

**RECONNAISSANCE GEOLOGICAL REPORT OF PROPOSED SITE OF
SHRI BHUPENDRA SINGH S/O SHRI MANDAL SINGH FOR THE
CONSTRUCTION OF OWNER DRIVEN CONSTRUCTION HOUSING (ODCH)
VILLAGE- NAGANGAON, TOK- GHARBADA, TEHSIL- BARKOT, DIST.-
UTTARKASHI
KHASARA NO – 4164 & AREA – 0.011 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 10th 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 Bhupendra Singh S/o Shri Mandal Singh, Village Nagangaon, Tok Gharbada, Tehsil- Barkot, Khasara No- 4164 and Area- 0.011 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 60-70m by bridle path from the Nagangaon road. It falls on coordinates – N 30°50.821' E 78°15.224' and elevation 1414m. The site is on the right bank of river Yamuna and is about 400-500m approximately distance from the Yamuna river bank, in South direction. The plot boundary is present on the SE direction and the site is highly populated.

2. GEOMORPHOLOGY OF THE PROPOSED AREA:

The proposed site is situated on a flat terrace in the centre of the Nagangaon village. The uphill slope from the site is 30°-35° towards Southwest direction and the downhill slope is 12°-15° towards Southwest direction for 30-40m and then increases to 40°-50° SW from the site. The overburden thickness in the proposed site is about 20-30m approximately and the soil matrix is composed of brown colored silty clay. The Badiyar River is there 80-100m approximately from the site in West direction and flowing in South direction. The proposed site is less vegetated.

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° - 35°) to steep (36° - 45°) 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 in-situ rocks found near the proposed site. The site is consolidated and appears to be stable.

4. GEOTECHNICAL OBSERVATION OF THE PROPOSED CONSTRUCTION SITE:

The proposed area is on a flat colluvial deposit man made terrace. The soil here is brown colored silty clay material with thickness of 2-4m. The proposed site depending on the geotechnical observations is stable for the construction of the house.



A side view of the proposed site from West 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. The foundation depth of the houses must be as per the compactness of the overburden material in the proposed site.
2. An inclined retaining wall of 3m must be constructed at the backside in NNE direction and another retaining of 1m at the downhill side in SSW direction of the site with proper weep holes at specific distance to prevent seepage into the house.
3. A sufficient gap of about 2-3ft must be kept between the backside retaining wall and the backside wall of the proposed house.
4. The back, sides and premises of the houses must be made cemented to prevent subsurface seepage and a proper drainage system to be developed.
5. The area falls in Lesser Himalayan earthquake zone IV so the houses must be erected with latest earthquakes resistive techniques, and scientific and technically sound craftsmanship.

6. CONCLUSION:

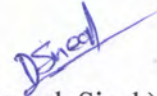
Prima-facie, the proposed site of Shri Bhupendra Singh S/o Shri Mandal Singh is geologically feasible for the proposed construction, only if, the above mentioned recommendations will be followed strictly, otherwise, in their contravention; geological suitability will be deemed annulled.



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Consultant Associate Geologist

Date: 25th Dec 2013

Place: Camp Uttarkashi



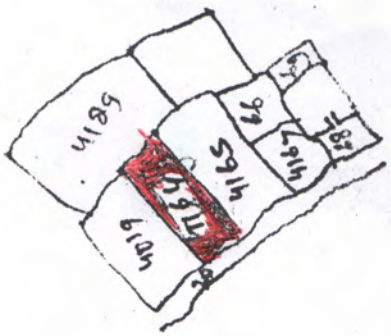
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पत्रांक

(1) उत्तर दिशा में ५१८९ में कामनाचिह्न अर्थात्



(2) दक्षिण दिशा में ५१८९ में उत्तर दिशा में कामनाचिह्न अर्थात्



(3) पूर्व दिशा में ५१८९ में उत्तर दिशा में कामनाचिह्न अर्थात्

(4) पश्चिम दिशा में ५१८९ में उत्तर दिशा में कामनाचिह्न अर्थात्

कामनाचिह्न अर्थात्

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नकल खसरा मौजामध्ये २१२७७ गा. ६ जी तोक, पट्टी६.१२.११.९.
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 प्रीफेब्रिकेट भवन निर्माण हेतु भूमि प्रस्तावित की जा रही है।

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