

योजना का नाम- जनपद देहरादून, मसूरी नगर पालिका क्षेत्रान्तर्गत निजी वन घोषित वेवर्ली कॉन्वेन्ट स्कूल इस्टेट में श्री मनोज कुमार काला एवं श्री अक्षत कुमार काला पुत्रगण स्व० टीकाराम काला, निवासी- सुधा निवास, हरनाम सिंह रोड़, मसूरी, जिला- देहरादून के स्वामित्व की कुल 408.76 वर्ग मी० भूमि है, जिसमें से 141.13 वर्ग मी० अर्थात् 0.014113 है० क्षेत्र में प्रस्तावित आवासीय भवन निर्माण हेतु वन (संरक्षण) अधिनियम, 1980 के अन्तर्गत भू-प्रत्यावर्तन की पुर्वानुमति लिए जाने का प्रस्ताव.

संलग्नक- 05

भू-वैज्ञानिक/ जिला टॉस्क फोर्स की संस्तुतियों का अनुपालन किये जाने का प्रमाण-पत्र

प्रमाणित किया जाता है कि प्रस्तावित परियोजना हेतु भू-वैज्ञानिक/जिला टॉस्क फोर्स द्वारा दिये गये सुझावों/शर्तों का निर्माण कार्य के दौरान हमारे द्वारा पूरी तरह अनुपालन किया जायेगा।

भू-वैज्ञानिक की रिपोर्ट संलग्न है।

(मनोज कुमार काला)
पुत्र स्व० टीकाराम काला,
निवासी- सुधा निवास, हरनाम सिंह रोड़,
मसूरी, जिला- देहरादून।

GEOLOGICAL APPRAISAL
OF
PLOT OF
SRI MANOJ KUMAR KALA & SRI AKSHAT KUMAR KALA
FOR PROPOSED BUILDING
AT
SUDHA NIWAS, HARNAM SINGH ROAD,
MUSSOORIE



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**GEOLOGICAL APPRAISAL
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1.0 INTRODUCTION

The Geological appraisal of the plot of proposed building of Sri Manoj Kumar Kala & Sri Akshat Kumar Kala, located at Sudha Niwas, Harnam Singh Road, Mussoorie (Fig.1) is being attempted here. The plot is located on a low sloping hilly ground.

2.0 CLIMATE:

The climate varies widely from extreme cold in winter to pleasant in summer season. The temperature also varies considerably between the day and night. The temperature goes down to freezing points in the winters and rises up to 32 ° C in summers. The average annual rainfall is around 2000mm.

3.0 PHYSIOGRAPHY:

Topography of the region is, in general rugged and mountainous, having gentle to steep slopes. Drains are steep and narrow and are mostly seasonal. The low order drainage is dendritic in the area. The proposed area falls on a gentle sloping east– west aligned hill face.

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4.0 REGIONAL GEOLOGY:

The regional geology of the area has been described by various workers out of which the work of Auden (1934) is still regarded to be authentic. Recently Validya (1980) gave a detailed account of lesser Himalaya of this region, whereas its seismicity had been discussed by Singh et al. (1966). The region forms a part of the main Krol Belt. It comprises of Janusar-Blaini-Krol-Tal sequence folded in the form of major syncline (Known as Mussoorie syncline) and thrust over the Siwaliks in the south along the Krol thrust (Fig. 2). The thrust dips at the 28° to 35° due N 40° E to east. In this region Krol Thrust coincides with the Main Boundary Fault.

The regional stratigraphic succession of the rocks in the area is given in the table 1. The Chandpur slates represented by highly jointed phyllites and quartzites is thrust over the Siwaliks in the Rajpur region, while all other formations including the Nagthat stage, Blaini series and Krol series have normal conformable contacts.

As stated earlier, the Jaunsar-Blaini-Krol-Tal succession is folded as a major syncline, with its NW-SE trending fold axis passing through Batagad ($30^{\circ}27'-78^{\circ}7'$) east of Mussoorie. This syncline is thrust over the Siwaliks and at places even on Doon gravels. The limbs of the Mussoorie syncline are also folded into local anticline and syncline with their axes often oblique to the main axis of the major fold. Such minor folds are prominent in the Krol D and E dolostones exposed in Banog block. The incompetent nature of the intercalated shales in the limestones has given rise to open or tight folding of varied nature. Few of these folds show overturning. In the north and west regions of this syncline the fold axes of minor folds are parallel to the axis of main syncline, whereas in the southern limb these are either oblique or normal. Considerable faulting within the Krol belt is also noted along with folding.

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Table 1: Stratigraphic Succession of Rocks in the Mussoorie Region (Modified after Singh et. al. 1966)

| Age | | Formations |
|----------------------------------|----------------|---|
| Recent | | Gravels |
| Upper Pleistocene | | Doon Gravels |
| Miocene-pliocene | | Middle Siwalik: Unconsolidated sandstone and sub-ordinate clay shales. |
| | Siwalik System | |
| Middle-Miocene | | Lower Siwaliks Sandstone And dominant clay shales. |
| Triassic-creataceous | Tal Group | Upper Tals: Quartzites and siltstone Lower Tals: shales |
| | | Krol E- Cherty Dolostone and shales. |
| | | Krol D- Dolostone and shales |
| Permo-Carboniferous | Krol Group | Krol C- Bluish Black limestone, grey to white grey cryptocrystalline marble and limestone, calcareous siltstone and shales. |
| | | Krol B-Purple shales. |
| | | Krol A- Thin intercalations of clayey limestone and calcareous shales. |
| Upper-carboniferous | Blaini series | <u>Infra Krols: staty-Shales</u> Blaini boulder Bed |
| Devonian | | Naghat Stage: Quartzites |
| | Jaunsar Series | |
| Lower Paleozoic and Pre-Cambrian | Jaunsar Series | Chandpur stage: Phyllites. |

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5.0 GEOLOGY OF THE AREA

The geological appraisal of the plot for proposed building of Sri Manoj Kumar Kala & Sri Akshat Kumar Kala, located at Sudha Niwas, Harnam Singh Road, Mussoorie is given below. The geology of the area (Fig.3) is given in the table 2.

Table 2. Geology of the Area

| Geological Age | Lithology | |
|---------------------|-----------------|---|
| Recent | Debris deposits | Boulders, pebbles, grit set in the matrix of calcareous sand silt and clay. |
| Permo-Carboniferous | Krol Group | Krol A Slates intercalated with limestone are observed in the surroundings. |

Low sloping hill face aligned E-W is designated for the proposed building site (Fig.4). The area has exposures terrace deposits in which boulders are set in the matrix of loose sediments consisting of dolomitic gravels and pebbles and the calcareous sand. The loose sediments are found all over the plot (Fig.5). Thickness of the loose deposits varies from 1.5 m to 3.5 m, as evidenced through the open vertical exposures at places. The plot is bound by low retaining walls on the upper and lower side.

Dolomitic limestone of Krol -C member of Krol Group are found exposed around the site. The grayish, fine grained calcareous rocks are hard massive and slightly weathered at the surface. These are found in isolated patches in the surrounding.

6.0 Geological Appraisal of Property:

The property of Sri Manoj Kumar Kala & Sri Akshat Kumar Kala, located at Sudha Niwas, Harnam Singh Road, Mussoorie is situated on E-W trending ridge having low sloping hill face (Fig 4). The terrace deposits as described above are found overlying the Krol C deposits. On all the sides open terraces are existing.

S. A. Gaur

The area does not shows any sign of mass movement or even soil erosion, which indicates that the rocks are lying at very shallow depths.

The site falls on stable hilly ground, where the bearing capacity is also high (Fig 5). As the terrace deposits are exposed on sloping terrace, it is proposed to provide proper drainage on all the sides to avoid erosion of soil through surface run off.

7.0 SEISMICITY:

The site falls in the seismic zone V of as per the Indian Standard Code. Therefore, the area is always prone to earthquakes. The structure of the building has been designed with extra safety factor, as per the seismic load of zone V.

8.0 RECOMMENDATION:

The site is geologically stable and the structure do not seems to have any threat from erosion, landslide or mass movement. It is recommended that proper drainage may be developed on all sides of the plot.

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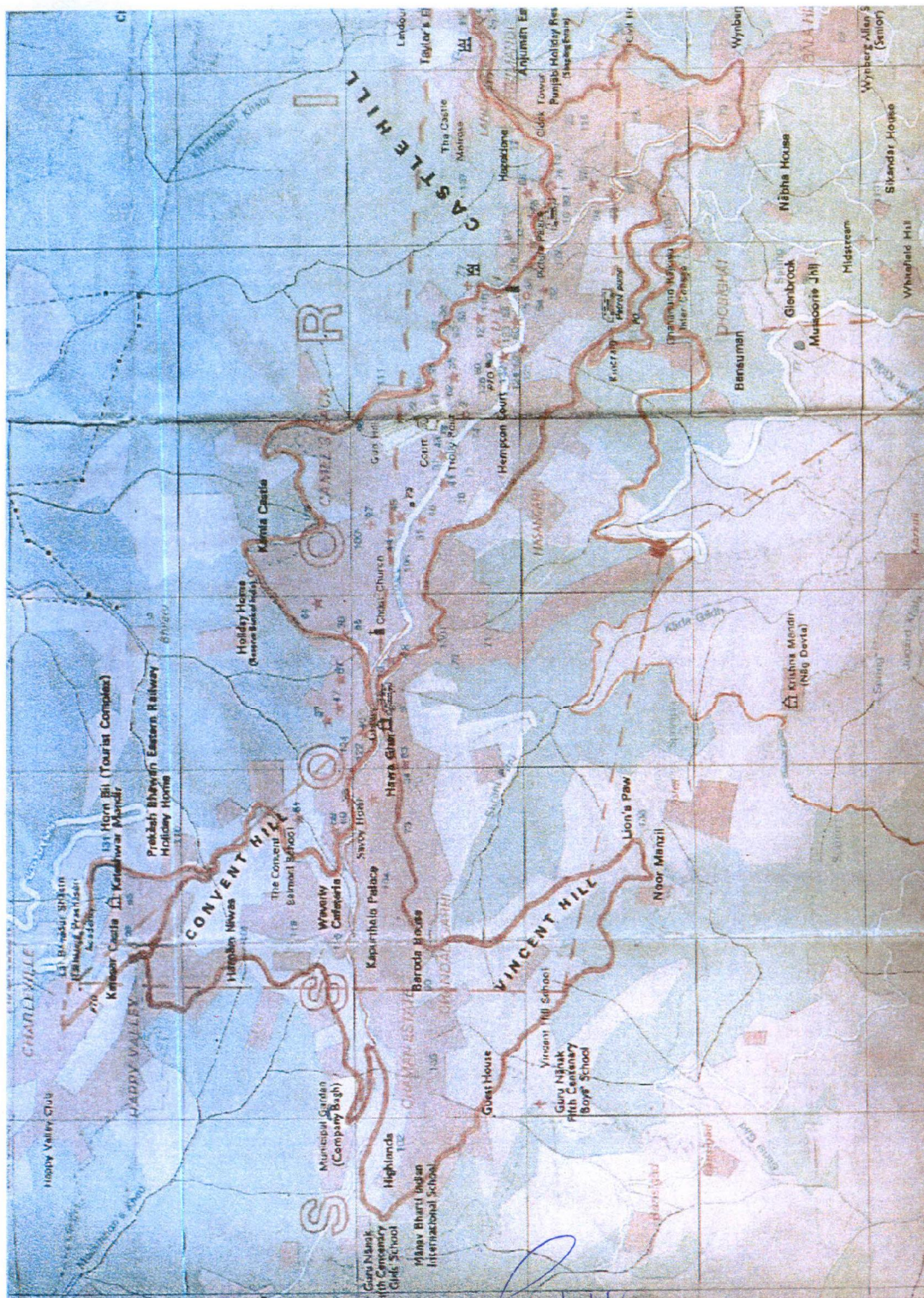
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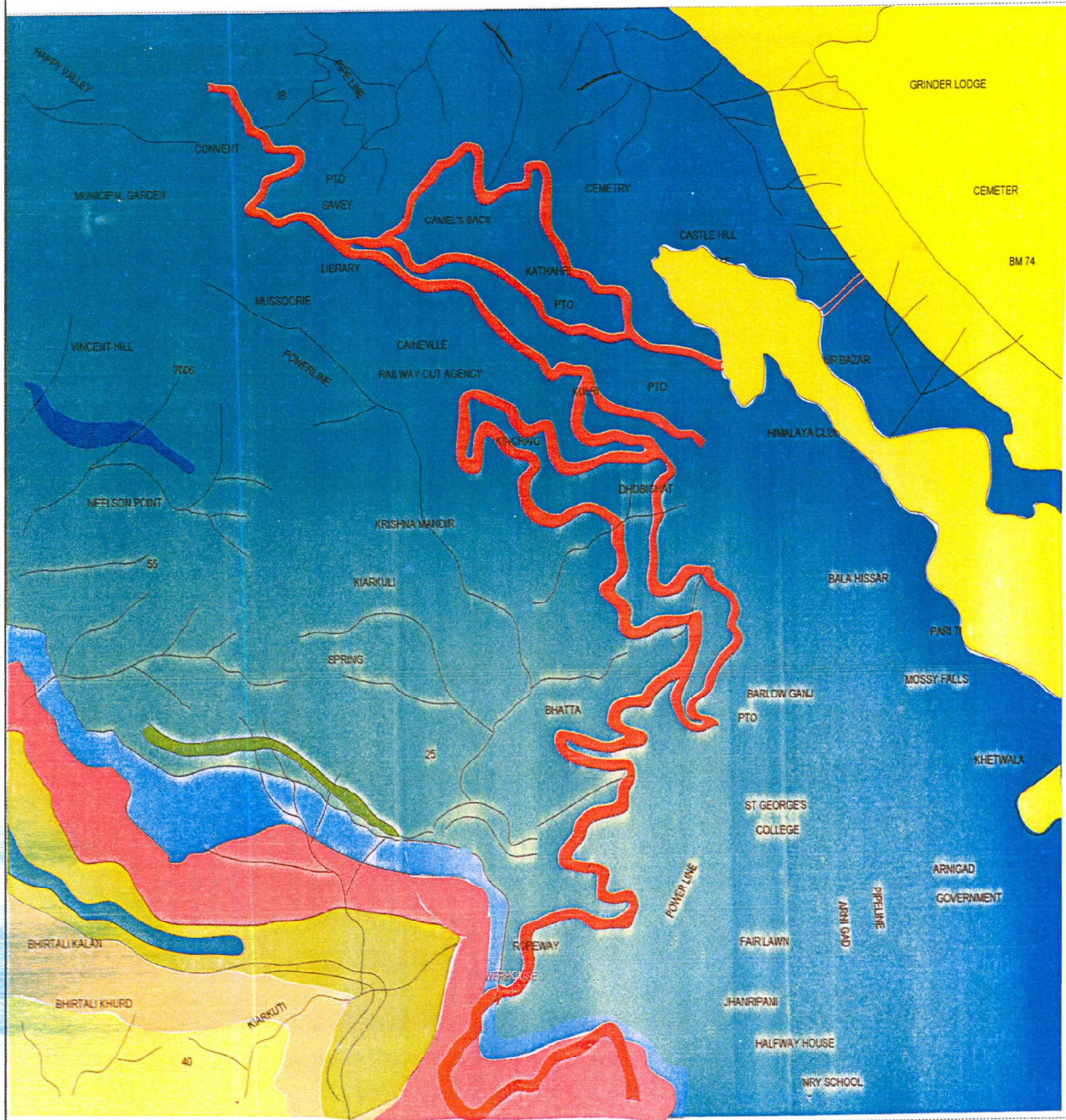


LOCATION MAP
PROPOSED RESIDENTIAL BUILDING PLAN OF SRI MAHARAJ KUMAR KALA &
SRI AKSHAT KUMAR KALA SITUATED AT SUDHA NIWAS, HARJAM SINGH ROAD,
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Regional Geological Map of Mussoorie













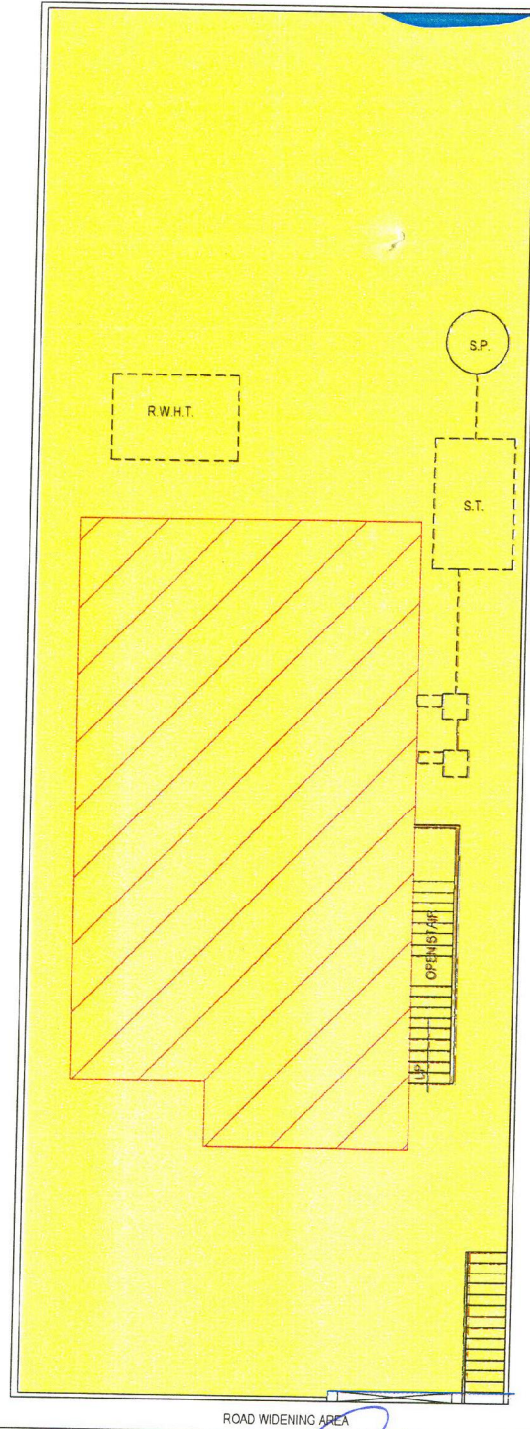
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|  | Slates |  | Krol-D and Krol-E Formation |  | Infra Krol Formations |
|  | Upper Tal Quartzite |  | Krol C Formations |  | Naghat Quartzite |
| | | | |  | Chandpur Phyllite |

Fig.2

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GEOLOGICAL MAP:
PROPOSED RESIDENTIAL BUILDING PLAN OF SHRI MANOJ KUMAR KALA &
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MUSSOORIE DISTT. DEHRADUN



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

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|---|---------------------|
|  | TERRACE DEPOSITS |
|  | DOLOMITIC LIMESTONE |

FIG.3



Fig.4. Terrace designated for house lies on low sloping hill face bound by retaining walls.



Fig.5. A view of terrace deposit.

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