

RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI BUDDHI LAL S/O SHRI JOHRI FOR THE CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION FOR HOUSING (ODCH) VILLAGE DANG, TEHSIL- DUNDA- DISTRICT UTTARKASHI, UTTARAKHAND KHASARA NO – 1016 & AREA – 0.009 ha

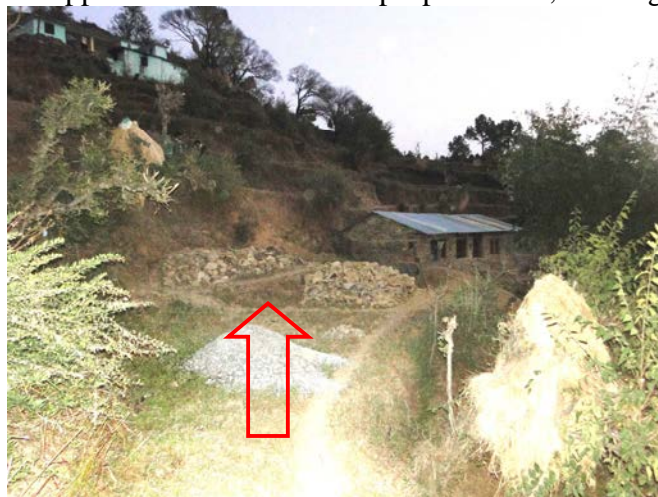
Date of Inspection: 20/12/2013

In a 'World Bank' funded programme, Government of Uttarakhand has provided teams of Consultant Geologists and Consultant Associate Geologist to Director, Geology and Mining Unit, Uttarakhand for geological studies in proposed site for Owner Driven Constructi on For Housing (ODCH) in disaster affected districts of Uttarakhand.

Director, Geology and Mining Unit, Directorate of Industries, Uttarakhand has issued an Office Order No. 1612 Aa. Pra./Bhu.Ni./Bhu.Khani.E./2013-14 dated 10th December 2013 regarding geological studies in disaster affected five districts of Uttarakhand, Uttarkashi is one of them. Thus, undersigned have taken geological observation during traverses and collected field geological data under the management of cosignatory departmental 'Assistant Geologist'.

In the above mentioned questioned area, the reconnaissance geological investigation was carried out in the presence and co-operation of Shri Ram Singh, Revenue Sub-Inspector, Brahmkhal. The proposed site is 25Km approx from Tehsil Headquarter Dunda, District Uttarkashi, Uttarakhand. It falls on coordinate – N 30^o 42'27.4" E 78^o 18' 32.6" El. 1641m. The site is 4Km approx from NH-123 (Delhi-Yamunotri National Highway) on Brahmkhal-Dang motor marg, up above the road.

The site is located on colluvial deposit and man-made cultivated step terraces are present. The thickness of overburden is varying at places in between 2-5m approx with boulders embedded in the soil at the proposed site. The boulders of quartzite, are varying in size from 20cm to 30cm approx, are found at and around the proposed site location. The uphill slope at the proposed site is 30^o-35^o and the downhill slope is 20^o-25^o sloping in SW direction. The proposed site location is covered with thick soil cover of 1-1.5m approx. At around the proposed site location less vegetation is present. A seasonal water body Bagrakhal Nala is at about 40-50m approx distance from the proposed site, flowing in SW direction.



Close view of the proposed site

At the proposed site, there was in-situ rocks exposed in foundation cutting, moderately weathered and jointed phyllite rocks. The orientation of the bed is as- Dip amount 40^o dipping in S 20^o W direction. The rocks are jointed and weathered and orientation

J1 dip amount 48° dipping in N 40° W direction, J2 dip amount 40° dipping in E direction and J3 dip amount 75° dipping in N 60° E direction. The dip of the bed is towards the hill i.e., opposite of the hill slope.

At the proposed site, thick and consolidated soil cover with rock fragments of phyllite varying in size from 1-3cm, with fined grained dark reddish brownish clayey soil matrix are found. The soil water saturation is moderate to high in the eastern side of the proposed site due to Bagrakhal Nala. The trees near the proposed site are standing straight which shows there is no active movement in the area. Some construction work is already under progress at the proposed site.

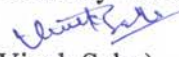
RECOMMENDATIONS:

Based on above surface geological observations, the proposed area seems geologically suitable for the proposed building construction. The following remedial measures are recommended for safety:

1. Inclined retaining wall at the uphill and downhill side with depth of foundation more than the foundation depth of the house, with provisions of weep holes and sufficient gap of about 0.5-1.0m in between the backside retaining wall and the proposed construction should be constructed. And also, proper drainage system between the retaining wall and the wall of house should be developed.
2. The surface drainage should be properly planned through lined drain/pipe, so both, rainwater from uphill side as well as waste water from the existing houses to be release safe place at down-hill along a channel with more dimensions than that of maximum possible volume of water.
3. The foundation depth of the houses must be as per the compactness of the overburden material in the proposed site.
4. Inclined retaining wall at the toe of the proposed site with provision of weep holes at specific distance should be constructed
5. Massive plantation of trees, bushes and grasses which can hold the soil mass and retained the debris with dense and long rooted, wide/broad leafed flora must be done to protect the soil erosion and minimize the surface erosion of the subsurface rocks.
6. The soakpits and toilet foundations must be quiet away from the house so that the foundations are not directly affected from subsidence due to excessive seepage.
7. The premises of house must be made 'pukka' to prevent excessive subsurface seepage and downward percolation of water and differential settlement.
8. Framed structure must be used and light roof should be constructed, as the area falls in the earthquake zone IV, so it is essential that the house must be constructed with latest earthquake resistive techniques, scientific and technically sound craftsmanship with logical and favourable principles of soil mechanics.

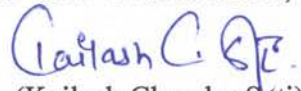
CONCLUSION:


Prima-facie, presently, the proposed site of Shri. Buddhi Lal S/o Shri. Johri is geologically feasible for the proposed construction, only if, the above mentioned recommendations will be followed strictly, otherwise, in their contravention; geological suitability will be deemed annulled.


(Vivek Sahu)
Consultant Associate Geologist

Date:

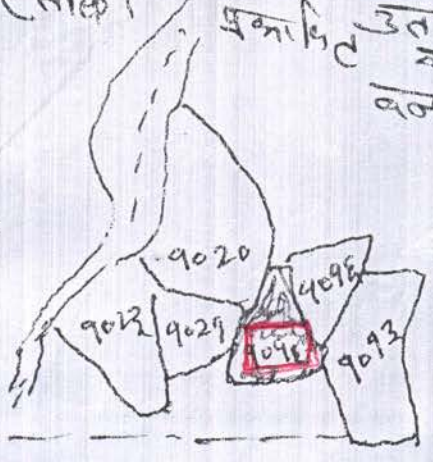
Place: Uttarkashi


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रा. उपनि. वेगवला

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