Geological Assessment of 11.50 Km long Laldhang-Chillarkhal Motor Road along with Flyover Alignment corridor between Chainage 0.0 to 11.50 Km, Kotdwar, District Pauri

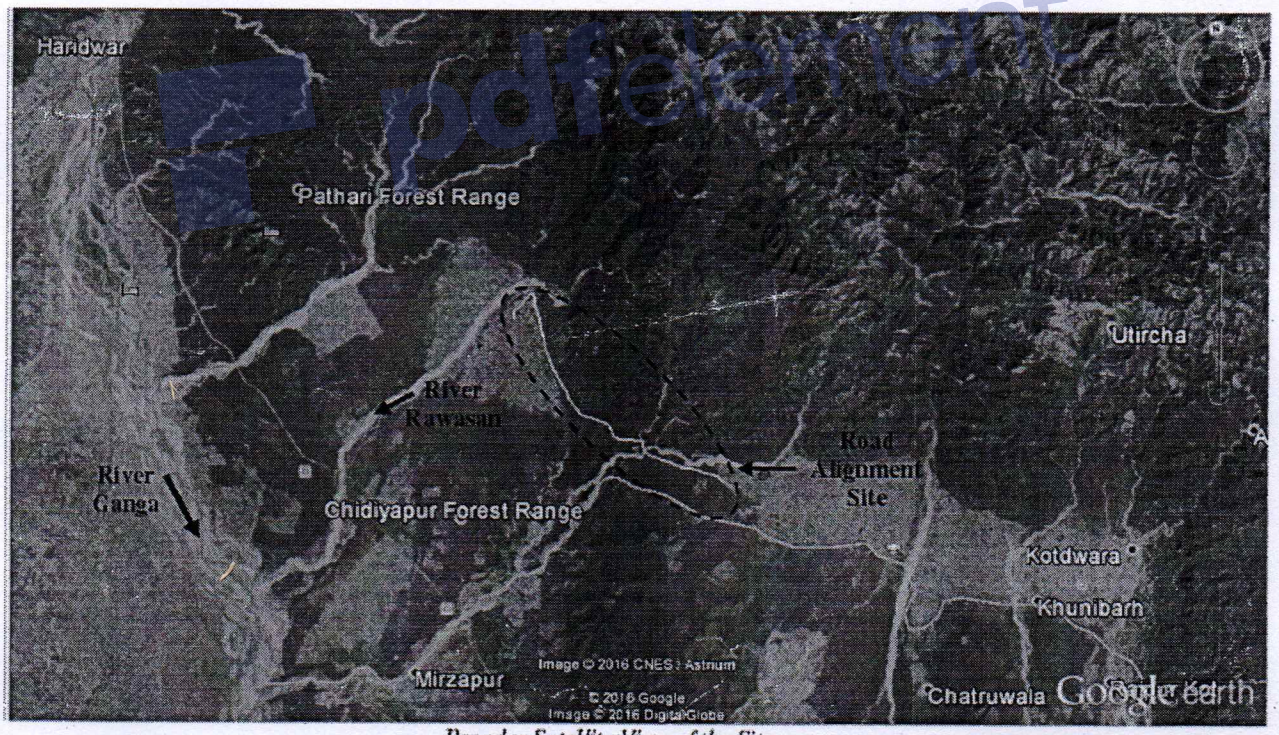
Tushar Sharma

22/07/2016

1- Introduction: The Construction Division, Dugadda, has been entrusted for the construction of 11.50 Km long Laldhang-Chillarkhal Motor Road along with Flyover. In order to assess the geological conditions of the road alignment site for its feasibility, Er. Rajesh Chandra (Executive Engineer) Construction Division, PWD, Duggadda asked for a geologist to make a site visit. Consequent to his request a visit to the proposed road site was made on 11/07/2016; Er. Deependra Rawat & Er. Pradeep Mamgain (Junior Engineers) CD PWD, Duggadda were present during the site visit.

2- Topographical Information/Location: The site proposed for the construction of 11.50 Km long Laldhang-Chillarkhal Motor Road along with Flyover, lies in Kotdwar area, district Pauri (Garhwal). The co-ordinates along with elevation, masl of the site are as follows-

Latitude	:	29°50'49.05"
Longitude	:	78°18'34.00"
Approximate Elevation	:	363 M



Broader Satellite View of the Site

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Closer Satellite View of the Road Alignment Site

3- <u>Geological Assessment</u>: Geologically the site and its surrounding area lie in the foothills of Lesser Himalaya consisting of thick cover of recent alluvium/river borne material/Sand & Gravels brought by the rivers from up North.

The ground material around both the abutments of the proposed flyover site appears to have varying competency and deformability values due to which the settlement values under the same loading pressure would be different at both abutments. Therefore, it is advised to design the foundation of the piers/abutments on the basis of geotechnical parameters of the ground.

CH 11.50 m of the road alignment at Laldhang

View of Flyover site at CH 0.0 Km

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The terrain proposed for the construction of the flyover piers/abutments appear to have varying rock conditions therefore, it is advised to carry out Sub surface soil testing investigation (minimum 5m depth) to ascertain the presence of rock and ground deformability values.

4- Seismicity of the area: According to Indian Standard code the site falls in seismic zone IV of seismic zoning Map of India (IS 1893, part 1, 2002) which corresponds to intensity VIII 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 and flyover 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. Rock/Earth excavation must be carried out by the skilled manual workers.
3. Construction of causeway/culverts on the alignment where ever it is intersected by a small nalla/stream is necessary.
4. Construct the road by compaction of fill material properly by dynamic compaction.
5. The flyover is being constructed on the foot hills Himalayan Belt which is a geodynamic seismotectonic block, which is likely to experience earthquake events, the area itself lies in seismic zone IV of seismic zoning Map of India therefore, the flyover as a whole and its abutments must be designed earthquake resistant.
6. River banks on either side of the flyover must be protected by suitably designing retaining/flood protection walls.
7. It is advised to carry out Sub surface soil testing investigation (minimum 5m depth) to ascertain the presence of rock and ground deformability values.
8. The muck and excavated waste of this road are to be disposed in the identified site for muck disposal.
9. All the construction activities ought to be carried out as per the standard codes of practice laid by the BIS and MORTH.

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6- Conclusion: On the basis of the geological / geotechnical studies carried at the site and with the above recommendations, the site proposed for 11.50 Km long Laldhang-Chillarkhal Motor Road along with Flyover was found geologically suitable for road construction.

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