

Geological Report

1. PREFACE

The Executive Engineer Outer Seraj Division HPPWD has intimated the State Geologist, Himachal Pradesh that the FCA case of the **Shagni to Bhaktikater** proposed road had pending with the observation to upload the geological report for the proposed alignment and to provide the geological report of the proposed road from **Shagni to Bhaktikater** within Jurisdiction of Anni Forest Division & Distt. Kullu Himachal Pradesh.

Accordingly, The Geologist (Zone-IV) directed the undersigned to inspect the proposed site and submit the requisite report. In compliance to the directions of the Geologist (Zone-IV) Himachal Pradesh the undersigned visited the site along with representative of HPPWD department at the site, on dated 16 June, 2025.

2. INTRODUCTION

The proposed road site is located in Gram Panchayat Lote about 2 Km from village Durah, Sub-Tehsil Neether District Kullu, and Himachal Pradesh. The site is approachable from Village Shagni about 2 km from Durah on Neether-Urtu-Nirmand road. The Site has rugged topography defined by high mountains and deep valleys. The approximate length of this proposed road is 4.675 Kilometers. The road will connect the small hamlets/villages in the vicinity which are not presently connected through proper motor able road.

3. REGIONAL GEOLOGY OF THE AREA

Geologically the area belongs to the mid Himalayas in Dhauladhar Range which are comprised of bedded quartzite, slates, phyllites and low-grade schists. The rock formations occupying the field have a distinct range from the Meso Proterozoic to Neoproterozoic period. The rocks are generally hard formations that form hilly and mountainous terrain and mainly comprise of sedimentary and metamorphic rocks, belonging to the Rampur group formations which occupy the major part of the area. Mainly Quartzite rocks mass are exposed and observed in the area with their gradational variants.

4.OBSERVATIONS

The proposed 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 0/0 km to 4/675 Kms covered with overburden (Slope wash Material) as well as hard rock mass strata at various locations.

There are no unstable stretches or Slide zone observed along the Alignments. No major geological surprises have been observed. There are no major nalla river crossing across the alignment. The slope angle across the alignment is moderate to steep at some locations however the gradient of the proposed road is moderate.

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 Quartzite of Banjar formations will be encountered during the construction of the proposed road.

5. RECOMMENDATIONS

Stability is the prime concern while proposing and designing a road to be constructed on hilly terrains. Certain scientific construction measures must be taken into account while constructing the roads in hilly regions.

As per the data provided by the department, to construct the road through the above said RD's, there are various trees of various classes of Pines and other varieties which shall be required to be cut/fell, for which the necessary permission shall have to be obtained from the competent authorities. 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:-

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 – Roadside drains are necessary on Hill roads. The Satluj Valley receive very heavy rainfall during monsoons. Therefore, suitable drainage structures in sufficient numbers should be provided to prevent the accumulation of excess 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 rainwater.

Post construction maintenance - 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 maintenance 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 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.

Construction of Road in Forest Land – As the alignment of the proposed road is almost final; it is recommended that no road construction shall be done in the forest land without getting 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.



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