

**RECONNAISSANCE GEOLOGICAL REPORT PROPOSED SITE OF SHRI GIRISH
CHANDRA S/O SHRI VISHALMANI FOR THE CONSTRUCTION OF OWNER
DRIVEN CONSTRUCTION HOUSING (ODCH)
TOK-BADAGADI,VILLAGE-KOTHIYALGAUN, TEHSIL- BHATWARI, DIST.-
UTTARKASHI
KHASRA NO.-115 & AREA-0.050 ha**

Date of Inspection: 12-12-2013

INTRDUCTION:

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 Jagwant Singh Mehar, Revenue Sub-Inspector, Joshiyara the land of Shri Girish Chandra Bhatt Khasra No.115, the area of the land is 0.050 ha.

The proposed site for building construction falls in old colluvial deposits left bank of Bhagirathi River. The site is located 5km from District headquarter Uttarkashi. In North direction Khsra No.71 Kirti Prasad, in East direction Khsar No.114 govt. land, in South direction Khasra No.122 Shri. Girish Chandra etc. A seasonal nala is also present just plot head in west direction and along nala a foot path present on the left flank of the site nala .The site is present just 200m from main motor road by foot road. The proposed site situated in toposheet no. 53J/6, the coordinate is N 30⁰ 43' 24.2" E 78⁰ 26' 11" and El. 1185m from msl.

GEOMORPHOLOGY OF THE PROPOSE AREA:

The proposed site situated on colluvial terrace, cultivated land about 1km hillside from river bed of Bhagirathi. At the same place the river Indrawati tributary of Bhagirathi River meets here. Valley side slope is 15⁰-20⁰ towards north direction and hill side slope is 15⁰-20⁰ towards south direction. About 2-5m thickness of overburden, phyllite and quartzite fragment varying 1-5cm with fine to coarse grain brownish soil matrix. Generally flat land, 2km from this site dense forest is present towards hill side direction. Geologically this area is well stable so this site is also very stable.

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 Centre 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 gravely 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 alluvial terrace. The overburden depth in terrace 2-5m thick, in overburden angular and sub-angular fragment of phyllite and quartzite varying 1-5cm with brown sandy soil matrix made up of colluvial terrace. The site is toe of the dance vegetated hill. The seasonal nala is just site head in about 15m towards west direction of this site. After 20 m this site settlements are present in valley side west direction.

These settlements are stable last many years so that on the basis of engineering and geologically aspects suitable for building construction.



Valley side view of proposed land for construction


RECOMMENDATIONS:

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

1. As the area falls in Lesser Himalayan earthquake zone-IV so, the house must be erected with latest earthquake resistive techniques (framed structure), 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.
2. 1.5-2m height and 12m length inclined retaining wall at uphill and downhill side at minimum 2-3m distance from the proposed structure is recommended before building construction.
3. 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.
4. Light weight and slanting roof, framed structure, deep column, tabular structure and single storied house for construction is immensely recommended.


CONCLUSION:

Prima-facie, the proposed site of Shri. Girish Chandra Bhatt S/O Shri Vishalmani 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.


(Vivek Sahu)
Consultant Associate
Geologist


(Kailash Chandra Sati)
Consultant Geologist

Date: 17th Dec 2013
Place: Uttarkashi


(Dipender Singh Chand)
Assistant Geologist

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