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प्रपत्र - 33

Office of Empannelled Geologist

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P.W.D. Uttarakhand

Geological Investigation Report
E.G. – Road / Bridge / Alingment
Kalsi – 10/2015

Geological Assesment of the Alingment Corridor Proposed For – From Kathiyan to Dirnad Motor Road, Block – Chakrata, Distt. Dehradun

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Geological Assesment of the Alingment Corridor Proposed For – From Kathiyan to Dirnad Motor Road, Block – Chakrata, Distt. Dehradun

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1. Introduction :- The Costruction Division, Public Works Department, PMGSY Kalsi has proposed the construction of 7.500 Km. long motor road named From Kathiyan to Dirnad Motor Road on the request of the Executive Engineer, C.D. P.W.D. PMGSY, Kalsi. I carried out the geological assessment of the Proposed alignment of the road in presence of Er. Parveen Rawat the concerned consultant.
2. Location :- The proposed alignment originates from the Tyuni-Kathiyan motor road as a Branch Road Connection the Unconnected village Dirnad having three H.P.Bends.
3. Geological Assessment:- Geologically the area of the proposed road is located in the inner lands of Lesser Himalaya Belt which is mostly occupied by the rocks of Ramgarh group, Brown, Grey, Green Phyllite schistose in nature, alternating serecitic quartzite & meta silt stone are exposed of Ramgarh Group along the alignment.

   Four prominent and one random joints set in addition to minor shear zone traverse these rocks and control the stability of the various slope facets of the alignment passes are inclined that moderate to steep angle and these are partially covered with the overburden material f varying thickness ranging from 0.5m to 1.5m thick. The rock mass exposed along the alignment corridor is mostly hard and its "Uniaxial Compressive Strength" has been estimated ranging between 100 M Pa to 150 M Pa (ISRM Manual Index). By the large the joints traversing the rock masses are shattered. The values of the Rock Quality Designation (RQD) calculated at the site ranging between 75 percent to 95 percent suggests that the slope forming rock masses are less distressed in nature and decrease the risks of instability. All the joints planes of the rocks are rough to moderately smooth, tight and sometimes sealed with the secondary inclusion.

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The details of the joints recorded at the site are given in the following table:-

Table

S. No.	Feature	Dip angle	Azimuth
1	2	3	4
J_1	(S_0 Bedding Joint)	50^0	N180
J_2	(S_1 Foliation Joint)	25^0	N155
J_3	(Random Joint Set)	65^0	N135
J_4	(Sealed with Quartzite's)	40^0	N105
J_5	Joint	35^0	N245

The overburden material exposed along the alignment corridor is comprised of the scanty rock fragments of various shapes and sizes embedded in the clay- silt matrix. This overburden material is naturally well compacted and dense in nature.

The slope forming overburden materials do not contain any soft/dispersive soils.

By and large the alignment slopes are stable and do not bear any signature of mass wasting/land sliding.

On the basis of the geological / geotechnical studies carried at the site and the facts mentioned above the following recommendations are being made for the construction of the proposed road.

3. Recommendation:-

(i) The alignment some time traverses along/across minor fault zone which is geologically fragile and special attention needs to be given for stability of road where alignment crossing the Nalas or Gads or Local streams.

(ii) The hill slope is another factor responsible for geological hazards; the road basically traverses the slope class 34^0 to 55^0 special attention needs to be given for stability where it is 48^0 to 60^0 in some parts.

(iii) Special attention must be give at the point of H.P. Bend at the time of construction of road.

(iv) Do not dispose the debris in hill side, dispose it in a safe zone.

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(v) Do not blast heavily on the rocks and blasting is restricted near the human settlement / public property.

(vi) The road must have extra wide lined long drain with adequate cross drainage arrangement.

(vii) The road must be formed shoulder to shoulder paved, this is so to check the water ingress into the sub surface material.

(viii) Construct suitably designed retaining walls / Breast wall all along the road, it is essential for the overall stability of the hill slope.

(ix) All the construction activity must be carried out as per the standards and norms following the IS codes prescribed for the similar civil construction in Himalayan Zone.

(x) The proposed alignment along with mostly existing L.V.R. some places are partially starting and ending for new alignment.

(xi) This report is prefeasibility report. At the time of construction it need separate geological concern.

5. Conclusion :- On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the site was found geologically suitable for the construction of 7.500 Km. long motor road named From Kathiyan to Dirnad Motor Road, Block Chakrata, Distt, Dehradun Uttarakhand.

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