

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF SHRI  
BALYOGESHWAR PRASAD S/O SHRI SHIV PRASAD BANKHANDI FOR THE  
CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION HOUSING (ODCH)  
TOK BHATUSAUR, VILLAGE AUGI, TEHSIL- BHATWARI- DISTRICT  
UTTARKASHI, UTTARAKHAND  
KHASARA NO – 3140 & 3141 and AREA – 0.014 ha. (414 Sq. Feet)**

**Date of Inspection: 11/12/13**

**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 10<sup>th</sup> December 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 Subodh Singh Rana, Revenue Sub-Inspector, Maneri for proposed site of Shri. Balyogeshwar Prasad S/o Shri. Shiv Prasad Bankhandi falls in Village Augi, Tehsil- Bhatwari, 17Km approx from District Headquarter Uttarkashi, Uttarakhand. It falls on coordinate – N 30<sup>0</sup> 44.634' E 78<sup>0</sup> 32.742' elevation 4320feet. The site is 10m approx from NH-108 (Gangotri-Dharasu National Highway) through bridle path on the right bank of river Bhagirathi and is about 40-50m approx horizontal distance from the Bhagirathi river bank, in N 217<sup>0</sup> direction. Around the proposed site there is no inhabitation and also there is no plot boundary.

**GEOMORPHOLOGICAL OBSERVATION OF THE AREA:**

The uphill slope at the proposed site is 70<sup>0</sup> in SW direction and the downhill slope is 48<sup>0</sup> direction is NE. The site is over situated 4-5m approx, above the insitu rock (quartzite), on overburden. The vertical height with respect to river is 40-45m approx.

**GEOLOGY OF OBSERVATION OF THE AREA:**

**Regional Geological Details**

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 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.

#### **Detailed Geological Observation**

At the site insitu rock quartzite found dipping towards N 37° E with a dip of 37°. There are three prominent joint sets found with orientation direction J1 along the dip, J2 – 50° NE, & J3- 42° SE and the joint spacing of 0.2-0.3cm is observed. The site location is lightly weathered and the rock fragments of meta-basic rocks and quartzite of varying size are found.

#### **GEOTECHNICAL OBSERVATION OF THE AREA:**

At the site thin alluvial soil cover and quartzite rock fragments of size 3-4cm in the soil matrix are found. The site area is not affected by any landslides and possibility of slope failure is least. At proposed site there is low vegetation cover. A forest road is also passing above the site from approx 20m.




**The proposed site location for the construction**


### CONDITIONS AND RECOMMENDATIONS:

1. As the site is on less overburden and also over the insitu rock therefore, the foundation must be constructed upto a sufficient depth with proper engineering consideration.
2. Keeping in mind the forest road and the slope gradient a inclined retaining wall at the back side of the proposed site at a minimum 2-3feet distance should be constructed to stabilize the slope so as to prevent damage to the road above.
3. Inclined retaining wall at the toe of the site location with respect to road with provisions of weep holes, at specific distances is recommended for further stabilization of the site.
4. Framed structure must be used as the area falls in the earthquake zone IV, and it is essential that the house must be constructed with latest earthquake resistive techniques.

### CONCLUSION:

Prima-facie, the proposed site of Shri. Balyogeshwar Prasad S/o Shri. Shiv Prasad is geologically feasible for the construction of house, only if the above mentioned recommendations will be followed strictly, otherwise, in its contravention; geologically suitability will be deemed voided.

  
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