

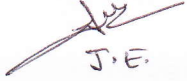
प्रारूप-2.28

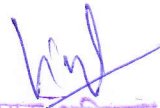
परियोजना का नाम :- राज्य योजना के अन्तर्गत चमियाला-इन्द्रवाणगांव-कांगड़ा मोटर मार्ग का नव निर्माण कार्य। (मार्ग के नव निर्माण हेतु वन भूमि हस्तान्तरण प्रस्ताव। (लम्बाई-10.00 कि०मी०)


भू-वैज्ञानिक की आख्या

(प्रस्तावित स्थल की भू-वैज्ञानिक द्वारा निर्गत अद्यतन निरीक्षण आख्या प्राप्त कर संलग्न की जाय।)

संलग्न है


J.E.


सहायक अभियन्ता
अस्थाई खण्ड लोक निर्माण विभाग
घनसाली, टि० ग०


अधिसूची अभियन्ता
अस्थाई खण्ड लोक निर्माण विभाग
घनसाली (टि० ग०)

(a)

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष
उत्तराखण्ड लोक निर्माण विभाग,
देहरादून।

भू - गर्भीय निरीक्षण आख्या एस0जी0- 570/सड़क/पुल-समरेखण/गढ़वाल/2014

Geological Assessment of the alignment
corridore proposed for Chamiyala to Kangda
motor road in Bhilangana Block, Distt. Tehri
Garhwal, U.K.

07-अगस्त-2014

10

**Geological Assessment of the alignment corridor proposed
for Chamiyala Indrawangaon Kangda motor road in
Bhilangana Block, Distt. Tehri Garhwal, U.K.**

Vijay Dangwal

08.07.2014

1- Introduction:- In the fulfilment of request made by Er. Madan Mohan Kala, Executive Engineer, Temporary Division, Public Works Department, Ghansali I carried out the geological assessment of the proposed alignment corridor of 10.00 km long Chamiyala-Indrawangaon-Kangra motor road located in Bhilangana Block, Distt. Tehri Garhwal on 6.6.2014. Er. Satya Prakash, Asst. Engineer and Er. Sunil Kumar, Jr. Engineer, PWD Ghansali was present during the walk over survey. The terrain bearing the proposed alignment was thoroughly assessed considering the various geological/geotechnical parameters like geology and geomorphology of the area, inclinations of the cross slope facets, characteristics of the slope forming material, hydrology of the area and the geometry of the various rock defects vis-a-vis to the target of the slope facets was studied and field measurements were taken to analyze the stability and suitability of the proposed alignment.

2- Location:- The alignment corridor of the proposed Chamiyala-Indrawangaon-Kangra motor road originates from km. 12 (8-10) of Ghansali-Chamiyala-Budhakedar motor road located in Bhilangana Block of Distt. Tehri Garhwal. The alignment bears 10 HP bends and it passes through the Naap, Civil and Reserve forest lands.

3- Geological Assessment:- Geologically the alignment corridor of the proposed Chamiyala to Kangra motor road lies in the Inner lands of Garhwal Lesser Himalayan Belt bounded by the Main Central Thrust (MCT) to the north and Srinagar Thrust (ST) to its south directions. The entire gamut bearing the proposed road is occupied by the rocks of Garhwal Group comprised of the quartzites and metabasites. These rock masses exposed along the alignment exhibits high values of physical competencies and these are almost fresh, very hard, compact and thickly/massive bedded in nature. These rocks have been traversed by numerous linear discontinuities which are described in the following table given after this paragraph. The alignment slopes which are generally inclined at moderate angle otherwise inclined steep slopes are partially exposed with these rock masses and largely by the thick cover of quaternary material generated by the fluvioglacial

of the area are steeper (more than 45°) and are covered with thick overburden material with scanty vegetal cover. The prominent joint sets recorded along the alignment corridor are listed below:-

Table

| Sl. No. | Feature | Dip Amt. / Dip Direction | Spacing (Cm) | Continuity (Cm) | Remarks |
|---------|---------|-------------------------------------|--------------|-----------------|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | J1 (S0) | $25^{\circ}-50^{\circ}$ / N020-N080 | - | - | Bedding Joint |
| 2 | J2 | $70^{\circ}-85^{\circ}$ / N040-N110 | 3-20 | 10-100 | Bedding Joint |
| 3 | J3 | 54° / N230 | 10-25 | 30-35 | Random Joint set |
| 4 | J4 | $54^{\circ}-60^{\circ}$ / N260-N280 | 07-30 | 15-80 | Moderately Smooth |

The soils encountered across the proposed alignment are non dispersive, stiff and free from the alkali content and the overburden composite material containing these soils is exposed naturally well compacted and dense in nature. It has been observed that these soils contain very low percentages of the particles having sizes below 2 micron. The "Undrained Shear Strength" of the soils has been assessed ranging between 300 K Pa to 500 K Pa and accordingly these were classified as "Stiff" and "Very Stiff" soils.

By and large the alignment slopes are stable and free from any sliding/ mass wasting activities.

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 failing to this report will be automatically treated as cancelled.

Photo Copy Attested

[Signature]

सहायक अभियन्ता

अस्थाई खण्ड लोक निर्माण विभाग
घनसाली, री. २० ग०

[Signature]

सहायक अभियन्ता

अस्थाई खण्ड लोक निर्माण विभाग
घनसाली, री.

-2-

activities occurred in the geological past. At places this composite overburden material is exposed as high as 10 m and it is exposed showing enormous quantities of large angular rock fragments along with the well graded sizes like gravel material with scanty vegetal cover. The prominent joint sets recorded along the alignment corridor are listed below.

Table

| Sl. No. | Feature | Dip Amt. / Dip Direction | Spacing (Cm) | Continuity (Cm) | Remarks |
|---------|---------|--------------------------|--------------|-----------------|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | J1 (S0) | 25°-50° / N020-N080 | - | - | Bedding Joint |
| 3 | J3 | 54° / N230 | 10-25 | 30-35 | Random Joint set |
| 4 | J4 | 54°-60° / N260-N280 | 07-30 | 15-80 | Moderately Smooth |

The soils encountered across the proposed alignment are non dispersive, stiff and free from the alkali content and the overburden composite material containing these soils is exposed naturally well compacted and dense in nature. It has been observed that these soils contain very low percentages of the particles having sizes below 2 micron. The "Undrained Shear Strength" of the soils has been assessed ranging between 300 K Pa to 500 K Pa and accordingly these were classified as "Stiff" and "Very Stiff" soils.

By and large the alignment slopes are stable and free from any sliding/ mass wasting activities. On the basis of the geological/geotechnical studies and facts mentioned above the following recommendations are being made for the construction of the proposed road falling to this report will be automatically treated as cancelled.

Photo Copy Attested

सहायक अभियन्ता
अरुणखंड लोक निर्माण विभाग
घनसाली, दि. 07.08.14

सहायक अभियन्ता
अरुणखंड लोक निर्माण विभाग
घनसाली, 1

-3-

1. Form the road by winning and nail cut-nail fill technique and compact the fill material properly by dynamic compaction.
2. Blasting on the rocks is geologically restricted.
3. Do not dispose the excavated waste on the lower slopes.
4. The entire surface of the road must be sealed by the black top immediately after the formation of the road bench, this is so as to check the water infiltration into sub surface material.
5. Suitably designed retaining and breast walls must be emstructed to improve the overall stability of the road and hill slope.
6. Construct large size lined long drain with the adequate cross drainage arrangements and make suitable arrangements to dispose the drained water on the stable ground.
7. The drainage work must be taken up immediately after the excavation of hill slopes.
8. All the construction activities should be carried out as per the guidelines and Standard codes of practice, laid by the MORTH/IRC for the construction similar structures.

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 10.00 km long Chamiyala-Indrawangaon -Kangra motor road located in Bhlangana Block, Distt. Tehri Garhwal.

सहायक अभियन्ता
अस्थायी खण्ड लोक निर्माण
घनरा टि० रा०

Photo Copy attested
for

सहायक अभियन्ता
अस्थायी खण्ड लोक निर्माण विभाग
देहरादून, उत्तरांचल प्रदेश

V. Dangwal
7.8.14
(Vijay Dangwal)

Sr. Geologist
Office of the Engineer in Chief,
PWD, Dehradun.