

To,
The Executive Engineer
(Temporary Division)
PWD, Gauchar

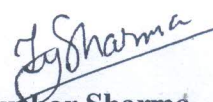
Subject: Submission of Geological Site assessment report of 2.0 Km long Deval-Dhaanai Motor Road between CH 0.0 to 2.0 Km.

Dear Sir,

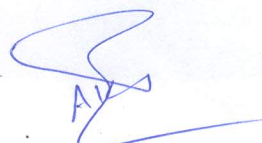
In response to your request of making a site visit for the assessment of the site selected for the construction 3.0 Km long Deval-Dhaanai Motor Road between CH 0.0 to 2.0 Km, which is under Temporary Division Gauchar, a site visit was made on 04/11/2016 of which a report has been prepared. Therefore it is requested to please find report of the above mentioned site attached with this letter.

Date: 09/11/2016

Yours Faithfully


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

हस्ताक्षर समिति

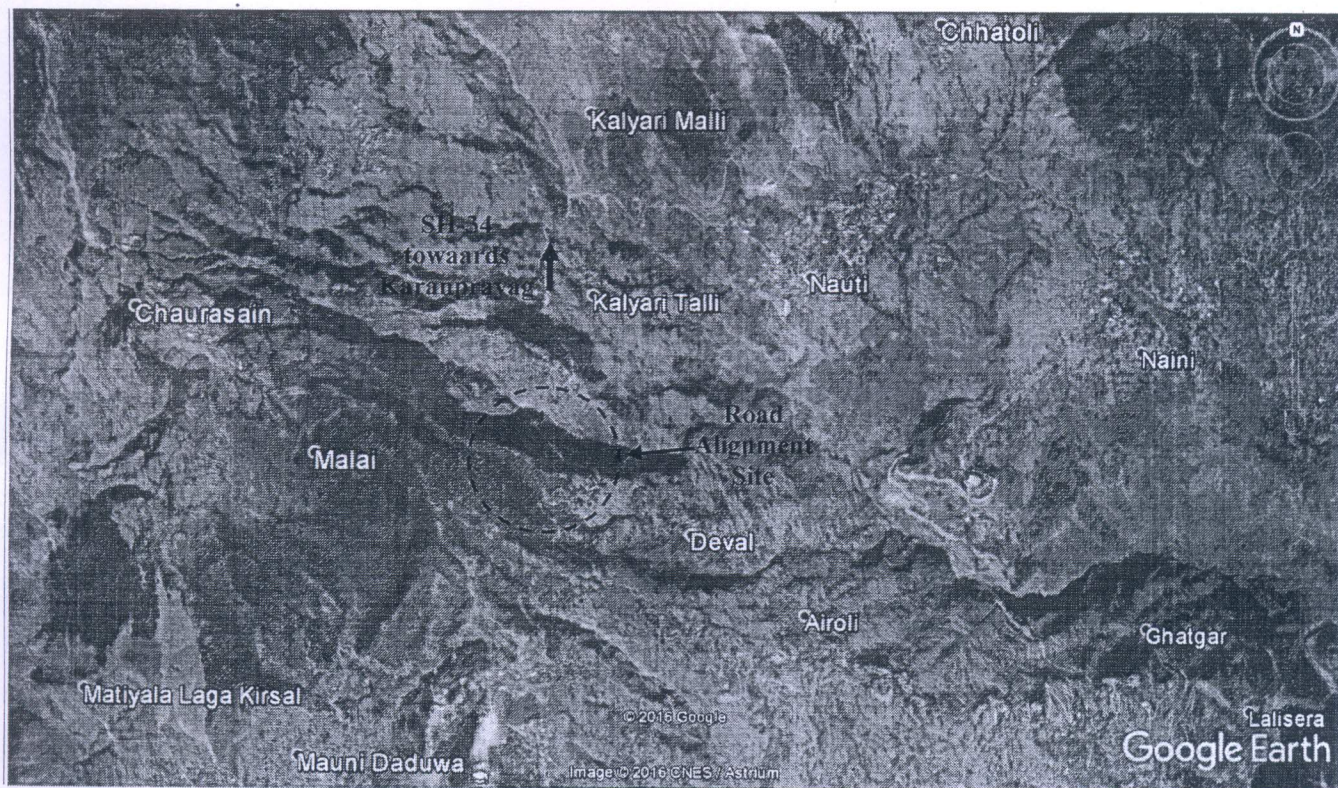

Assistant Engineer
Ty. Division P.W.D.
Gauchar (Chamoli)

Geological Assessment of 2.0 Km long Deval-Dhaanai Motor Road Alignment
corridor between Chainage 0.0 to 2.0 Km, Gauchar Division,
District Chamoli
Tushar Sharma
09/11/2016

1- **Introduction:** The Temporary Division, PWD Gauchar, has been entrusted for the construction of 2.0 Km long Deval-Dhaanai Motor Road between CH 0.0 to 2.0 Km. In order to assess the geological conditions of the road alignment site for its feasibility, Er. K.S. 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 04/11/2016; Er. Anuj Sharma (Junior Engineer) PWD, Gauchar was present during the site visit.

2- **Topographical Information/Location:** The alignment site proposed for the construction of 2.0 Km long Deval-Dhaanai Motor Road between CH 0.0 to 2.0 Km diverts from CH 28.2 Km of SH-34 (Karanprayag-Nauti-Paithani Motor Road) near village Devalgarhsari. The co-ordinates along with elevation, masl of the site at CH 0.0 Km are as follows-

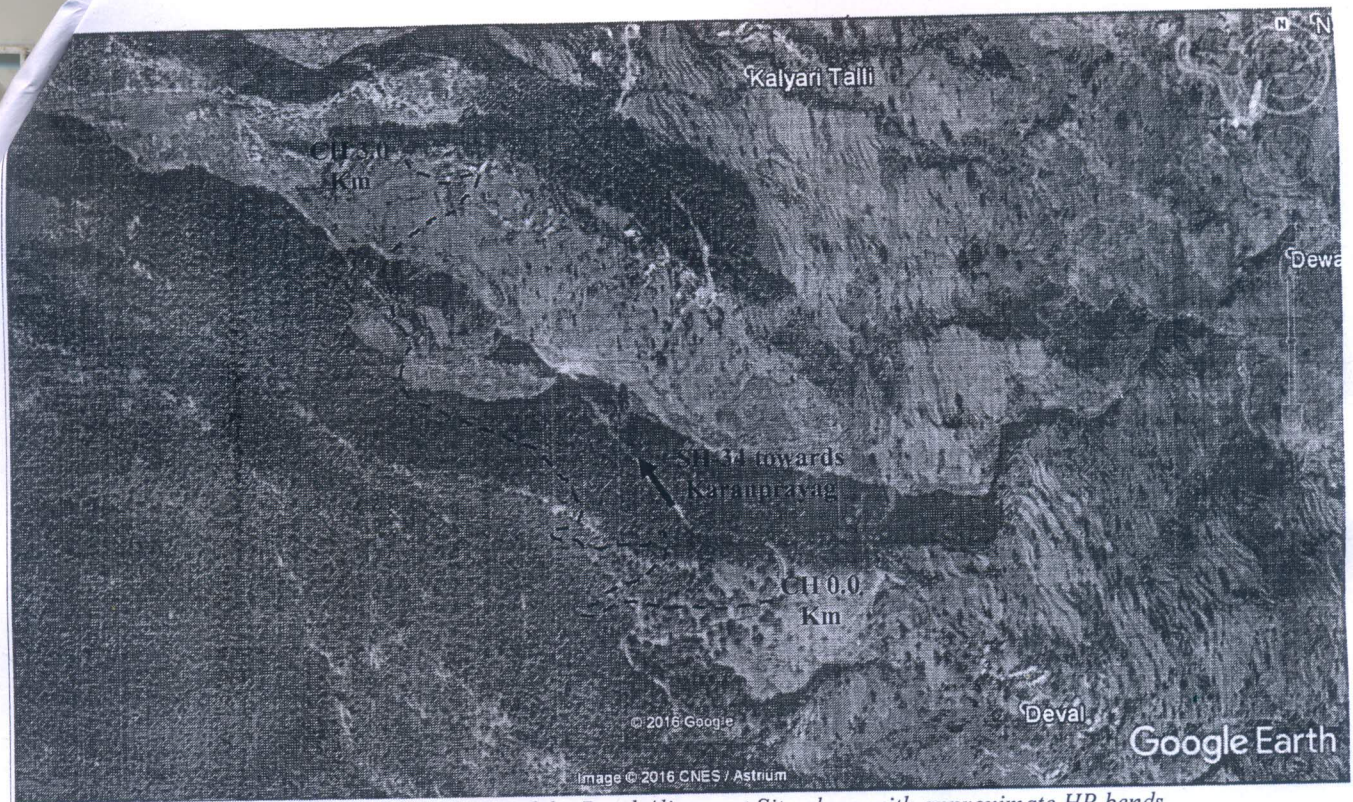
Latitude : 30°11'44.92"
Longitude : 79°11'24.45"
Approximate Elevation : 1790 M



Broader Satellite View of the Site

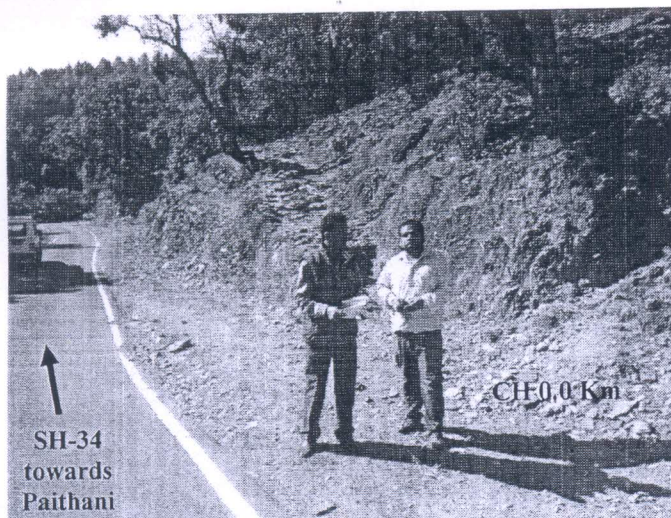
टुषर शर्मा

AKS
Assistant Engineer
T. Division P.W.D.
Gauchar (Chamoli)



Closer Satellite View of the Road Alignment Site along with approximate HP bends

3- Geological Assessment: Geologically, the road alignment site area falls under Lesser Himalaya. The rocks exposed in the area consist of jointed and weathered Hard Quartzite, Quartzitic Phyllite bands which belong to Rautgara Formation of Damtha Group. 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 with a few exposures of bed rock. The alignment is intercepted by a Nalla at CH 1.70 Km nalla which may damage the road especially during rainy season therefore a causeway/small bridge is to be constructed over it. The hill slope angle at the road alignment is $\sim 15-20^\circ$ for initial 2.0 Km but gets as steeper $\sim 40-50^\circ$ between 2.0 and 3.0 Km. The approximate strength of exposed rock mass is around $\sim 50-150$ MPa and has undergone W_1 to W_3 weathering grade.



View of site at CH 0.0 Km



View of gentle hill slope of the alignment site

There are four hairpin bends on the road alignment which are at CH 0.225, 0.500, 0.750 and 1.0 Km respectively.

- 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 or 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 might 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.
4. A cause/small bridge is to be constructed over CH 1.700 Km over a nalla.
5. Construction of longitudinal concrete lined drain all along the hill side of the road with adequate provision of cross drains is necessary.
6. Construct the road by half cut and half fill techniques and compact the fill material properly by dynamic compaction.
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.

दया शर्मा सहायक


Assistant Engineer
Ty. Division P.W.D.

Garuchar (Chamoli)

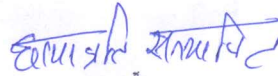
Conclusion: On the basis of the geological/geotechnical studies carried at the site and with the above recommendations, the site proposed for 2.0 Km long Deval-Dhaanai Motor Road between CH 0.0 to 2.0 Km was found geologically suitable for construction.

Letter No: 2764-A /भू० वै०-07-पौड़ी /2016

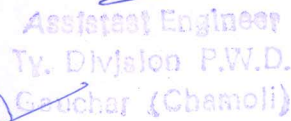
Date: 09/11/2016



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



Copy Attested


Assistant Engineer
Ty. Division P.W.D.
Gadwar (Chamoli)