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P.W.D. Uttarakhand

Geological Investigation Report
E.G. – Road / Bridge / Alignment
I.D, PWD, Almora – 01 / 2018

Geological Assessment of the Alignment Corridor Proposed For
From Km. 04 of Basolikhan – Chamtola M/R to Nayaladhura Motor Road
in Distt. Almora

05 June 2018


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- (viii) Construct suitably designed retaining walls / brest 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 BIS codes prescribed for the similar civil construction in Himalayan Zone.
- (x) This report is prefeasibility report. At the time of construction it need separate geological concern.

4. 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 Km. 04 of Basolikhan - Chamtola M/R to Nayaldhura motor road, Distt. Almora, Uttrakhand.



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सहायक अभियन्ता
सिवाई रोड पी.एम.जी.एस.वाड
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(62) 12
65

Geological Assessment of the Alignment Corridor Proposed For
From Km. 04 of Basolikhan – Chamtola M/R to Nayaladhura
Motor Road in Distt. Almora

J.P. Madhwal

05/06/2018

Introduction :- The I.D, PWD, Almora, has proposed the construction of 7.500 Km. long motor road named From Km. 04 of Basolikhan – Chamtola M/R to Nayaladhura motor road under PMGSY Project on the request of the Executive Engineer, I.D, PWD, Almora. I carried out the geological assessment of the proposed alignment of the road in presence of the person of Combined Engineering Consultant, D.Dun on Dated 22/05/2018.

- 1. Location:-** The proposed alignment is started From Km-04 of existing Basolikhan to Chamtola Motor Road.
- 2. Geological Assessment:-** Geologically the area of the proposed road is located in the inner lands of Kumaon lesser Himalayan Belt which is mostly occupied by the rocks of Almora Group. The Augen gneiss and Mica Schist are exposed along the alignment. These rocks are massive to thinly bedded, soft to very hard, compact and partially weathered in nature.

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 at moderate to steep angle and these are partially covered with the overburden material of varying thickness ranging from 0.5 m to 1.5 m thick. The rock mass exposed along the alignment corridor is mostly hard and its "Uniaxial Compressive Strength" has been estimated ranging between 50 M Pa to 100 M Pa (ISRM Manual Index). By and large the joints traversing the rock masses are widely spaced through except at places where the rocks is sheared and shattered. The values of the Rock Quality Designation (RQD) calculated at the site ranging between 71 percent to 90 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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64

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


Table


S. No.	Feature	Dip angle	Dip direction
1	2	3	4
J ₁	(S ₀ Bedding Joint)	20 ⁰	N160
J ₂	(S ₁ Foliation Joint)	30 ⁰	N220
J ₃	(Random Joint Set)	25 ⁰	N210
J ₄	(Sealed)	45 ⁰	N300

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 and soft rock zone.
- (ii) The hill slope is another factor responsible for geological hazards, the road basically traverses the slope class 35⁰ to 48⁰ special attention needs to be given for stability where it is 60⁰ to 65⁰ in some parts.
- (iii) Special attention should be pay for the protection of H.P. Bends.
- (iv) Do not dispose the debris in hill side, dispose it in a safe zone.
- (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.


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