

RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI LAIBAR LAL S/O SHRI NATHU LAL FOR THE CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION FOR HOUSING (ODCH) VILLAGE-NAILADI, TEHSIL- PUROLA DISTRICT- UTTARKASHI KHASARA NO- 815m. & AREA- 0.016ha

Date of Inspection: 29/12/13

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 Construction 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 R. S. Rawat, Revenue Sub-Inspector, Nailadi. The proposed site is 17Km approx from Tehsil Headquarter Purola, District Uttarkashi, Uttarakhand and on road head Hudoli-Panigawan motor road. It falls on coordinate – N 30⁰ 50' 2.5" E 78⁰ 8' 14.6" El. 1706m. At 200m horizontal distance Mohna Gad in E direction is present.

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 1-2m approx with boulders embedded in the soil at the proposed site. The boulders of phyllite, general slope are 10⁰ -15⁰ and 25⁰ -30⁰ hill side in S direction. The proposed site location is covered with thick soil cover of 2-3feet approx. At around the proposed site location less vegetation is present.

At the proposed site in-situ rocks exposed at 100-150m approx along the nala way phyllite and gneisses rocks are present. The orientation of the bed is as- Dip amount 42⁰ dipping in W direction. The rocks are jointed and weathered and orientation of the joints is as- J1 –Dip amount 86⁰ dipping in S direction, J2 dip amount 90⁰, J3-Dip amount 50⁰ dipping in S 60⁰ E direction. The dip of the bed is towards slope direction.



Close view in front of the proposed site

At the proposed site, thick and consolidated soil cover with rock fragments of phyllite varying in size from 5-10cm, with fine grained light brownish silty soil matrix are found. Boulders were embedded in the soil of varying size from 60cm to 80cm approx at and around the proposed site. The soil water saturation is moderate to high in the southern side of the proposed site due to underground water. 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:

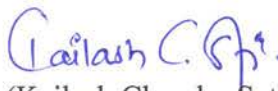
1. Inclined retaining wall at the uphill side with depth of foundation more than the foundation depth of the house, with provisions of weep holes and sufficient gap of about 0.5-1.0m in between the backside retaining wall and the proposed construction should be constructed. And also, proper drainage 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 released at 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 uphill footway and 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 leaved 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 kept 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. Laibar Lal S/o Shri Natthu Lal 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.

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