प्रारुप–33

परियोजना का नाम:– संगलाकोटी–**भैंडगांव–गुण्डिडा मोटर मार्ग का तिलखोली–जजेड़ी तक विस्तार।**

## भू–वैज्ञानिक की आख्या

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

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(भू–वैज्ञानिक)
नाम व मुहर सहित

**Office of Empanelled Geologist**
पत्रांक 622 / 148व्यक–सा0 / 13 दिनांक 15 / 05 / 2013
**P.W.D. Uttrakhand**

# Geological Investigation Report
# E.G. – Road / Bridge / Alignment
# Pauri – 7 / 2013

## Geological Assessment of the Alignment Corridor Proposed For – Extension of Sangla Koti-Bhaidgaon-Gudinda Motor Road upto Tilkholi-Jajedi

**15 April 2014**


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# ›ogical Assessment of the Alignment Corridor Proposed For – tension of Sangla Koti-Bhaidgaon-Gudinda Motor Road upto Tilkholi-Jajedi District – Pauri.

**J.P. Madhwal**
**15/04/2014**

1. **Introduction :-** The Provincial Division, Public Works Department, Pauri has proposed the construction of 12.00 Km. long motor road named extension of **Sangla Koti-Bhaidgaon-Gudinda Motor Road upto Tilkholi-Jajedi** on the request of the Executive Engineer, P.D. P.W.D. Pauri, I carried out the geological assessment of the proposed alignment of the road in presence of Er. Sanjay Bisht the concerned A.E.

2. **Location:-** The proposed alignment originates from the end point of Sangla Koti -Bhaidgaon-Gudinda Motor Road as a Extension.

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 Chandpur Nagthath formation. The olive green and grey phyllite inter bedded and very finely interbanded with meta silt stone and very fine wackes with quartzite of Nagthath formation. 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 81 percent to 100 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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e 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) | $45^0$ | N165 |
| $J_2$ | ($S_1$ Foliation Joint) | $55^0$ | N185 |
| $J_3$ | (Random Joint Set) | $65^0$ | N135 |
| $J_4$ | (Sealed with Quartzites) | $35^0$ | N095 |
| $J_5$ | Joint | $48^0$ | N345 |

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 material 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 con struction of the proposed road.

## . Recommendation:-

(i) Form the road by half cut – half fill techniques and ensure the proper compaction of the fill material. Special attention must be give at the points of H.P. Bends during the time of construction of road.

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

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

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

(vi) 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.

**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 12.00 Km. long motor road named extension of **Sangla Koti-Bhaidgaon-Gudinda Motor Road upto Tilkholi-Jajedi**, Distt. Pauri Garhwal, Uttrakhand.

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