HIMACHAL PRADESH
PUBLIC WORKS DEPARTMENT

No. PW-SD-WA-Forest Cases/2022-23- 2627 Dated 21-4-22

To

The Divisional Forest Officer,
Churah Forest Division
Salooni, Distt. Chamba

Subject: - Diversion of 3.677 Ha. of forest land in favour of HPPWD for the construction of link road from Naddal to village Jutrahan km 0/0 to 7/00 within the jurisdiction of Churah Forest Division, Distt. Chamba (HP).

Reference: - Your office Endorsement No. 5578 dated 26.02.2022.

Sir,

The observations raised vide letter quoted under reference of above cited subject have been attended and reply to the same is as under: -

Point No. 1.

i **Alignment No. 1** Total area required is 4.490 Ha. from 8.280 km length in which 4.01 Ha. & 0.48 Ha. passes through forest & private land respectively involving 1245 trees. Alignment passes through steep cliffs and does not cover all habitations.

ii **Alignment No-2**: - Total area required is 4.399 Ha. from 7.890 km length in which 3.899 Ha. & 0.50 Ha. passes through forest & private land respectively involving 1189 trees. Alignment passes through loose/fragile strata and partly touches obligatory points.

iii **Alignment No-3:** - Total area required is 4.067 Ha. from 7.000 km length in which 3.677 Ha. & 0.39 Ha. passes through forest & private land respectively involving 932 trees. Alignment passes through smooth gradient & hard strata and touches obligatory points.

Out of the above three alternate alignments explored necessarily passes through the Ban Forest and cannot be avoided. The one selected alignment has comparatively less Ban trees and every effort made to reduce or minimize the number of trees and barest minimum area of forest land to be diverted.
In view of above it is requested to please consider the above proposal for diversion.

Point No. 2. It is true that Police Battalian Check Post exit in one of beneficiary village being a border area with J&K, but no road exist beyond village Nadal and further journey by people including Police and

other aligned department/officials to Jatrahan village have to travel on foot. The Superintendent of Police Chamba office report has been attached as **Annexure-I.**

Point No. 3. Requisite certificate obtained from Deputy Commission Chamba regarding none of the proposed beneficiary villages are connected by any of the road is attached as **Annexure-II**

Point No. 4. Geological stability and inescapabilty report obtained from NIT Hamirpur is attached as **Annexure-III**.

Point No. 5. It is submitted that people have small land holding and most of the land falls in the category of forest land and due to small land holding (private land) people falls in the category of marginal farmers and not willing to donate their land for dumping. Hence dumping has to be done on sites selected on barren / degraded forest land due to non availability of non forest land. Certificate for non-availability of non forest land from Worthy Deputy Commissioner Chamba is also attached as **Annexure-IV**.

Point No. 6. The road alignment passes through forest as well as in non-forest land according to the gradient and obligatory points. It is not possible that alignment passes through non forest land. Moreover, the land owners have small land holding and their livelihood depends upon it. The alignment so finalized require barest minimum of private as well as forest land, which will keep the project cost low and feasible.

Point No. 7. The funds will be available as per the requirement.

The District Chamba being Aspirational District and infrastructure improvement as per indicator-3 regularly monitored by Niti Aayog for providing connectivity to un-connected habitations. The Hon'ble Chief Minister of Himachal Pradesh has also announced for construction of this road at the earliest, considering the public demand.

Hence it is requested that in view of above the proposal for diversion of forest land be considered sympathetically please.

Executive Engineer
Salooni Division
HPPWD/Salooni

DA/As above

E-MAIL Annexure

OFFICE OF THE
SUPERINTENDENT OF POLICE,
CHAMBA DISTRICT CHAMBA HIMACHAL PRADESH

No. 17685 /

Dated. 13.4.2022

To

The Executive Engineer,
Salooni Division,
HPPWD Salooni. (Through SDPO Salooni)

Sub:- Diversion of 3.677 ha. of forest land in favour of HPPWD for the construction of link road from Naddal to village Jatrahan (kms0/0 to 7/00), within jurisdiction of Churah Forest Division, Distt.Chamba H.P

Sir,

Ref. to your office letter No.PW-SD-WA-Forest Cases/ 2020-21-11204-07 dated 3.3.22 on the subject cited above

In this regard, it is intimated that after the ghasty incident of Satrundi and Kalaban in 1998, police force was deployed along Chamba-J& K border to check the spillover of terrorist activities from the neighboring state. At present the force of 2nd IRBn is deployed at different locations along Chamba-J&K border.

Furthermore, it is pertinent to mention here that Dy.SP/ Incharge sector Kihar & Khairi, vide letter No.642/21A dtd.12.4.22 intimated that link road has been extended from Brangal to village Naddal(approx.40 kms) and Outer Check Post (OCP) Naddal, operational in village Naddal is well connected by the road for vehicles(copy attached). This is for information & further necessary action Please.

Encls:- As above.

Superintendent of Police,
Chamba, District Chamba (HP)

13-04-22.

GHQ Chamba
Distt Chamba
No. [illegible]
Dated [illegible]

To - SP Chamba
Distt Chamba.

From - Sec. Incharge
Kihar, Chamba

Sub - Req Construction of link road from Naddal to village Jathsalan.

Sir,

Kindly refer to your office letter No. 4342/UD dt 17.03.22 on subject cited above. In this regard it is submitted that the link road is extended from Brangal to village Naddal (approx 40 KM) and OCP Naddal is situated at the last point of the road in Naddal village and connected with road. For your kind information and perusal please.

I/C Oprs for N/A
[signature]
@ SP Chamba
13-4-22

[signature]
Dy. S.P.
Sector Kihar Teh Saloon
Distt Chamba (H.P.)

Annexure –II

हिमाचल प्रदेश सरकार
कार्यालय उपायुक्त चम्बा जिला चम्बा।

संख्या–चम्बा–।।।–10(विविध)/2022–

दिनांक चम्बा अप्रैल, 2022

प्रेषित,

अधिशाषी अभियन्ता,
सलूणी मण्डल,
हिमाचल प्रदेश लोक निर्माण विभाग,
सलूणी, जिला चम्बा।

विषयः – Diversion of 3.677 ha. of forest land in favour of HPPWD for the construction of link road from Nadal to village Jatrahan (Kms 0/0 to 7/00), within jurisdiction of Churah Forest Division, District Chamba Himachal Pradesh (Online No. FP/HP/Road/50036/2020.

महोदय,

उपरोक्त विषय पर आपके कार्यालय पत्र संख्या PW-SD-WA-Forest Cases/2020-21-10870-72 दिनाक 22 फरवरी, 2022 के सन्दर्भ में मांगी गई सूचना क्षेत्रिय राजस्व इकाई से तैयार करवाई गयी। मुताबिक रिपोर्ट उप मण्डलाधिकारी (नागरिक) सलूणी, जिला चम्बा के अनुसार वांगल–मण्ड़ोह–नडल सड़क मार्ग पर स्थित गांव/मुहाल नगोड, कुण्ड़ा, खल व जुतराहण किसी भी अन्य सड़क मार्ग से नहीं जुड़े है। प्रस्तावित लिंक रोड़ नड़ल से जुतराहण तक के निर्माण से नगोड़, कुण्ड़ा, खल व जुतराहण गांव/मुहाल लाभान्वित होगें।

भवदीय,
१२/५/२२
उपायुक्त चम्बा,
जिला चम्बा।

प्रमाण पत्र

उप मण्डलाधिकारी (नागरिक) सलूणी, जिला चम्बा की रिपोर्ट जो कि इस कार्यालय में पत्र संख्या/सलूणी/उ0 म0 अ0 (ना0)/एस0 डी0 के0/2022–820 दिनांक 11 अप्रैल, 2022 द्वारा प्राप्त हुई है के आधार पर प्रमाणित किया जाता है कि वागल–मण्ड़ोह–नड़ल सड़क मार्ग पर स्थित गांव/मुहाल नगोड़, कुण्ड़ा, खल व जुतराहण किसी भी सड़क मार्ग से जुड़े नहीं है। प्रस्तावित लिंक रोड नड़ल से जुतराहण तक के निर्माण से गांव मुहाल नगोड़, कुण्ड़ा, खल व जुतराहण लाभान्वित होगें।

उपायुक्त चम्बा
जिला चम्बा।

Deputy Commissioner,
Chamba Distt. Chamb. H.P

Annexure - III

राष्ट्रीय प्रौद्योगिकी संस्थान हमीरपुर
हमीरपुर (हि.प्र.) – 177 005 (भारत)

NATIONAL INSTITUTE OF TECHNOLOGY HAMIRPUR
HAMIRPUR (H.P.) - 177 005 (INDIA)

(An Institute of National Importance under Ministry of HRD)

{OFFICE OF HEAD, CED}

NO. NIT/HMR/CED/71/2022/-'12 Dated: 04/04/2022

FR
4/4
7/4/2022

To

Executive Engineer,
Salooni Division,
HPPWD Salooni.

29
7.4.22.

Subject:- **Diversion of 3.677 ha. Forest land in favour of HPPWD for the construction of lonk road from Nadal to Village Jatrahan (Kms. 0/0 to 7/00) – Geological report thereof.**

This is in reference to your letter No. PW-SD-WA-Forest Cases/2021-22-10772-74 dated 18/02/2022. Please find enclosed the Geological Report on the proposed link road from Nadal to Jatrahan Village Distt. Chamba HP.

Consultant

4/4/2022

Dr. Rajeshwar Singh Banshtu
Associate Prof.CED

Head 04.04.2022
Department of Civil Engineering
NIT, Hamirpur (HP)

GEOLOGICAL REPORT ON PROPOSED LINK ROAD FROM NADAL TO JATRAHAN VILLAGE, DISTRICT CHAMBA HIMACAL PRADESH

SUBMITTED TO

PUBLIC WORKS DEPARTMENT

HIMACHAL PRADESH

SUBMITED BY

DEPARTMENT OF CIVIL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY

HAMIRPUR (H.P)

GEOLOGICAL REPORT OF THE PROPOSED ROAD ALIGNMENT FORM NADAL TO JATRAHAN VILLAGE, CHAMBA DISTRICT, HIMACHAL PRADESH

SCOPE OF WORK:

Letter was received from office of Executive Engineer, Salooni Division, Public Works Department, Salooni, (H.P) vide letter no. PWD-SD-WA-Forest Case/2021-22-10772-74 Dated 18.2.2022 Geological stability in respect of construction of Link Road from Nadal to Village Jatrahan Km. 0/0 to 7/00.

INTRODUCTION:

Himachal Pradesh is situated in the western Himalaya and embraces a vast mountain terrain between Ravi river in the Northwestern and Yamuna in the Southwestern direction. Chamba district is located between the Zanskar in North (which separates Himachal Pradesh from Tibet) and Dhauladhar mountains in South direction. The district is situated between north latitude 32° 11′ 30″ and 33° 13′ 06″, and east longitude 75° 49′ 00" and 76° 52′ 00″. The area of the district is 6,522 sq. km with Chamba as its Headquarters. The district has been divided into 7 Sub-divisions (Chamba, Churah, Pangi, Bharmaur, Dalhousie, Salooni and Chowari). The present study falls in the Salooni sub-division of Chamba district bordering Kathua district of J & K State.

The district has varying altitude ranging from 609 to 6402 m above mean sea level, with some plain areas bordering Pathankot district of Punjab in the south and Kangra district of H.P in the South. The Ravi is the main river of Chamba district and its tributaries drains the whole of Chamba valley between Dhauladhar and Pangi range thus commands the largest and most important part of the district. The river originates from Bara Banghal area of Dhauladhar. The Main tributaries of Ravi are Budhil, Tundah, Beljedi, Sal, Siul, Siowa The river Chandra-bhaga rises from the mountains of Baralacha La with its source on south-eastern side of the pass being called the Chandra and the other one which rises from north-western side is called the Bhaga. After their confluence at Tandi, near Keylong in Lahaul & Spiti district the stream is named as Chandrabhaga.

PHYSIOGRAPHY:

The area in general is a part of the Lesser Himalaya. The lesser Himalaya, located in north-western India in the States of Himachal Pradesh and Uttar Pradesh, in north-central India in the State of Sikkim, and in north-eastern India in the State of Arunachal Pradesh, ranges from 1,500 to 5,000 metres in height. Terrains of the area are rugged and there is no. of steep sided valley and 6 very narrow spurs and having thick forest cover mainly of the deodar and kail etc. Soil cover of the entire area is very thin and acidic with increase in altitude. The main rivers of

the district are Ravi, Budhil, Suil, and Tundahand main glaciers of the district belongs to the Bara-Bhangal & Tantagiri-glacier area.

FORESTS:

Forests play a vital role in shaping the characteristic conditions of an area. Besides, these also influence the economic and social life 12 of the people considerably. The climatic condition prevailing in Himachal Pradesh and varying elevations are most suitable for the growth of forests. In Chamba District, various important species of trees namely Deodar, Kail, Chil, Oak, Mohru and Kharu etc. are found in the forests and the major forests produce are resin and medicinal herbs. The available resin in the District is being processed by two resin and turpentine factories at Bilaspur and Nahan. However, the medicinal herbs are being exported in raw from out of the District. The forests in the District are mainly in the tract of outer Shiwalik to the mid Himalayas. The soil is generally sandy-loom and depth is shallow except in the areas having vegetation cover where it is fairly deep in the region above 1500 Mtrs. The soil is generally deep and contains a thin layer of leaf moulded species of Ban, Oak, Chil, Kail and Deodar. In the lower elevation scrub forms are found while in the higher altitude Deodar, Kail etc. are available. Higher places in the lower ranges with warmer aspects and sharp slopes with deep soil and favourable conditions, species of mixed forest of Bamboo and scrub are found.

GEOLOGY:

The geology of Chamba region is the combination of wide range of rock formation of age from late Proterozoic to Triassic (Rattan, 1973, Sharma & Bhola, 2004; Agarwal & Kumar, 2004). The sequence of these rocks has been classified as lower and upper in literature. The geological sequence of the Chamba area is given in table 1. Baltal formation located on the southwest side of the central crystalline zone, alongwith a basal unit of Manjir conglomerate overlies the Chamba Formation of Salkhala Group. The Slakhala Group is surrounded by the Vaikrita Group of central crystalline zone below and Manjir-Batal (Katari Gali) formations in Chamba area. The broad classification of Salkhala Group are Bhalai and Chamba Formation (Rattan, 1973). The oldest rocks are of undifferentiated Proterozoic age, comprising carbonaceous phyllite, schist, gneiss, quartzite and marble. The Ghoghar dhar (undiffertiated Proterozoic age) occurs as an intrusive body within the Chail Group minor aplite and basic veinlets. The Sunder Nagar group of rocks of Meso-Proterozoic age is represented by quartzite with basic flows. The Shali group of (Meso Proterozoic) comprising Limestone, dolomite, slate & quartzite. The Subathu consist mainly, of olive green shales and Grey shales. At the top, a band of white quartzite has been taken as the marker, defining the top of the Subathu sequence. The thick sequences of brackish and fresh water sediments immediately succeeding the fossiliferous marine Subathu are classified as Dharamshala formation. The Dharamshala formations are widely exposed, in the Mandi par-autochthon, further west in the autochthon, these rocks are exposed, in the core of the Sarkaghat anticline.

The Shiwalik group of Middle Miocene of Early Pleistocene age comprises coarse clastic fluviatile deposits of sandstone, clay and conglomerates. The Quaternary sediments (older

Alluvium and Newer Alluvium) along prominent channels consisting of sand, silt clay, pebbles and cobbles occurring along present channels of Middle to late Pleistocene and Holocene age.

Vaikrita group (supersequence) of rocks represents the higher grade metamorphics of the Higher Himalaya pervasively penetrated by young Tertiary granite. The rocks comprising, this group, are micaceous schists, talcose rocks, phyllites and gneisses overlying mainly the granite gneisses. Spatial extension wise the Vaikrita Group includes the meta-sedimentaries exposed between the granite-gneisses constituting the central crystalline and the overlying Martoli Group and its equivalents. The granite intrudes both the Vaikrita and Martoli groups and includes, biotite granite, tourmaline granodiorite, tourmaline aplite and pegmatite.

Table- 1: Geological sequence of Chamba area (after Srikantia & Bhargava, 1988).

Kalhel Formation (Triassic)	Greyish blue, grey and yellow limestone and dolomite with interbedded grey orthoquartzite in the upper part. Grey calcareous shale with interbeds of limestone in the basal part.
Salooni Formation (Permian)	Dark grey or black carbonaceous pyritous slates with thin lenticles of limestone at places. There are discontinuous bands of varying thickness of amygdaloidal and massive lava flow of basaltic to andesitic composition.
——————— unconformity ———————	
Batal Formation (also called Katari Gali) (Terminal Proterozoic)	Black carbonaceous phyllite with interbeds of quartzite. Local limestone bed at the base with magnesite and scale of gypsum.
Manjir Formation (Neoproterozoic)	Polymictic diamictite-poorly sorted, lithologically heterogeneous, laminated or banded.
——————— unconformity ———————	
Chamba Formation (Salkhala Group) (Mesoproterozoic)	Dark Grey, thinly bedded laminated slates with subordinate bands.

The rocks exposed along the proposed alignment form Nadal to Jatrahan village belong to the Vaikrita group consisting of phyllites with interbeds of quartzite. The rocks are dipping 25° to 65° due North to Northeast with two sets of Joints trending NW-SE with varying amount of

dip ranging from 50° to 75°. Minor folding of rocks are observed at various places along the stretch without any major geological consequence. Patches of slaty rocks ae also noticed along with quartzite at various places on the alignment stretch. Pinch and swell structure of quartz veins is noticed within the shale and quartzite. Though the type and structure on the rock does not seem to have drastic impact on the stability of the road along the present alignment its presence is bound to destabilise the road cuttings. The details of the structures present in the rocks along the proposed alignment is given in Table-2:

Most of the track is covered with soil and vegetation therefore outcrop wherever exposed have been studied for structure and type of rocks exposed. The entire stretch consists of phyllite and quartz veins. Major rocks dips into the hill at most of the outcrops accompanying random joints of closed to open types. Vertical cliffs were observed at certain places without any noticeable geological structure. After the last ridge RD 3/500 (approx.) rocks were found dipping towards the valley in a stretch of about 50 meters which may cause instability to the road and may require extra measure for the stabilisation. The alignment is following the contour since the starting point and the destination are almost at the same elevation as a result there is not much slope problem in the proposed road. The number of trees falling along the alignment can be reduced by modifying the alignment at the local level.

Table-2: The details of the structures present in the rocks.

Sr. No.	Location RD	Type of Structure	Dip Amount	Dip Direction	Remarks
1	0/300	Bedding (S_1)	25°	N	Phyllite
		Joint (J_1)	60°	S40°W	Weathered open joint
2	0/750	Bedding (S_1)	35°	N55°E	Phyllite
3	0/810	Bedding (S_1)	35°	N10°E	Phyllite
		Joint (J_1)	75°	N85°E	Closely spaced compact joint
4	1/450	Bedding (S_1)	65°	N	Phyllite
		Joint (J_1)	55°	N40°W	Undulating random joint
		Joint (J_2)	55°	S50°E	Close to open joint
5	2/195	Bedding (S_1)	60°	N60°E	Phyllite
		Joint (J_1)	65°	N80°W	Tight joint
6	2/975	Bedding (S_1)	60°	N10°E	Phyllite, slightly weathered
		Joint (J_1)	70°	N40°W	Close joint, smooth surface

STABILITY CONSIDERATTONS:

Since the Jatrahan village falls in the border district of the State it very necessary to provide an all-weather road connectivity to the people residing in this far flung area. Due to lack of medical facility in the area ailing persons are shifted by carrying over shoulders causing hardship to the people living in border areas. Apart from all these social issues, the stability of road is of prime concern while designing a road through hills causing steep cut slopes vulnerable to land slide. The following points may be considered while constructing the road along the proposed alignment keeping in mind topographical, geological, ecological, seismic and environmental aspects:

1. The road alignment falls in steeply sloping hilly terrain.
2. Chamba district falls in the seismic zone V which is most vulnerable to earthquake.
3. There are human settlements above and below the road alignment.
4. Road alignment crosses through natural drainage features which remains dry except during the rainy season.
5. The area has rich flora and fauna, therefore, ecology and environment of the area should be kept in mind while construction of the road.

SUGGESTIONS:

Keeping geological, seismic and ecological constraints in mind and to ensure overall stability of the road in particular and the concerned area in general, following suggestions are made for the construction of the proposed motorable road.

1. Drain should be constructed by the side of the hill all along the road to channelise the water collected on the slopes.
2. Cuttings through such high slopes may be kept as gentle slope wherever geological condition are not favourable.
3. Breast/retaining wall should be constructed as per site requirement.
4. Culvert/causeway should be constructed at the location of dry nallas to avoid flooding of water on the road.
5. Due care must be taken keeping ecology and environment into consideration.
6. While construction the road, debris should not be thrown on the hill slopes rather it should be dumped at the designated locations.
7. Use of explosive if required should be done as per existing rules and regulations.
8. Planting of trees on both sides of the road should be done to stabilise the hill slope.

CONCLUSION:

The construction of road along the proposed alignment is feasible and the executing agency may go ahead for the construction of road keeping in view the above considerations and suggestions. Keeping view the cutting of trees for road construction, more local flora should be planted to recover the loss to flora in the area.

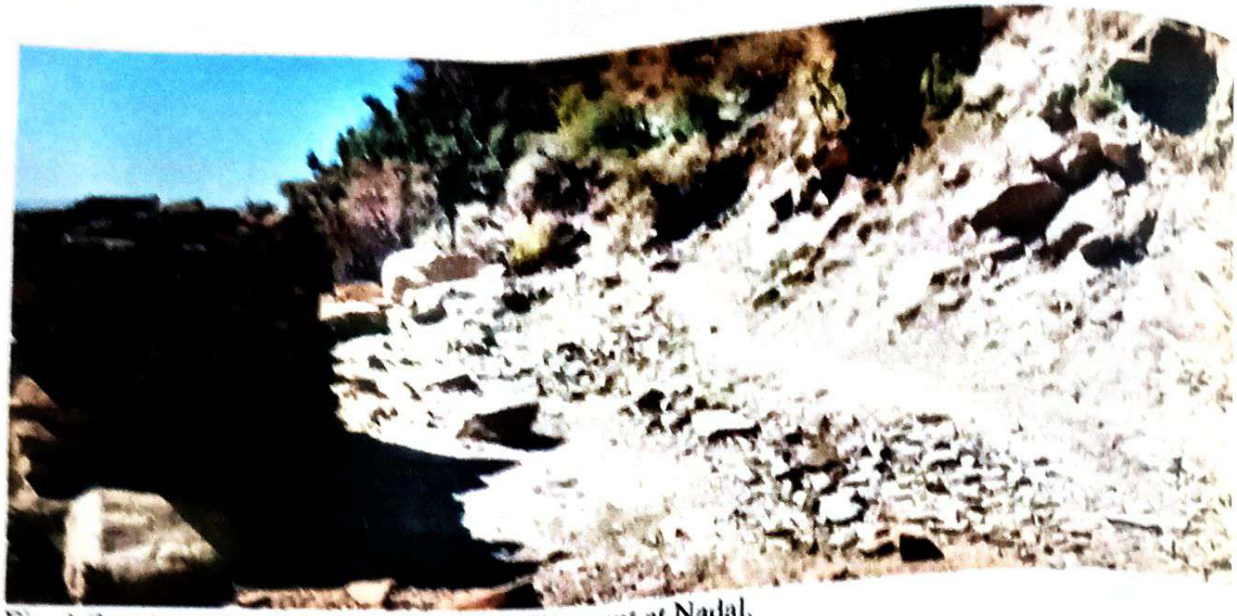

Fig. 1 Starting point 0/0 of the proposed alignment at Nadal.

Fig. 2 Panoramic view of J & K area on left side and far end of the picture.

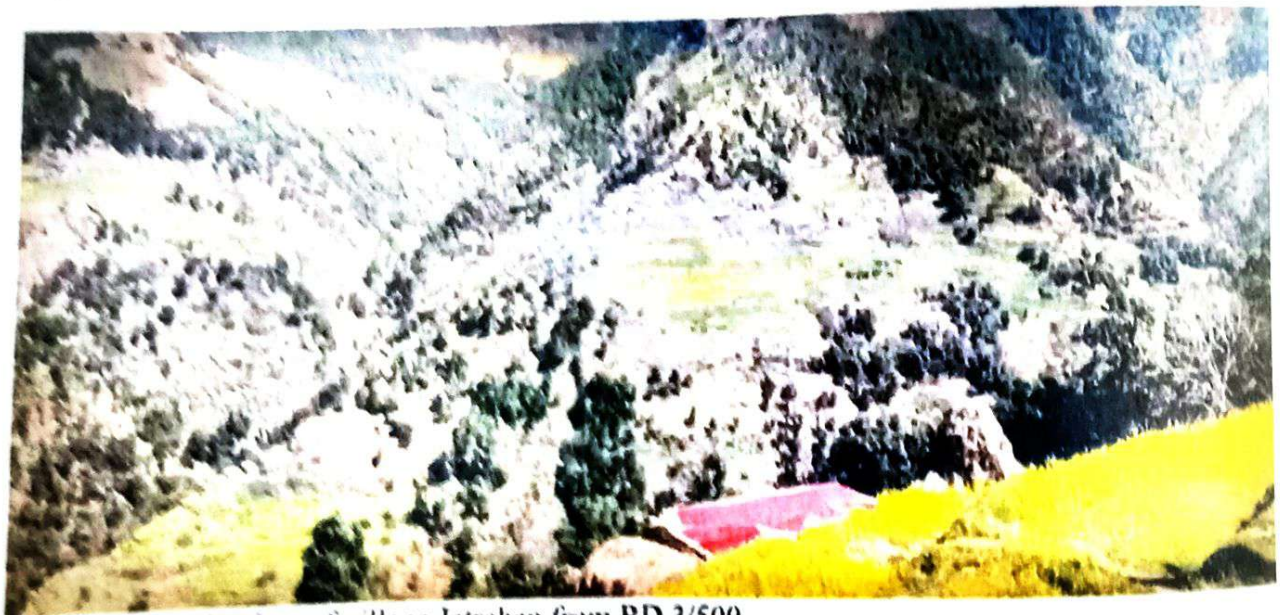

Fig. 3 Panoramic view of village Jatrahan from RD 3/500.

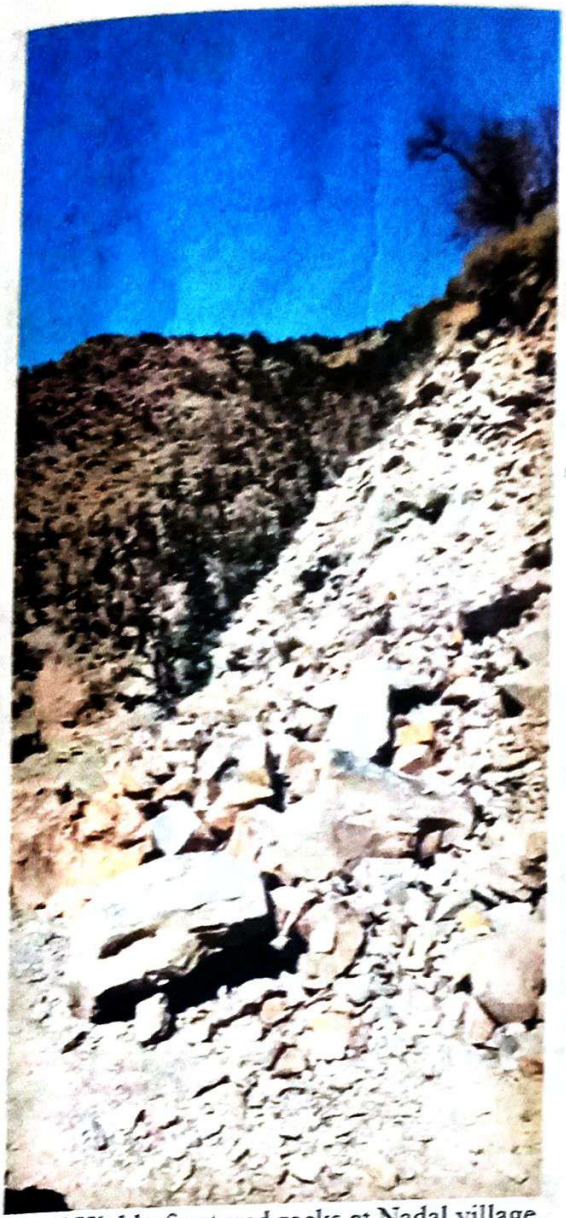

Fig. 4 Highly fractured rocks at Nadal village.

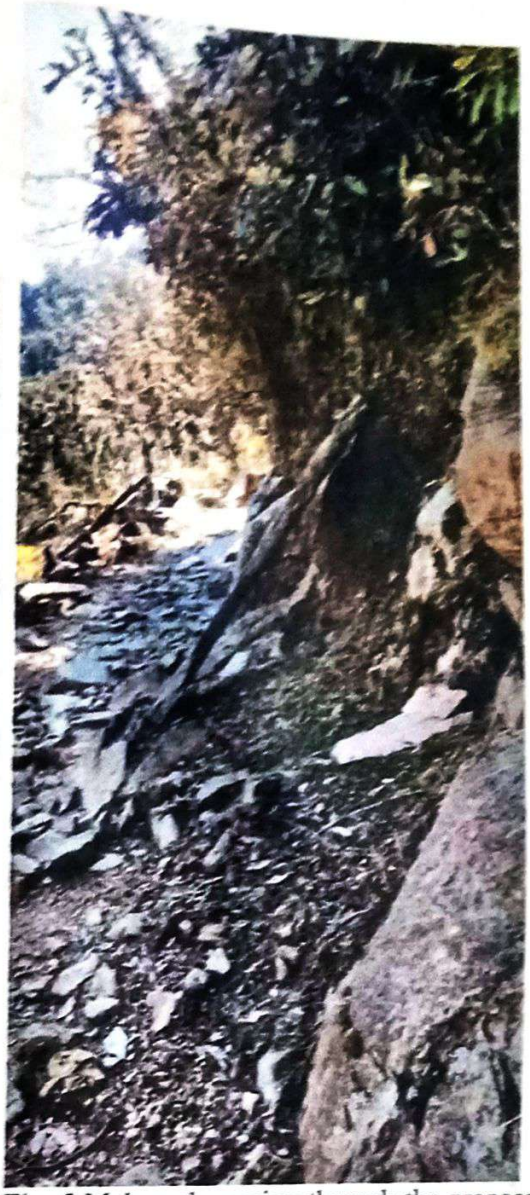

Fig. 5 Mule path passing through the proposed alignment.

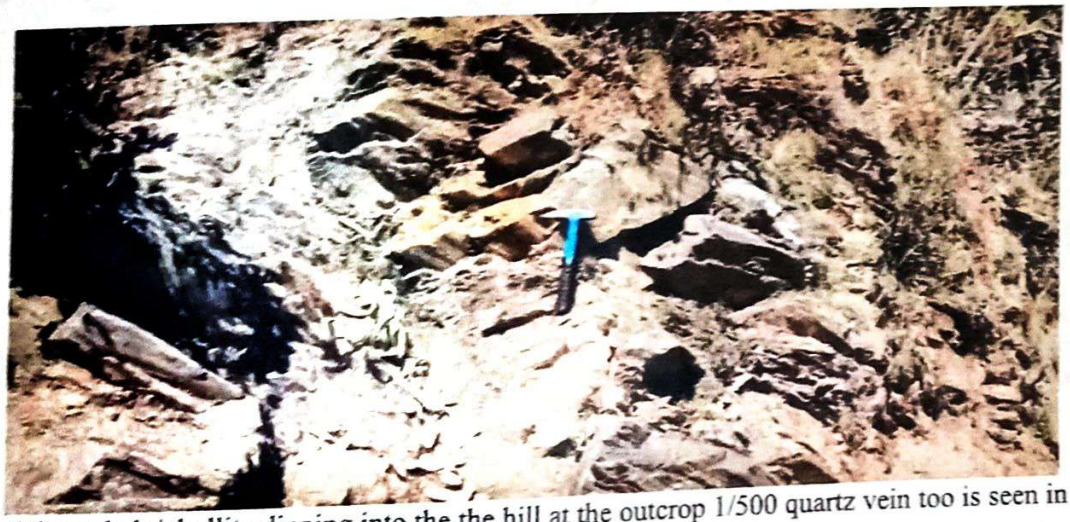

Fig. 6 Grey shale/phyllite dipping into the the hill at the outcrop 1/500 quartz vein too is seen in the picture.

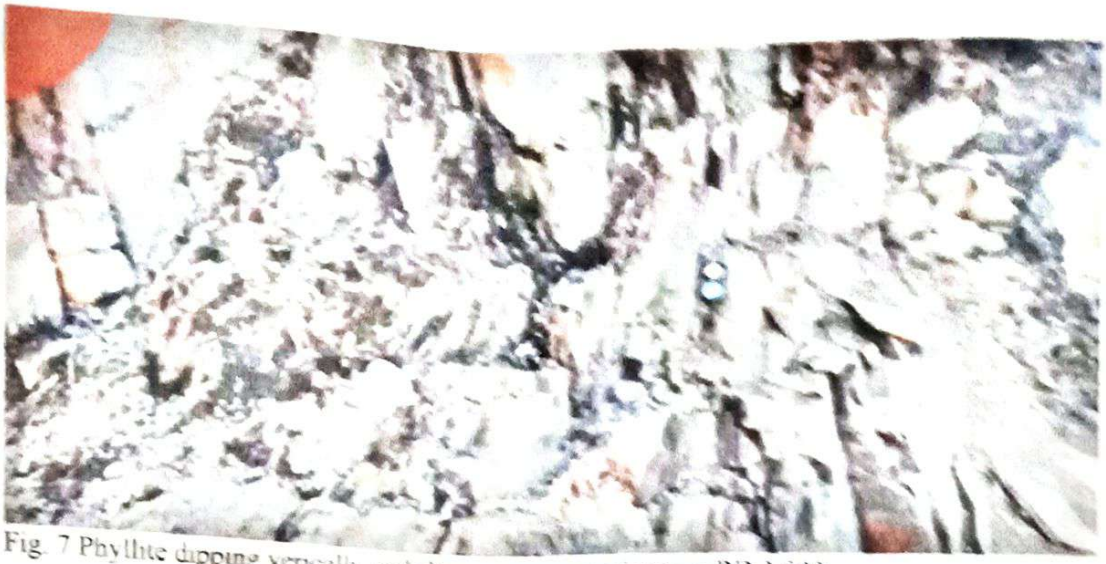

Fig. 7 Phyllite dipping vertically and showing two set of joint at RD 3.500.

Fig. 8 Grey phyllite dipping into the hill RD 2.00.

Fig. 9 Padestrian path passing through jungle at RD 4.00.


Kundi
Jutrahan

REFERENCES:

Agarwal, G.S and Kumar, B (2004): "Status of Chamba formation, Chamba district, H.P.," *Rec. Geol Surv. India*, Vol. 136, pt. 8, 99. 111-113.

https://www.google.com/maps/d/viewer?ie=UTF8&t=m&oe=UTF8&msa=0&mid=1voKog-ZOOY9BUlRGit8M-QqRLjE&ll=32.67883061086859%2C75.91660022073218&z=16

Rattan, S.S (1973): "Stratigraphy and sedimentation of Chamba area, Western Himachal Pradesh," *Him. Geology*, vol 3, pp. 231-248.

Sharma, B.K and Bhola, A.M (2004): "Microstructures of co-axially folded vein segments and crenulation cleavage: Evidence for dissolution phenomena in the Chamba thrust sheet, Western Himalayas," *Episodes*.

Srikantia, S.V and Bhargava, O.N (1988): "Geology of Himachal Pradesh", *Bangalore: Geological Society of India*, ISBN 81 85867 32 1, pp. 408.

Dr. Rajeshwar Singh Banshtu,
Associate Professor,
Department of Civil Engineering,
National Institute of Technology,
Hamirpur (H.P)