

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF**  
**SHRI ANAND SINGH S/O SHRI KENDRA SINGH FOR THE CONSTRUCTION OF**  
**OWNER DRIVEN CONSTRUCTION HOUSING (ODCH)**  
**VILLAGE-THAN GAON, TEHSIL- BARKOT, DISTT.- UTTARKASHI**  
**KHASARA NO – 3449 (c) & AREA – 0.030 ha**

**Date of Inspection: 19-12-2013**

## **1. INTRODUCTION:**

In a 'World Bank' funded programme, Government of Uttarakhand has provided teams of Consultant Geologists and Consultant Associate Geologists to Director, Geology and Mining Unit, Uttarakhand for geological studies in proposed sites 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. Uttarkashi is one of them. Thus undersigned traversed and collected field geological observations 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 Bharat Singh Rawat, Revenue Sub-Inspector, Nagangaon, for proposed site of Shri Anand Singh S/o Shri Kendra Singh, Village Thangaon (Nagangaon Panchayat), Tehsil- Barkot, Khasara No- 3449 (c), and Area- 0.030 ha. The site is 12km approximately from Tehsil Barkot, District Uttarkashi, Uttarakhand and is approachable 9km by NH-123 (Delhi-Yamunotri National Highway) and then 3km via Nagangaon-Masalgaon Motor road. The site is 30-40m from the road in South direction and 100-150m from the Thangaon in East direction. It falls on coordinates – N 30°50.456' E 78°15.457' and elevation 1390m. The site is on the right bank of river Yamuna and is about 200-250m approximate distance from the Yamuna river bank, in Southwest direction. The site is highly populated.

## **2. GEOMORPHOLOGY OF THE PROPOSED AREA:**

The proposed site is situated on a flat terrace about 30-40m downhill in Southwest direction from the Nagangaon-Masalgaon Motor road. The overburden thickness in the proposed site is about 30-40m approximately and is alluvial in nature, brown color composed of fine grained, silty clay. The uphill slope about 30-40m from the site is 55°-60° towards SSW direction and the downhill slope of the site is very gentle approximately 2°-3° towards SSW direction. The Badiyar River is approximately 200-300m in West direction from the proposed site and is flowing in South direction. The proposed site is less vegetated and cultivated terraces are present.

### **3. REGIONAL GEOLOGY AND GEOLOGICAL OBSERVATION AROUND THE CONSTRUCTION SITE:**

Uttarkashi valley exhibits characteristic rugged topography of the Lesser Himalayan terrain. The ground elevations generally vary between 1150m to 2000m 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 ( $25^{\circ}$ -  $35^{\circ}$ ) to steep ( $36^{\circ}$ -  $45^{\circ}$ ) while few escarpments or cliffs ( $>50^{\circ}$ ) 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 Bhatwari-Barkot Formation (= Chail) of Ramgarh Group of Lesser Himalayan terrain, the rocks are mainly phyllites, quartzites with intrusion. It should be emphasized that the quartzites, phyllites and metabasics (= Chail) directly underlying the crystalline are a typical phenomenon for all the Himalayas.

No insitu rocks found near the proposed site. The site is consolidated and stable.

### **4. GEOTECHNICAL OBSERVATION OF THE PROPOSED CONSTRUCTION SITE:**

The proposed area is on a flat alluvial deposit man made terrace. The general slope of the site is  $3^{\circ}$ - $5^{\circ}$  towards Southwest direction. The Nagangaon-Masalgaon motor road and some houses in the Thangaon in NE direction have been constructed within the past 5 years. The soil is alluvial type, brown color, silty clay material of 2-3m thickness. The proposed site depending on the geotechnical observations is stable for the construction of the house.



**A side view of the site from SE direction.**



**A far view of the proposed site from N-direction**


## 5. RECOMMENDATIONS:

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

1. An inclined retaining wall of 2m must be constructed in SSW direction of the proposed site with proper weep holes at specific distance to avoid seepage into the house.
2. The foundation depth of the houses must be as per the compactness of the overburden material in the proposed site.
3. The back, sides and premises of the houses must be made cemented to prevent subsurface seepage and a proper drainage system with drain pit needs to be developed.
4. As the area falls in Lesser Himalayan earthquake zone IV, light weight and slanting roof, framed structure, and single or double storied house construction is preferable.

## 6. CONCLUSION:


Prima-facie, the proposed site of Shri Kendra Singh S/o Shri Judhvir Singh is geologically feasible for the proposed construction with the implementation of the above mentioned recommendations.

  
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Date: 25<sup>th</sup> Dec 2013

Place: Camp Uttarkashi

  
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सर्व क्षेत्रों में एक ही दर से कर वसूल करने का निर्णय किया गया है।  
 यह दर 19-12-2013 से लागू होगी।

अनुसूची - 1 अक्षर



सूची

- (1) 3413 क्षेत्र में एक ही दर से कर वसूल किया गया है।
- (2) 3450 क्षेत्र में एक ही दर से कर वसूल किया गया है।
- (3) 3472 क्षेत्र में एक ही दर से कर वसूल किया गया है।
- (4) 48 क्षेत्र में एक ही दर से कर वसूल किया गया है।
- (5) 44 क्षेत्र में एक ही दर से कर वसूल किया गया है।

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