

RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI BHAGWAN DAS S/O SHRI PULAN DAS FOR THE CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION HOUSING (ODCH) VILLAGE-CHILOTH, TEHSHIL- CHINYALISAUR, DIST.- UTTARKASHI KHASRA NO.- 7193 & AREA-0.008

Date of Inspection: 13-12-2013

INTRODUCTION:

In a 'World Bank' funded programme, Government of Uttarakhand has consummate teams of undersigned for geological studies in proposed site for Owner Driven Construction House (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 10thDecember 2013 regarding geological studies in disaster affected five districts of Uttarakhand.

In the above mentioned questioned area, the reconnaissance geological investigation was carried out in the presence and co-operation of Shri Mohan Singh Rana, Revenue Sub-Inspector, Joshiyara the land of Shri Bhagwan Das Khasra No.7193 and the area of the land are 0.008 ha.

The proposed site for building construction falls in old alluvial deposits on right bank of Bhagirathi River. The site is located 60km from District headquarter Uttarkashi. In Northward plot of Shri Jhepan Singh, in Eastward plot of Shri Dependra Singh, in southward govt. land and in west direction foot road just behind of plot head. This site is about 20m on foot from Chiloth PMGY motor way. A village savage/seasonal drain also present near in south direction from proposed site. The proposed site falls on coordinates N 30° 37' 43.9" E 78° 17' 11.6" and El. 1629 m from msl.

GEOMORPHOLOGY OF THE PROPOSED AREA:

The proposed site situated on alluvial terrace, cultivated land is present at very stable terrace. Slope hill side 20°-25° in northwest direction and slope valley side 30°-40° in southeast direction. About 4-5m thickness of overburden, phyllite fragment varying 1cm-5cm with fine to coarse grain brownish soil matrix. Generally flat land, 500m from this site dense forest is present towards hill side direction here just below the site in-situ rock found which dips towards hill side that shows that this locality is stable dew to slope stability.

REGIONAL GEOLOGY OF THE AREA:

Uttarkashi valley exhibits characteristic rugged topography of the Lesser Himalayan terrain. The ground elevations generally vary between 1150 to 2000 meters above msl. The hill slopes in the area are generally observed to comprise of rocky outcrops, rocky cliffs and mantle of colluviums. The hill slopes in the area is generally moderately steep (25°- 35°) to steep (36°- 45°) while few escarpments or cliffs (> 50°) are also present.

Uttarkashi town is located in the Lesser Himalayan geotectonic block and it is bound by two major Thrust fault i.e. Main Central Thrust (MCT) and Srinagar Thrust (ST). The MCT can

be traced to the northeast of Uttarkashi while the Srinagar Thrust lies in the southwest. Phyllite, metabasic and quartzite of Garhwal Group are exposed around the area.

Geologically, the area falls in the region of rocks of Netala Formation of Lesser Himalayan terrain. Quartzite with bands of limestone, phyllite and slate is fine grained, compact, massive in general, but jointed and fractured at places. The slope of the hill ranges between 25°-30° towards eastern direction. At few places insitu rocks are exposed in the plot whereas maximum plot area is covered with overburden. This overburden material comprising soil, hillwash and debris of varying size consisting of brown colored, fine to medium grained silty to gravelly matrix with angular fragments of dolomitic limestone and a few brown fine grained shale etc., in which percentage of the angular fragments is more than the matrix. The major joint trends 240°/30° NW (Oblique to foliation plane) whereas minor joint trends 265°/40° NW.

GEOTECHNICAL OBSERVATION OF THE AREA:

The proposed area is on old colluvial deposit on terrace. The overburden depth in terrace 2-3m thick, in overburden angular and sub-angular fragment of phyllite varying 1-5cm with brown sandy soil matrix made up of colluvial sloppy terrace. The site is toe of the moderately vegetated hill. The seasonal nala is just site head in north direction of this site.

An in-situ phyllite rock exposure has been seen below the proposed land on seasonal drainage valley side. Moderately to highly weathered and slightly folded brownish grey phyllite outcrop is about 5m towards SW direction. The expose rock dipping 15° towards S 35° E, joint J1 trend is 85° towards N 50° E and J2 is 80° towards N direction. Proposed site is suitable for house construction due to bed rock is exposed below the site and dipping hillside.

The land owner has already started constructing a new house on the proposed site, before the geological site inspection and without implementing the required engineering techniques. There is no retaining or supporting wall on the uphill side of the proposed site and there is no space between the backside wall of the house and the uphill overburden mass.



A north direction view of newly constructed house of Shri. Bhagwan Das, at the proposed site

RECOMMENDATIONS:

Based on above surface geological observations of the proposed area, geologically suitable for building construction and the following remedial measures are recommended:

1. Inclined retaining wall at the back side of the proposed site at minimum 2-3feet is recommended with a provision of weep holes at specific distances.
2. The surface drainage should be properly planned through lined drain/pipe, both rain water flows from higher elevation as well as waste water from existing building and release safe place at down-hill along a sewage channel.
3. Framed structure of building must be designed as per seismic coefficient in earthquake zone 4 of this region.
4. Light weight and slanting roof, framed structure, deep column, tabular structure and single storied house for construction is immensely recommended.
5. As the area falls in Lesser Himalayan earthquake zone IV so the houses must be erected with latest earthquake resistive techniques, and scientific and technically sound craftsmanship with logical and favourable principles of soil mechanics or the foundation of the houses must be kept in the fresh in-situ outcrops.

CONCLUSION:

Prima-facie, the proposed site of Shri. Bhagwan Das S/O Shri Pulan Das is geological feasible for construction work, only if, the above mentioned recommendations will be followed strictly, otherwise, in its contravention, geological suitability will be deemed voided.


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Date: 17th Dec 2013
Place: Uttarkashi


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Spun 1200

R.S. Badhu 13/12/15
Indar.

Handwritten notes in a non-Latin script, possibly Odia or a related language. The text is written in black ink and appears to be a list or a set of instructions. It includes several lines of text, some of which are underlined.

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