

To,
The Executive Engineer
(Construction Division)
PWD Baijro

Subject: Submission of Geological Site assessment report of 7.0 Km long Syunsi-Aamkulaun Motor Road from CH 0.0 to 7.0 Km.

Dear Sir,

In response to your request of making a site visit for the assessment of 7.0 Km long Syunsi-Aamkulaun Motor Road from CH 0.0 to 7.0 Km near village Syunsi, 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: 11/07/2017

Yours Faithfully



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

सहायक अभियन्ता



सहायक अभियन्ता
निर्माण खण्ड ले० नि० वि०
बैजरो (गढ़वाल)

(64) 9

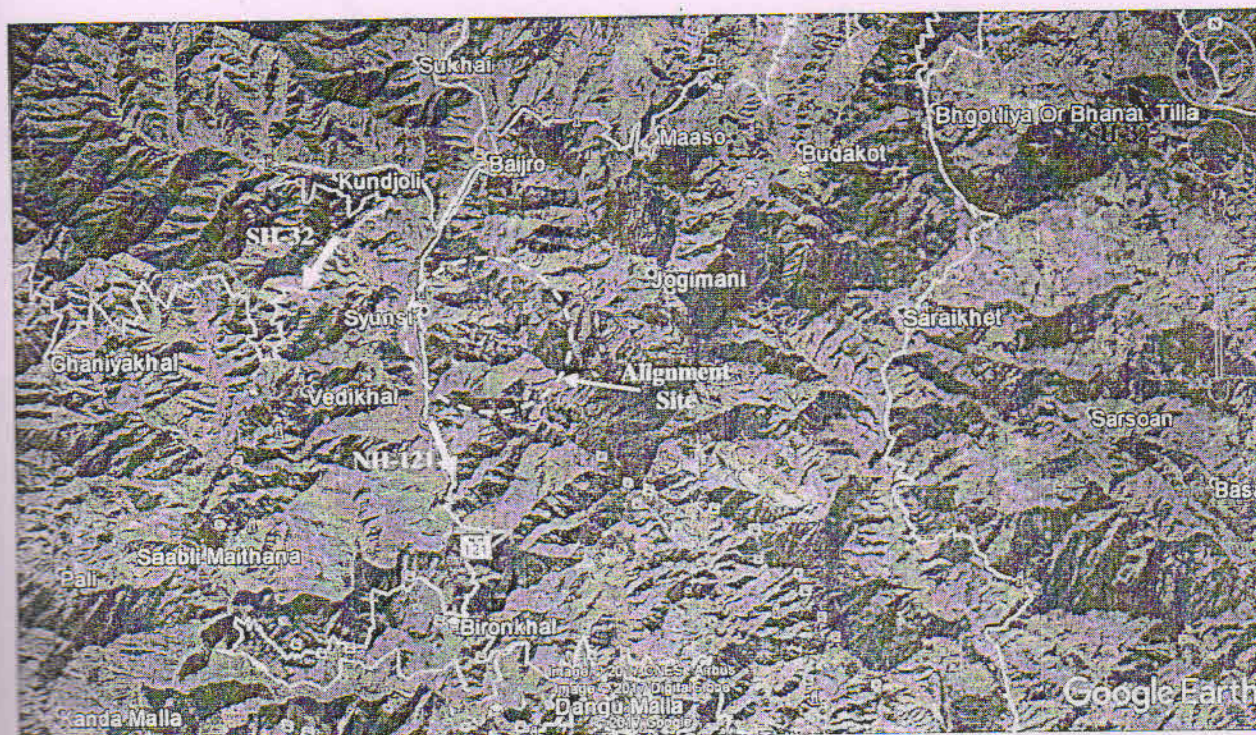
Geological Assessment of 7.0 Km long Syunsi-Aamkulaun Motor Road Alignment
corridor between Chainage 0.0 to 7.0 Km, Baijro Division District Pauri

Tushar Sharma

11/07/2017

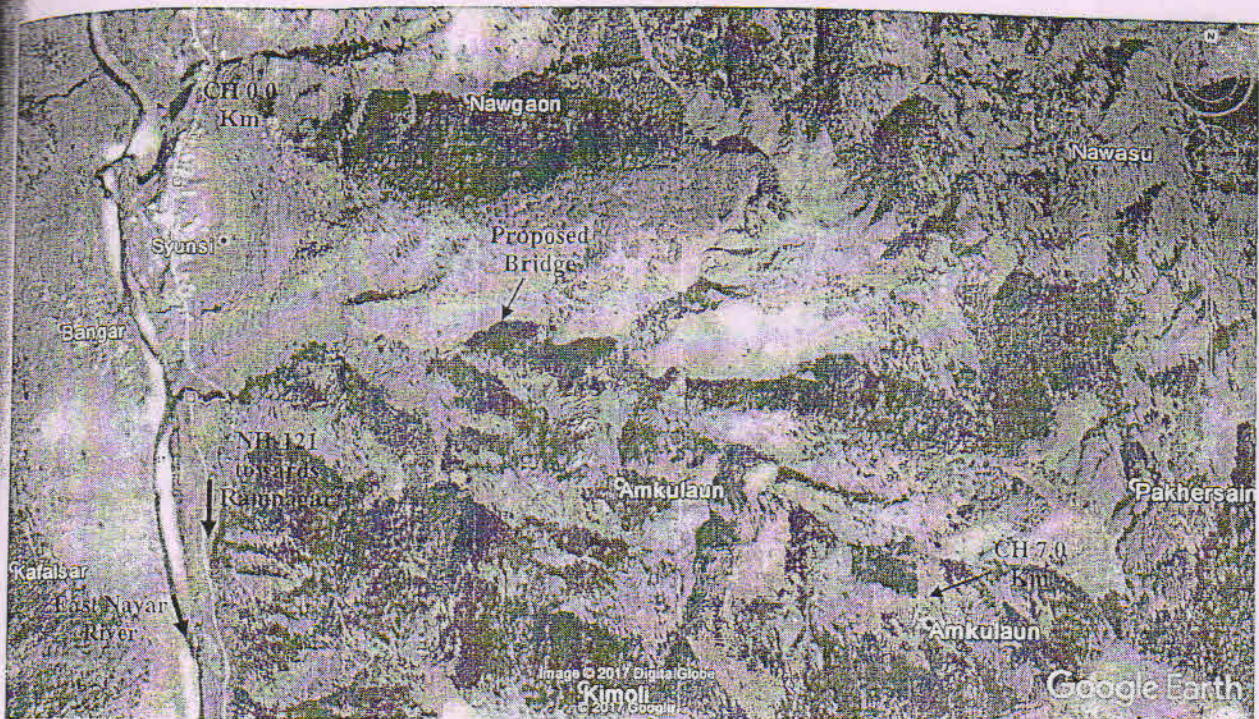
- 1- **Introduction:** The Construction Division, Baijro, has been entrusted for the construction of 7.0 Km long Syunsi-Aamkulaun Motor Road from CH 0.0 to 7.0 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. R.P. Singh (Executive Engineer) Construction 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 (Jr. Engineer) CD, PWD, Baijro was present during the site visit.
- 2- **Topographical Information/Location:** The site proposed for the construction of 7.0 Km long Syunsi-Aamkulaun Motor Road from CH 0.0 to 7.0 Km diverts from CH 140.0 Km of NH-121 near village Syunsi, 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° 53' 43.90"
Longitude	:	79° 01' 30.20"
Approximate Elevation	:	1264 M



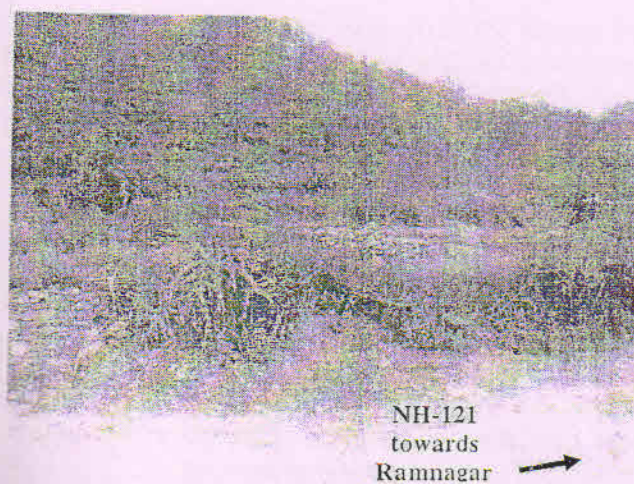
Broader Satellite View of the Site

अध्यक्ष श्री अमरपाल

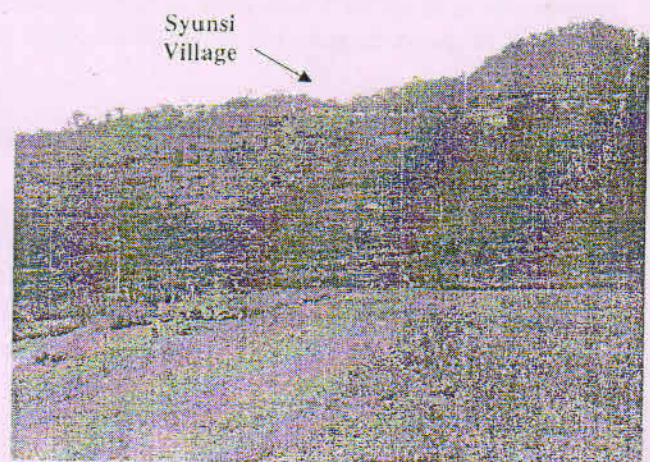


Closer Satellite View of the Road Alignment Site with approximate HP Bends

- 3- **Geological Assessment:** Geologically, the road alignment site area falls under the Meta-Sedimentaries of Lesser Himalaya. The rocks exposed in the area consist of Fine to Medium Grained Quartzite, Phyllite to Quartzitic Phyllite which belong to the Nagthat formation of Jaunsar Group. The rocks are hard jointed and slightly weathered except phyllitic rock patches which showed much more fractures/joints and weathering. Overall the hill slope of the road alignment site at places rock outcrop is covered under thin to thick veneers of overburden and slope wash material with exposed patches of bed rock especially along the nalla. The approximate strength of exposed rock mass is around ~100-120 MPa and has undergone W_0 to W_2 weathering grade.



View of road alignment at CH 0.0 Km near NH-121

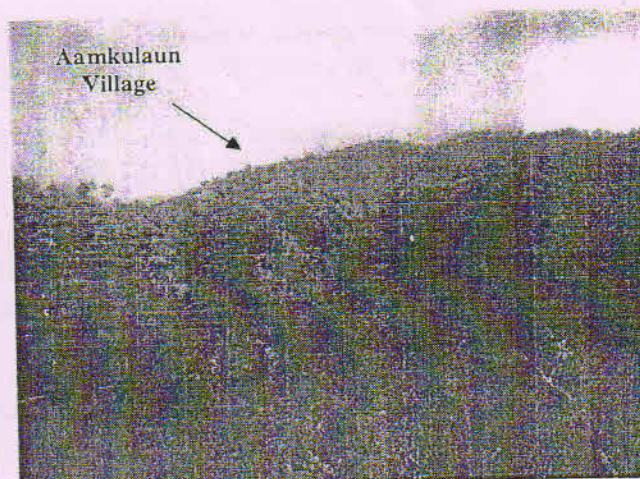


View of gentle hill slope around Syunsi Village

सहायक अभियन्ता
निर्माण खण्ड लगेनि0वि0
आ. बेजरो (मदकाल)



View of seasonal nalla on Aamkulaun Foot Trek



View of alignment slope below Aamkulaun village

There is a seasonal nalla between CH 2.250 and 2.300 Km of the road alignment over which there is a small damaged concrete foot bridge which indicates that during season the nalla catchment gets charged with considerable amount of water. The hill slope of the road alignment site is initially gentle and further gets moderately steep which ranges between $\sim 20-45^\circ$. There are total seven Hair Pin Bends on the alignment at CH 0.250, 0.800, 2.950, 4.475, 4.800, 5.225 and 5.950 Km.

- 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 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.
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.

सहायक अभियन्ता

निर्माण खण्ड लोडिंग वि०
प्रो. कैजरो (मदयाल)

4. It is advised to construct a small bridge/puliya over the seasonal nalla between CH 2.250 and 2.300 Km which if not done may damage the road especially during rainy season.
 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.
- 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 7.0 Km long Syunsi-Aamkulaun Motor Road from CH 0.0 to 7.0 Km was found geologically suitable for road construction.

Letter No: 1293 /भू० वै०-12-पौड़ी /2017

Date: 11/07/2017

Tushar Sharma

(Tushar Sharma)
Assistant Geologist
Chief Engineer Office
PWD, Pauri

सहायक अभियन्ता

b
सहायक अभियन्ता
निर्माण खण्ड लो०नि०वि०
3m (गढ़वाल)