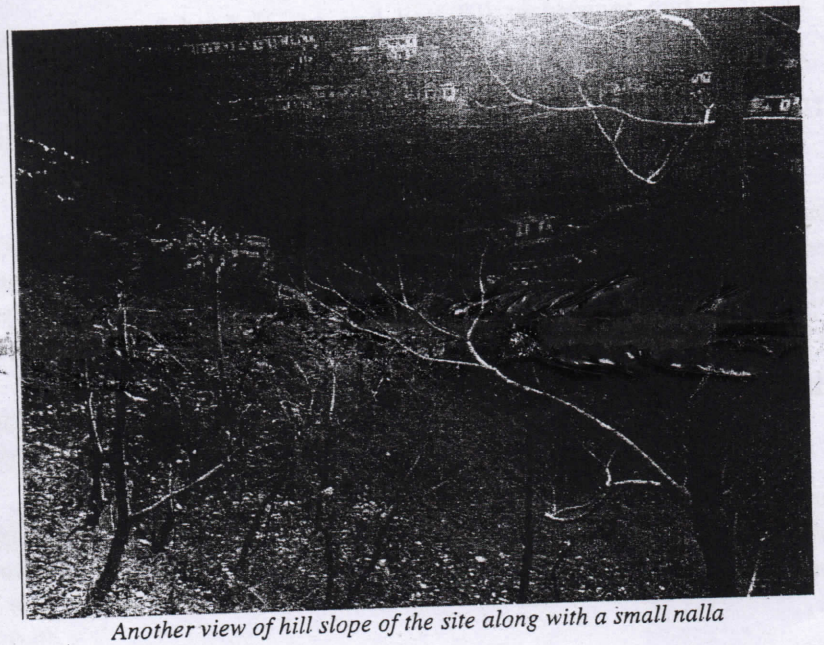
Closer Satellite View of the Road Alignment Site with approximate hairpin bend

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 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 ~20-30° roughly towards North direction. The approximate strength of exposed rock mass is around ~100 MPa and has undergone W_0 to W_2 weathering grade. The alignment passes through a seasonal nala between CH 0.250 and 0.300 Km.



View of site at CH 0.0 Km

View of hill slope at the site



Another view of hill slope of the site along with a small nalla

There is one hairpin bend on the road alignment which is at CH 0.650 Km. The road alignment overall has level to 1:20 of rising and 1:20 of 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 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. Construct small pulliya/scupper/culvert on the seasonal nalla between CH 0.250 and 0.300 Km so as to avoid any damage to the road during monsoon season.

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.

6- <u>Conclusion</u>: On the basis of the geological/geotechnical studies carried at the site and with the above recommendations, the site proposed for 0.850 Km long Gauchar-Sidoli motor road to Panaai link motor road alignment between CH 0.0 to 0.850 Km was found geologically suitable for construction.

Letter No: 943/भू० वै०-7-पौड़ी /2018 **Date: 26/04/2018**

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