

NO: Udyog/Bhu/Chamba/Geological Report- 565
Office of the Mining Officer, Chamba
Distt. Chamba (H.P)

Chamba

Dated: 19-9-2021

To

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The Executive Engineer
HPPWD Division Dalhousie
Distt. Chamba (H.P)

Sub:

Regarding Geological report of proposed Dadiara-
Chakki road in Bhattiyat Tehsil distt. Chamba.

Sir,

As per the direction of State Geologist Himachal Pradesh,
Shimla, the Geological report of proposed Dadiara- Chakki road in Bhattiyat Tehsil
distt. Chamba is enclosed.

Encl: As above in Original

Yours Faithfully


Mining Officer
Distt. Chamba (H.P)

Copy to :

The State Geologist Himachal Pradesh, Shimla for information w.r.t
telephonic direction please.


Mining Officer
Distt. Chamba (H.P)

Geological Report of Proposed Road

1.1 PREFACE

The Executive Engineer, Himachal Pradesh Public Works Department, Division, Dalhousie, District Chamba Himachal Pradesh, has requested the State Geologist, Himachal Pradesh to provide the geological investigation report of the proposed road from Dadiara to Chakki Km. 0/00 to 13/500 Km. located in Bhattiyat area of Distt. Chamba Himachal Pradesh.

Roads are an integral part of the transport system. Transport infrastructure provides a basis for economic activities in the rural areas in the long term. Road construction is a critical aspect of infrastructure development in rural as well as urban India. The environment consequences cannot be neglected only foreseeing long term economic benefit. Difficult topography and unstable geology make the road construction difficult in the rural hills of Himachal Pradesh. A good communication network is the prerequisite for development of hilly areas. Rural roads not only provide connectivity to the far flung Ares but also serve as a path to the development. Special attention should be given to road connectivity to rural and remote areas, which are not yet connected to the main roads. In this context road is one of the major infrastructures that is required for overall development of a country. In fact, the development of important sectors of economy such as Agriculture, Horticulture, Industry, Mining and Forestry depends upon efficient road network. For a developing country like India, roads play vital roles in lifting up the country's economic conditions.

The site is located in beautiful Chamba valley is a beautiful Himalayan village. The developments of roads also exhort tourists to spend quality time in a nuanced fashion by engaging them in different ethnic, indigenous and aesthetic practices in these rural areas. The State Geologist, Himachal Pradesh deputed the undersigned to inspect the proposed site and submit the requisite report. In compliance to the directions of the State Geologist, Himachal Pradesh the undersigned visited the proposed road site for the Geological Investigation on 09.09.2021 along with Junior Engineer, Tundi from HPPWD, Sub Division Sihunta Distt. Chamba, Himachal Pradesh.

1.2 INTRODUCTION

The initial point of the proposed road of said site is located near village Dadiara. It has a rugged topography defined with towering mountains and deep valleys. The proposed link road starts from village Dadiara, bifurcated from Shahpur –Sihunta-Chawari road. The approximate length of this proposed road is 13.50 Kilometers. The road will not only connect the village maradi, jandroga, chihun & Rat bhaonra, Chakki, but shall also connect some other small villages of the vicinity. At present there is proper motorable no road to these villages.

CONSTRUCTION OF LINK ROAD CHAKKI TO DADIARA,
TEHSIL BHATTIYAT, DISTRICT CHAMBA (H.P.)

ALTERNATE MAP - I

SOI Topo Sheet No. 52 D/3



The site under investigation falls under the Survey of India Toposheet Nos. 53D/3 and is situated in between the latitude $32^{\circ}23'22.58''N$, $76^{\circ} 3' 24.7''E$ and longitude $32^{\circ}25'$

0.42°N 76.° 6' 28.58"E (tentatively). The altitude of the site ranges from 4150 feet to 6555 feet. The area under investigation is mostly covered with hard rock mass, slope wash and soil cover accumulation having gentle to steep slopes at some locations.



1.3. REGIONAL GEOLOGY OF THE AREA

The rocks are generally hard formations forms hilly and mountainous terrain and mainly comprise of igneous and metamorphic rocks, belonging to Lower Shivalik formations which occupy the major part of the area. Mainly Quartzite and Slate rocks mass are exposed and observed in the area with their gradational

variants.



Figure showing geological Image of the site under reference

1.4 OBSERVATIONS

The proposed link road is located at high hills as observed during the site inspection. The geological and topographical profile of the area/site indicates that the cut and fill methods will be suitable for the construction of the road. The Preliminary Geological road assessment indicates that the road from RD 0/00 km to 13/500 Kms covers with overburden (Slope wash Material) as well as hard rock mass strata at various locations.



Figure showing Approx. alignment of Proposed Road

The slope angle at the initial RDs of the road varies from 50 to 60 degree and thereafter the road alignment is on gentle slope. Surface observations along the proposed alignment reveal the slope wash materials (Overburden) as well as hard rock mass will be encountered during the construction of the proposed road. The regional geology of the area had revealed that inter banded sequence of Quartzites and Slates formation will be encountered during construction of proposed road. The outcrop indicates hill and valley side dipping of the rock. The rock exposures are weathered and slightly fractured. Two to three joint sets have been observed. The proposed road passes through small numerous slide zones. Apart from this, it was observed that there are no major risk of sliding debris, falling stones, and avalanches along the proposed road stretch. No major River, Nalas falls along the proposed Road though some small meandering channels were observed, which are crossing the proposed road alignment at various RD's.



Figure Showing Rock type along the proposed road

1.5 CONCLUSION AND RECOMMENDATIONS

Although the road construction in hilly areas poses great difficulties and road construction becomes very difficult due to curves, sharp turns, steep gradient and limited width in the area. It also leads to damage both flora and and have adverse effects on environment, but without proper connectivity facilities, it is not possible to explore the valuable wealth of such areas. During the course of inspection, it was appraised by Junior Engineer, HPPWD that the 2.225 Km stretch falls under private area, but the other stretches of road which falls under Government/Forest Land will be started only after obtaining permission from the competent authorities under the provisions of the Forest Conservation Act, 1980. To construct the road through the above said RD's, a total of 617 nos. of trees of various classes of Chil, Kail, Deodar, Ban, spruce, Rhododendron etc. verities shall be required to be cut/fell for which the necessary permission shall have to be obtained from the competent authorities. Certain scientific construction measures must be taken into account while constructing the roads in hilly regions. The proposed roads shall be well drained and graded to ensure a firm, non-sliding surface during the rains and in winter season. Following recommendations should

be taken into consideration during and after the construction of Proposed road:-

Construction of Road in Forest Land – As the alignment of the proposed road is almost final, so it is recommended that no road construction shall be done in the forest land without getting the prior permission from the competent authorities. Also, no felling of trees shall be done without getting the necessary approvals from the competent authorities, however it is advised to use or develop some practice in order save as many trees as possible.


Protection Works – At present the hill slope is at a natural angle and seems to be stable but Slope failures or landslides occurs once the excavation starts. Over, uneven or steep slope cutting creates instability in the Hill slope. The proposed road is formed by mostly by cutting into the hill and thereby disturbing natural stability of slopes. Suitable protection work should be provided where ever necessary. In case if rock is encountered, the back slopes of cut banks shall be stable and compatible with existing topography, and shall be flattened as far as practicable to the natural ground surface. For proper safety of unstable areas like overburden etc. suitable protection work like Breast walls, side walls or retaining wall should be provided wherever necessary.

Drainage – Road side drains are necessary on Hill roads. The Chamba valley area is very prone to heavy rainfall during monsoons. Therefore, suitable drainage structures in sufficient numbers should be provided to prevent accumulation of excessive water which causes erosion of the road surface. Further, wherever required proper cross drainages/culverts should be constructed to avoid any damage to the road due to rain water.

Post construction maintainance - The hill roads are very prone to landslides, heavy rainfall, snowfalls etc. The aim is to keep road surface in good order and prevention of further damages erosions etc. For this, not only regular maintainance and repairing but also cleaning of drains and ditches should be taken into account periodically to prevent further damages etc.

Grade and Width - Nominal grade should be maintained for the vehicular movement. The roads shall be wide enough to allow light traffic in both directions. To prevent excessive erosion, no steeper longitudinal slope than 10% shall be used, except wherever specifically approved.

Prepared & Submitted By:-


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