Social Impact Assessment Report

October: 2021

Project ID: P154990

Sub-Project: Improvement & Up-gradation of Tutain Di Khui to Khada Madana" Road (District Jammu)

Jhelum Tawi Flood Recovery Project

(World Bank Funded)

Prepared by: PIU, JK ERA (JTFRP) for WB

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ABBREVIATIONS

BPL	Below Poverty Line
CBO	Community Based organisations
COI	Corridor of Impact
CPR	Common Property Resources
DC	District Collector
DSC	Design & Supervision Consultant
DED	Detailed Engineering Design
EIA	Environmental Impact Assessment
EP	Entitlement/Eligible Persons
ERA	Economic reconstruction Agency
ESMF	Environment and Social Management Framework
ESSR	Environment & Social Screening Report
EM	Entitlement Matrix
GBV	Gender Based violence
GESI	Gender Equality and Social Inclusion
Govt.	Government
GRC	Grievance Redressal Cell/Committee
HP	Halqa Panchayat
IRC	Indian Road Congress
IDA	International Development Agency
IRAP	International Road Assessment Programme
JTFRP	Jhelum Tawi Flood Recovery Project
J&K	Jammu & Kashmir
DSC	Design & Supervision Consultant
DEA	Department of Economic Affairs
DPR	Detailed Project report

NGO	Non-Governmental Organization
OP	Operational Policy
PAP	Project Affected Person
PAF	Project Affected Family
PDF	Project Displaced Family
PDP	Project Displaced Person
PIU	Project Implementation Unit
PMU	Project Management Unit
PMC	Project Management Consultant
R&R	Resettlement & Rehabilitation
RAP	Resettlement Action Plan
RFCTLAR&R	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement act, 2013
RDNA	Rapid Damage and Needs Assessment
ROW	Right of Way
RTI	Right to information Act
SAR	Social Assessment Report
SES	Socio- Economic Survey
SEO	Site Engineering Office
SH	State Highway
SIA	Social Impact Assessment
SC/ST	Schedule Caste and Schedule Tribe
SMF	Social Management Framework
SMP	Social Management Plan
SOR	Schedule of Rates

Definition of Words and Phrases

Affected Persons (APs)

Affected Persons (APs), for this Project, means all the people directly affected by a project-related land acquisition that leads to their physical relocation or loss of assets, or access to assets, with adverse impacts on livelihoods. This includes any person, household (sometimes referred to as project affected family), firms, or public or private institutions who on account of project-related land acquisition would have their;

1. standard of living adversely affected;
2. right, title or interest in all or any part of a house, land (including residential, commercial, artisanal mining, agricultural, plantations, forest and/or grazing land), water resources or any other moveable or fixed assets acquired, possessed, restricted or otherwise adversely affected, in full or in part, permanently or temporarily; and/or
3. business, occupation, place of work or residence, or habitat adversely affected, with or without displacement. APs therefore include;
    - persons affected directly by the acquisition or clearing of the right-of-way or construction work area;
    - persons whose agricultural land or other productive assets such as mining, trees or crops are affected;
    - persons whose businesses are affected and who might experience loss of income due to project-related land acquisition impacts;
    - persons who lose work/employment as a direct result of project-related land acquisition; and
    - people who lose access to community resources/property as a result of project-related land acquisition.

Census

Census means the pre-appraisal population record of potentially affected people, which is prepared through a count based on the village or other local population data or census.

Compensation

Compensation means payment in cash or kind for an asset to be acquired or affected by a project at replacement costs.

Cut-off-date

Cut-off-date means the date after which people will not be considered eligible for compensation if they are not included in the list of APs as defined by the census. Normally, the cut-off date for the titleholders is the date of the detailed measurement survey.

Displacement

Displacement means either physical relocation or economic displacement directly caused by project-related land acquisition.

Encroachers

Encroachers mean those persons who extend their property beyond that for which they hold a Title are encroachers and would not be eligible for compensation for land for which they do not possess a title.

Entitlement

Entitlement means the range of measures comprising cash or kind compensation, relocation cost, income rehabilitation assistance, transfer assistance, income substitution, and relocation which are due to /business restoration which is due to APs, depending on the type and degree nature of their losses, to restore their social and economic base.

Livelihood Restoration

Livelihood Restoration means the measures required to ensure that APs have the resources to at least restore, if not improve, their livelihoods. Restoration of livelihood of all APs is one of the key objectives of the World Bank's resettlement policy. It requires that people are given the means and assistance necessary for them to improve, or at least restore, their livelihood and living conditions to pre-project levels. Inventory of Losses means the pre-appraisal inventory of assets as a preliminary record of affected or lost assets.

Land Acquisition

Land Acquisition means the process whereby a person is compelled by a public agency to alienate all or part of the land s/he owns, possesses, or uses, to the ownership and possession of that agency, for public purposes, in return for prompt and fair compensation. This includes direct acquisition and easement.

Non-Titled

Non-titled means those who have no recognizable rights or claims to the land that they are occupying and includes people using private or state land without permission, permit, or grant.

Rehabilitation

Rehabilitation means the assistance provided to severely affected APs to supplement payment of compensation for acquired assets to improve, or at least achieve full restoration of, their pre-project living standards and quality of life to pre-project level.

Resettlement

Resettlement means all social and economic impacts that are permanent or temporary and are:

(i) caused by the acquisition of land and other fixed assets,
(ii) by the change in the use of land, or
(iii) restrictions imposed on land as a result of the project.

Resettlement Plan

Resettlement Plan means the time-bound action plan with budget setting out resettlement strategy, objectives, entitlements, actions, responsibilities, monitoring, and evaluation.

Structures

Structures mean all structures affected, or to be acquired, by the project such as living quarters, wells, hand pumps, agricultural structures such as rice bins, animal pens, stores/warehouses, commercial enterprises including roadside shops and businesses.

Squatters

Squatters mean the same as a non-titled person i.e. those people without legal title to land and/or structures occupied or used by them. World Bank policy explicitly states that such people cannot be denied assistance to restore livelihoods and living conditions based on the lack of title.

Vulnerable

Vulnerable means any people who might suffer disproportionately or face the risk of being marginalized from the effects of resettlement i.e; (i) single household heads with dependents; (ii) disabled household heads; (iii) poor households; (iv) elderly households with no means of support; (v) the landless or households without the security of tenure; and (vi) ethnic minorities.

Social Impact Assessment (SIA)

Social impact assessment (SIA) is the process of identifying and managing the social impacts of industrial projects. It can also be applied to policies, plans, and programs. SIA is used to predict and mitigate negative impacts and identify opportunities to enhance benefits for local communities and broader society.

Project Area Influence

The project area of influence: The area likely to be affected by the project, including all its ancillary aspects, such as power transmission corridors, pipelines, canals, tunnels, relocation, and access roads, borrow and disposal areas, and construction camps, as well as unplanned developments induced by the project (e.g., spontaneous settlement, logging, or shifting agriculture along access roads). The area of influence may include, for examplethe area where the project road is located.

Executive Summary

Catastrophic deluge of September 2014 caused negative impact on the socio-economic aspects of the Union territory of Jammu and Kashmir (erstwhile state) and massive infrastructure damaged in which not only Srinagar but other districts were also affected. It left behind a trail of siltation in most of the water bodies as environmental degradation, which is always synonymous with major floods. In connection to catastrophic flood, a mission of the World Bank visited the Union territory of Jammu and Kashmir (erstwhile state) during February 1-6, 2015 on request of Government of India to review and assess the damages in order to produce a rapid multi-sectoral assessment report of the damages and needs. The RDNA estimates the total damages and loss caused by floods at about INR 211,975 million (US$ 3,550.45), most of it to housing, livelihoods, and roads and bridges, which combined represented more than 70% of the damages in terms of value.

Based on the RDNA results, restoration works underway, and discussions with the GoJ&K, "Jhelum and Tawi Flood Recovery Project (JTFRP)" will focus on restoring critical infrastructure using international best practice on resilient infrastructure. One of the sub-projects identified under Component 2 of JTFRP is “Improvement and Upgradation of Tutiyan Di Khui to Khada Mandana road”. This road is proposed to be upgraded up to a total length of 11 kms. The SIA has been conducted for the proposed sub-project road.

Sub-projects under **“Jhelum and Tawi Flood Recovery Project”** have a prior requirement of screening which has been conducted and is based on three categories; viz., nature of the project, size of the project and location of the project with a sensitive area criterion. The objective of Environment and social screening is to identify the potentially significant environmental/ social issues of the sub-project at an early stage for detailed Environmental and Social impacts. The screening of the sub-project was conducted and it did not envisage any significant social impact of the proposed sub-project.

One of the significant requirements under JTFRP is to disseminate project information by the method of “meaningful public Consultation with stakeholders and general public”. The consultation for this sub-project was conducted successfully with Gram Sabha members and local residents/ stakeholders in Kana Chargal, Shandi and Panjoa villages area on 12.7.2019, 18.12.2020 and on 19.12.2020 respectively. Head of Gram Sabha along with other people were told about the proposed sub-project. They confirmed that as per the project design, they know that there is no private land requirement but sometimes during execution, need of land arises. In this case, they want compensation. They also suggested to provide protection walls

wherever, executing agency does land cutting along the road. During consultation process, people have expressed keen interest about the proposed sub-project.

Approved DPR and the site visits envisaged that the sub-project does not require land acquisition either private or government for proposed sub-project. Further, neither any structure such as residential, commercial nor any CPR falls in the available RoW. Project Manager (Transport, Jammu division) confirmed same vide letter no PIU/T/ERA/2021/865 dated 16.03.3021 provided a non-encumbrance certificate which confirms that RoW of 6.00 meters is available for road upgradation and its encumbrance free which means that no private or public structure exists on the whole alignment.

The revenue record of the proposed sub-project could not be obtained from the concern department by JK ERA. Since the revenue record of the proposed sub-project was not available, therefore PMU, JTFRP published a notice in the two local newspapers namely "Amar Ujala" and "State Times" on 19.09.2021 and 20.9.2021 respectively, informing general people and those who are likely to be benefitted/affected in particular, about the upgradation of this road sub-project within the existing right of way under World Bank funding. It also called for any objection from the local people regarding use of RoW, along with supporting documentary evidence within 07 days of publication of the notice in the newspaper. The office of Director safeguards did not receive any objection or claim from anyone even after the lapse of one month of the publication of notice in two local newspapers. Thereafter, Director Safeguards issued an official letter vide no. ERA/DSG/PS/88-93 dated 25.10.2021 regarding encumbrance free RoW detailing therein the process followed to reconfirm the ROW ownership status.

Therefore, on the basis of certificate issued by Project Manager (Transport, Division Jammu), site visits, approved DPR and notice published in the newspaper it can be said that the sub-project does not have any adverse impact on the assets such as structures, land or on livelihood of anyone.

However, if during execution, there is any unanticipated impact of the sub-project on any asset, the issue shall be addressed as per the provisions of Environment & Social Management Framework (ESMF) for the project, applicable policies of the WB and that of U.T of J&K.

1. Background Introduction

1.1 Project Background

In September 2014, Jammu & Kashmir experienced torrential monsoon rains in the region causing major flooding and landslides. The continuous spell of rains from September 2-6, 2014, caused Jhelum, Chenab, and Tawi Rivers as well as many other streams/tributaries to flow above the danger mark. The Jhelum River also breached its banks flooding many low-lying areas in the Kashmir region, including the capital. In many districts, the rainfall exceeded the normal by over 600%. In the Jammu division also, many districts received rainfall above normal. Jammu district itself recorded over 467.3 mm of rainfall during Sept 2014, which is 339% excess of the normal (source-Indian Meteorological department website). The Indian Meteorological Department (IMD) records precipitation above 244.4 mm as extremely heavy rainfall, and J&K received 558mm of rain in the June- September period, as against the normal 477.4 mm.

Due to the unprecedented heavy rainfall, the catchment areas particularly the low-lying areas were flooded for more than two weeks. Some areas in urban Srinagar stayed flooded for 28 days. Water levels were as high as 27 feet in many parts of Srinagar. The areas from the main tributaries of river Jhelum vis-à-vis Brengi nallah, Vishav nallah, Lider nallah and Sandran nallah started overflowing due to the heavy rainfall causing water levels in Jhelum river to rise. Subsequently, the discharge of the river Suran was 200 thousand cusecs as against an average of 50 thousand cusecs. With the excessive discharge of water, the river Suran affected the basin areas and also took a different course at various locations causing damages to the surrounding villages in the catchment area. Water levels also increased in the rivers of Chenab and Tawi, both of which were flowing above normal levels. Due to the rivers overflowing nearly 20 districts of the Union territory of Jammu and Kashmir (erstwhile state) were impacted.

A joint team led by the Department of Economic Affairs (DEA), GoI, with representation from the World Bank visited J&K on October 21, 2014. Subsequently, GoI has sent a request to the World Bank on January 5, 2015, to field a Joint Rapid Damage and Needs Assessment (RDNA) Mission within the Union territory of Jammu and Kashmir (erstwhile state). In response, a mission of the World Bank visited the Jammu and Kashmir (erstwhile state) during February 1-6, 2015 to produce a rapid multi-sectorial assessment report of the damages and needs. The RDNA estimates the total damages and loss caused by floods at about INR 211,975 million (US$ 3,550.45), most of it to housing, livelihoods, and roads and bridges, which combined represented more than 70% of the damages in terms of value.

Public service infrastructure and equipment of hospitals and education centers were also severely damaged and are still not fully operational. Based on the Rapid Damage Needs Assessment (RDNA) results, restoration works underway, and discussions with the GoJ&K, the project will focus on restoring critical infrastructure using international best practices on resilient infrastructure.

Given the Jammu and Kashmir (erstwhile state)'s vulnerability to both floods and earthquakes, the infrastructure will be designed with upgraded resilient features and will include contingency planning for future disaster events. Therefore, the project aims at both restoring essential services disrupted by the floods and improving the design standard and practices in the Jammu and Kashmir (erstwhile state) to increase resilience.

1.2 Project Development Objective[1]

The Project Development Objective (PDO) is to support the recovery and increase disaster resilience in targeted areas of the Jammu and Kashmir (erstwhile state) and increase the capacity of the Jammu and Kashmir (erstwhile state) entities to respond promptly and effectively to an eligible crisis or emergency.

1.3 Project Components

The project is comprised of the following seven components:

1. Reconstruction and strengthening of critical infrastructure
2. Reconstruction of roads and bridges
3. Restoration of urban flood management infrastructure
4. Strengthening and restoration of livelihoods
5. Strengthening disaster risk management capacity
6. Contingent Emergency Response
7. Implementation Support.

1.4 Sub- Project Background

Component 2 of the "Jhelum and Tawi Flood Disaster Recovery Project" is 'to restore and improve the connectivity disrupted due to the disaster through the reconstruction of damaged roads and bridges. The component will finance and support the reconstruction of about 300 km. of damaged roads and associated drainage works, retaining walls, breast walls, and other structures to increase resilience, designed to be seismic resilient (as per the guidelines of the Bureau of Indian Standards) and concerning topography and

[1] Source: JTFRP- Environmental & Social Management Framework (ESMF), 2015.

hydrology (as per the guidelines of the Indian Roads Congress, the Ministry of Road Transport and Highways), and projected demographic changes.

One of the sub-projects identified under Component 2 of JTFRP is "Improvement and Upgradation of Tutiyan Di Khui to Khada Mandana road "sub-project. Under component 2 "Improvement and Up gradation of Tutiyan Di Khui to Khada Mandana road" is proposed for a total length of 11.00 kms. The road falls under district Jammu. The SIA has been conducted for the proposed sub-project road. It will be a single lane road with 3.75 m, carriageway.

1.5 Sub-Project Description

Project Road takes off from 7th km of Sidhra Surinsar Mansar Road and end 11th Km of this alignment near village Shandi which follow hilly terrain. After 11th Km, this road is under construction. From connectivity point of view, these particular roads have high importance. Due to bad condition of the project road, at present significant no of vehicle found. However, after the development of the project stretch, traffic routed from Kalu Chawk Purmandal Road at Khada Madana towards Katra from Nagrotra to avoid entering in Jammu. Moreover, there are some tourist places exists namely Uttarbahani. Existing Pavement mostly gravel surface after Km 4.000 to Km 7.500 and from 10.000 to Km 11.000. Due to non- existence of throughout CC drain, pavement badly damaged and slope eroded at several locations. Necessary protection work requires at several stretches with provision of CC drain. There are 6 location where road discontinued due to existence of channel/water way and connectivity close during monsoon period. 6 nos of Bridges of length 30 m, 60 m, 40 m, 60 m, 45 m and 50 m respectively are require at those location to continue the traffic flow throughout the year. After development of this road, significant traffic flows through the routes which also indirectly help to enhance the economy of that area.

The geographical location is 32°46'0.26"N (Start of the Road) and 32°42'20.48"N (End of the Road); 74°54'52.40"E (Start of the Road) and 74°59'2.92"E (End of the Road) (annexure 2).

1.6 Benefits of the Sub-Project

The reconstruction of the proposed road will be of great help to the farmers to transport agricultural products, children would be able to travel faster and safer to go to school. Throughout year all weather road will provide a sense of security to the women, school going children and old age people as well. People will get access to the basic facilities such as health centre/hospital, markets, working place, place of worship, and other areas. People will save the time and maintenance cost of the vehicles will also get reduced. Private

passenger vehicle will also start their services which now they don't provide once the road is reconstructed and rehabilitated.

During the civil works there will be minimal social impacts but these are temporary disturbances and will be mitigated under the SMP. Overall, the project will provide long-term benefits for the local people. People expressed full support to the project 100% among consulted persons and are in favour of the project.

1.7 Need for Social Impact Assessment

Social Impact Assessment (SIA) is a tool for anticipating and mitigating the potentially temporary and permanent adverse impacts of projects. It also helps in enhancing the positive outcomes of the sub-project. SIA alerts project planners (public and private bodies) as to the likely social and economic costs and benefits of a proposed project. The knowledge of the potential costs, when weighed against the likely benefits of a project, helps decision-makers in deciding whether the project should be carried out, with or without modifications, or abandoned completely. The agency carrying out the SIA also develops a mitigation plan to overcome the potential negative impacts on individuals and communities.

The purpose of the SIA is to ascertain whether a project proposed by the developer is truly in the public purpose, and whether the project is located at a site which is least-displacing and requires the bare minimum amount of land.

1.7.1 Need for SIA in Tutiyan di Khui to Khada Mandana road Sub-Project

Social Impact Assessment study in the sub-project road was conducted to identify and assess the land requirement for the proposed sub-project besides identifying the temporary and permanent impacts. "Tutiyan di Khui to Khada Mandana" sub-project road is going to be improved and upgraded on existing alignment and the existing RoW is 6.00 meters**.** No additional land is required for improvement and up-gradation of the road. Though the sub-project does not require private land acquisition, therefore, the Social Impact Assessment was conducted to identify and assess any other impact on the people and communities due to project implementation such as any impact on private assets (of both titleholders and non-titleholders), on the livelihood of people, common property resources or any other type of impacts. Further, it will guide Executing Agency (EA) to prepare a sound Social Management Plan that will provide guidance to the contractor & PIU to manage social issues during execution and post execution.

1.8 Objective and Scope of Social Impact Assessment

The Social Impact Assessment study involves the identification of potential social issues in the project and trying to address them through design interventions. The SIA further carries out impact prediction and evaluation of social issues of the project and proposed mitigation measures in the form of Social Management Plan. The major objectives of the SIA are given below:

- To gather baseline data for assessment of impacts (both direct and indirect);
- To do the socio-economic profiling of the project;
- To identify all potential adverse and positive social issues /impacts of the project;
- To suggest mitigation measures to effectively manage potential adverse impacts;
- To involve local people in the SIA study and project activities.

1.9 The methodology adopted for the SIA

1. Defining the Impact area

The first step undertaken was to define the Area of Impact. For defining the project area (both directly and indirectly), a map that will show the project area was prepared. Besides, field visits to the area were undertaken on 18.12.2020 and 19.12.2020 to have a better understanding of the geographic limits of the area and the people living there.

2. Identifying the Information/Data Requirements and their Sources

The existing secondary data (census 2011) on impacts likely to follow from the project was reviewed and used for assessment purposes. This has provided disaggregated data according to caste, religion, sex, and other administrative categories, such as persons below the poverty line.

3. **Public Consultations**
4. Project-related information were shared with all the concerned stakeholders in Kana Chargal, Shandi and Panjoa villages area on 12.7.2019, 18.12.2020 and on 19.12.2020 respectively. This was the first step in developing plans for consultation and participation. Since the sub-project does not triggers involuntary resettlement, therefore, the major stakeholders are the Gram Sabha, Locals and PIU/PMU. The basic questions considered in identifying stakeholders include:
    - Who will be directly or indirectly and positively and negatively affected?
    - Who are the most vulnerable groups?
    - Who might have an interest or feel that they are affected?

- Who supports or opposes the changes that the project will produce?
- Whose opposition could be detrimental to the success of the project?
- Whose cooperation, expertise, or influence would be helpful to the success of the project?

5. Conducting Screening

Social Impact Assessment (SIA) process began with screening. Screening was undertaken in the very beginning stages of project development. The purpose of screening was to screen out "no significant impacts" from those with significant impacts and get a broad picture of the nature, scale, and magnitude of the issues. This helped in determining the scope of detailed SIA that would be subsequently carried out. The screening results revealed that the project does not have any significant impact (annexure 1). It has been decided that the proposed road will be upgraded in the available RoW and there are no structures either commercial, residential or any CPR in the alignment of the road.

6. Carry Out Scoping in the Field

The next step was scoping. Essentially, this involves visits to the project site, and consultation with all stakeholders. It is important to confirm their understanding of key issues. On-site appreciation of impacts is indispensable for projects that cause displacement on a large scale. The local knowledge can be invaluable in finding alternatives that help avoid or at least reduce the magnitude and severity of adverse impacts.

7. Developing a Mitigation Plan

SIA study helps and guides in the preparation of social mitigation and management plan for the envisaged and unanticipated impacts. In this study SMP has been prepared in consultation with the locals, PIU and other stakeholders which will serve as blueprint for managing and mitigating social issues/impacts during execution of the sub-project.

1.10 Structure of SIA Report

To Present the findings of the SIA study, the information's have been suggested in the following chapters:

Executive Summary

1. Introduction & Background
2. Project Description

3. Legal and Regulatory Framework
4. Socio-Economic Profile of the Project Impact Area
5. Analysis of Alternatives
6. Stakeholder's Consultation
7. Analysis of Social Impacts
8. Mitigation Measures
9. Grievance Redressal Mechanism
10. Institutional Arrangements
11. Monitoring and Evaluation

2. Project Description

2.1 Description of the Project

The Jammu & Kashmir region owing to its geographical and geo-climatic setting is a multi-hazard prone region that has experienced natural disasters like earthquakes, floods, landslides, avalanches, high-velocity winds, and snowstorms. Most of the project roads in Kashmir Valley fall in plain terrain whereas roads under Jammu Province are passing through hilly terrain. In Kashmir, Floods and flash floods are also frequent. Floods generally occur in the summer when heavy rains are followed by snowmelt. Flooding of the river Jhelum is the main cause of floods in the region. In Jammu province, hill roads are mainly damaged frequently during the beginning of summer due to snowmelt and due to heavy rain. Hill slopes are badly damaged and sliding comes on the roads as there is no such protection work exists towards hill slide slope. Even Jammu Srinagar National Highway is not unturned from it.

ln September 2014, the northern region of India experienced torrential monsoon rains in the region causing major flooding and landslides. The continuous spell of rains from September 2nd to 6th, 2014, caused Jhelum and Chenab Rivers as well as many other streams/tributaries to flow above the danger mark. Due to the unprecedented heavy rainfall, the catchment areas particularly the low laying areas were flooded for more than two weeks. As a result, the main tributaries of river Jhelum vis-a-vis Brengi Nallah, Vishav Nallah, Lider Nallah, and Sundran Nallah started overflowing. The water level also increased in the rivers of Chenab and Tawi, both of which the water flowing above normal levels. Due to the rivers overflowing nearly 20 districts were impacted. The total damage and loss caused by the flood is about INR 211,975 million, most of it to housing, livelihoods, and roads and bridges, which combined represented more than70% of the damages in terms of value. Public service infrastructure and equipment of hospitals and education centers were also severely damaged and are still not fully operational.

The project "Jhelum & Tawi Flood Recovery Project" will focus on restoring critical infrastructure using the international best practice of resilient infrastructure. Given the region's vulnerability to both floods and earthquakes, the infrastructure will be designed with upgraded resilient features and will include contingency planning for future disaster events. Therefore, a study followed by detailed reports on flood management aims at both restoring essential services disrupted by the floods and improving the design standards and practices to increase resilience.

Based on the RDNA results, restoration works underway, and discussions with the Govt. of J&K, "Jhelum and Tawi Flood Disaster Recovery Project (JTFRP)" will focus on restoring critical infrastructure using international best practice on resilient infrastructure. Component 2 of JTFRP is 'to restore and improve the connectivity disrupted due to the disaster through the reconstruction of damaged roads and bridges. The project will finance the restoration and improvement of selected damaged roads, as per the guidelines of the Indian Roads Congress, the Ministry of Road Transport and Highways.

2.2 Sub-Project Description

Project Road take off from 7th km of Sidhra Surinsar Mansar Road and end at 11th Km of this alignment near village Shandi. The entire stretch of the road follows hilly terrain. From the connectivity point of view, this particular road has high importance as through this alignment people of several villages connect with district town. Gravel/ Earthen surface mostly exists. Due to the non-existence of throughout CC drain, the pavement was badly damaged and the slope eroded at several locations. Necessary protection work requires at several stretches with the provision of CC drain.

2.3 Project Location

The geographical location is 32°46'0.26"N (Start of the Road) and 32°42'20.48"N (End of the Road); 74°54'52.40"E (Start of the Road) and 74°59'2.92"E (annexure 2).

Figure 1: Overview of Proposed Road in Tutiyan di Khui-Khada Mandana Road Sub Project

2.4 Details of the Existing Project Road

2.4.1 The embankment, Carriageway, and Shoulder

The average width of the existing carriageway varies from 2.35 m to 3.0 m with an average shoulder width of 1.50 m resulting in the average formation width varies from 5.75 m to 6.0 m. The details of carriageway, Surface & Shoulder condition, etc are mentioned in annexure III of DPR.

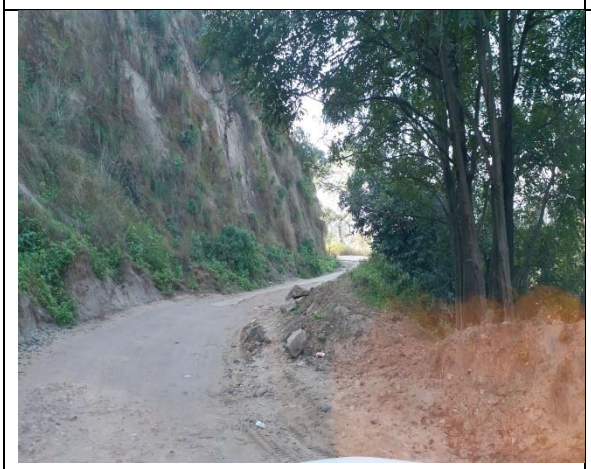
2.4.2 Horizontal and vertical alignment

Project road runs in Hilly terrain and the existing alignment is in fair condition. The differences in existing vertical gradients are within codal limitation.

2.4.3 Pavement Condition

	
Start Point Chainage km 0.00	**Chainage km 0.250**
	
Chainage km 0.60, H.P Culvert 0.9dia	**Ch. km -0.70, Causeway, Village- Khana Charkal**

Chainage km 1.00, H.P Culvert (2 nos)	Chainage km 1.30
	
Chainage km 2.50	**Chainage km 2.70, Temple**
	
Chainage km 4.20	**Chainage km 4.7,H.P Culvert ,Earthen Road**

	
Chainage km 5.20	**Chainage km 6.5,H.P Culvert**
	
Chainage km 7.3,Causeway	**Chainage km 7.7 ,Slab Culvert**
	
Chainage km 8.00	**Chainage 11km End Point**

2.4.4 Cross Drainage Structures

There are 81 nos. of CD structure in the project road, out of which 53 nos HP culverts, 20 nos Slab culverts, and 6nos of the causeway. Out of these 45 nos HP culverts are chocked by siltation; need to replace by 1.2 m dia HP Culverts. The details are given in Table 1.

Table 1: List of Existing Cross Drainage Structures

Sl	Existing Structure					
	Chainage (Km)	Type of Structure	Span / Dia (m)	Total Width (m)	Width of Head/Parafet Wall (m)	Condition
1	0+100	SC	1.7 x 2.8	6.338	1.900	Retained
2	0+384	HPC	1 x 0.9	10.709	1.200	C & P
3	0+515	HPC	-	12.436	-	Replaced by Box
4	0+565	SC	2.8 x 7.1	6.745	3.000	Retained
5	0+772	Causeway	28	6.870		Bridge Required
6	0+985	HPC	1 x 0.9	10.116	1.250	C & P
7	1+067	HPC	2 x 0.9	9.817		C & P
8	1+170	HPC	1 x 0.9	9.692	1.350	C & P
9	1+460	SC	2.9 x 1.2	7.218	3.100	Retained
10	1+508	HPC	1 x 0.9	9.967	1.350	C & P
11	1+571	SC	2.0 x 1.4	9.120	2.200	Retained
12	1+800	Causeway	75	7.406		Bridge Required
13	1+965	SC	1.3 x 1	18.046	1.600	Retained
14	2+092	SC	2.2 x 2.3	6.524	2.500	Retained

Sl	Existing Structure					
	Chainage (Km)	Type of Structure	Span / Dia (m)	Total Width (m)	Width of Head/Parafet Wall (m)	Condition
15	2+222	SC	3.4 x 4.3	7.315	3.700	Retained
16	2+332	HPC	1 x 0.9	9.857	1.200	C & P
17	2+650	HPC	1 x 0.9	10.013	1.250	C & P
18	2+717	HPC	1 x 0.9	7.867	1.200	C & P
19	3+115	SC	5.5 x 1.8	4.830	5.800	Widening
20	3+170	HPC	1 x 0.9	7.133	1.250	C & P
21	3+250	SC	1.9 x 1.3	6.875	2.400	Retained
22	3+400	HPC	-	7.434	-	Replaced by Box
23	3+450	HPC	1 x 0.9	10.133	1.350	C & P
24	3+600	Causeway	30	6.520		Bridge Required
25	3+778	HPC	1 x 1.0	9.784	1.350	C & P
26	3+887	HPC	1 x 1.2	9.843	1.600	Retained
27	4+000	HPC	-	6.394	-	Replaced by Box
28	4+140	HPC	-	7.807	-	Replaced by Box
29	4+231	SC	5.3 x 3.3	4.512	5.800	Widening
30	4+345	HPC	1 x 0.6	6.236	0.850	C & P
31	4+388	HPC	1 x	8.568	1.200	C & P

Sl	Existing Structure					
	Chainage (Km)	Type of Structure	Span / Dia (m)	Total Width (m)	Width of Head/Parafet Wall (m)	Condition
			0.9			
32	4+500	HPC	1 x 0.9	8.514	1.250	C & P
33	4+564	HPC	1 x 0.9	9.451	1.250	C & P
34	4+768	SC	1.2 x 3.0	6.208	1.600	Retained
35	4+850	HPC	1 x 0.9	8.784	1.200	C & P
36	4+932	SC	1.3 x 1.2	6.706	1.600	Retained
37	5+082	HPC	1 x 0.9	7.636	1.350	C & P
38	5+179	SC	1.9 x 2.5	5.423	2.600	Retained
39	5+300	HPC	1 x 0.9	7.779	1.350	C & P
40	5+482	HPC	1 x 0.9	7.083	1.250	C & P
41	5+700	SC	1.9 x 1.4	4.665	2.500	Widening
42	5+850	HPC	6 x 0.9	7.733		C & P
43	6+010	HPC	1 x 0.9	7.138	1.350	C & P
44	6+227	SC	4.2 x 1.0	4.653	4.600	Widening
45	6+325	HPC	1 x 0.9	8.472	1.200	C & P
46	6+400	HPC	1 x	9.451	1.200	C & P

Sl	Existing Structure					
	Chainage (Km)	Type of Structure	Span / Dia (m)	Total Width (m)	Width of Head/Parafet Wall (m)	Condition
			0.9			
47	6+510	HPC	-	6.055	-	Replaced by Box
48	6+572	HPC	1 x 1.2	7.134	1.650	Retained
49	6+638	HPC	1 x 1.2	7.175	1.550	Retained
50	6+725	SC	2.8 x 3.3	5.099	3.300	Widening
51	6+745	HPC	1 x 1.2	7.444	1.450	Retained
52	6+800	SC	-	4.817	14.025	Widening
53	7+113	HPC	1 x 0.6	8.573	0.900	C & P
54	7+300	Causeway	55	6.963		Bridge Required
55	7+516	HPC	1 x 0.6	7.394	1.100	C & P
56	7+600	HPC	1 x 0.6	9.310	0.900	C & P
57	7+724	SC	2.8 x 0.5	5.278	3.300	Widening
58	7+967	SC	1.8 x 2.3	4.989	2.400	Widening
59	8+100	HPC	-	5.393	-	Replaced by Box
60	8+250	HPC	1 x 1.0	9.698	1.350	C & P
61	8+393	HPC	1 x 0.9	6.424	1.350	C & P
62	8+464	HPC	1 x 1.0	7.422	1.300	C & P

Sl	Existing Structure					
	Chainage (Km)	Type of Structure	Span / Dia (m)	Total Width (m)	Width of Head/Parafet Wall (m)	Condition
63	8+481	HPC	1 x 1.2	7.262	1.550	Retained
64	8+532	HPC	1 x 1.2	7.129	1.450	Retained
65	8+594	HPC	1 x 0.6	7.452	0.850	C & P
66	8+694	HPC	1 x 0.6	6.605	0.900	C & P
67	8+825	HPC	1 x 0.9	9.570	1.250	C & P
68	8+985	HPC	1 x 0.6	7.450	1.100	C & P
69	9+035	SC	2.6 x 3.9	6.011	3.000	Retained
70	9+307	HPC	1 x 0.9	7.560	1.200	C & P
71	9+440	HPC	1 x 1.0	9.474	1.350	C & P
72	9+535	HPC	1 x 0.6	9.491	0.850	C & P
73	9+587	HPC	1 x 0.9	9.612	1.250	C & P
74	9+700	Causeway	45	7.191		Bridge Required
75	9+838	HPC	-	6.195	-	Replaced by Box
76	9+950	Causeway	41	6.955		Bridge Required
77	10+340	HPC	-	5.195	-	Replaced by Box
78	10+628	HPC	1 x 0.9	8.318	1.200	C & P
79	11+000	HPC	1 x	14.024	1.350	C & P

Sl	Existing Structure					
	Chainage (Km)	Type of Structure	Span / Dia (m)	Total Width (m)	Width of Head/Parafet Wall (m)	Condition
			0.9			

* C&P – Chocked & Poor, R&NC-Replaced & New Construction

2.4.5 Existing drain

In this project road from Ch 0.00 Km to Ch 11.000 Km, there are only 2340.21 m existing PCC drain at different stretches. Existing Drains are in good condition but filled with siltation, clearance of drain is very much required. Kindly see Table 2.

Table 2: List of Existing Drain

Sl No.	Drain				Type of Structure
	Chainage		Left	Right	
	From	To	Length (m)		
1	0+000	0+100	65.527	-	PCC Drain
2	0+100	0+200	24.285	-	PCC Drain
3	0+200	0+300	-	220.943	PCC Drain
4	0+300	0+400	-		PCC Drain
5	0+400	0+500	-	14.889	PCC Drain
6	0+500	0+600	-	8.890	PCC Drain
7	0+600	0+700	-	81.551	PCC Drain
8	0+700	0+800	-	44.246	PCC Drain
9	0+800	0+900	56.847	-	PCC Drain
10	0+900	1+000	57.697	-	PCC Drain
11	1+000	1+100	53.719	-	PCC Drain
12	1+100	1+200	54.966	-	PCC Drain
13	1+200	1+300	31.310	-	PCC Drain

Sl No.	Drain				Type of Structure
	Chainage		Left	Right	
	From	To	Length (m)		
14	1+300	1+400	16.767	32.294	PCC Drain
15	1+400	1+500	-	26.290	PCC Drain
16	1+500	1+600	-	36.710	PCC Drain
17	2+000	2+100	-	37.014	PCC Drain
18	2+100	2+200	10.401	-	PCC Drain
19	2+200	2+300	-	450.862	PCC Drain
20	2+300	2+400	-		PCC Drain
21	2+400	2+500	-		PCC Drain
22	2+500	2+600	-		PCC Drain
23	2+600	2+700	-		PCC Drain
24	2+700	2+800	-	-	PCC Drain
25	2+800	2+900	-	-	PCC Drain
26	2+900	3+000	-	52.099	PCC Drain
27	3+000	3+100	-	87.122	PCC Drain
28	3+100	3+200	-	22.929	PCC Drain
29	3+200	3+300	-	45.413	PCC Drain
30	3+300	3+400	-	54.828	PCC Drain
31	3+400	3+500	-	162.763	PCC Drain
32	3+500	3+600	-		PCC Drain
33	3+600	3+700		181.716	PCC Drain
34	3+700	3+800			PCC Drain
35	3+800	3+900		114.841	PCC Drain
36	3+900	4+000			PCC Drain
37	5+400	5+500	-	33.350	PCC Drain

Sl No.	Drain				Type of Structure
	Chainage		Left	Right	
	From	To	Length (m)		
38	7+400	7+500	34.182	-	PCC Drain
39	9+900	10+000	19.721	-	PCC Drain
40	10+700	10+800	-	206.042	PCC Drain
41	10+800	10+900	-		PCC Drain
42	10+900	11+000	-		PCC Drain

2.4.6 Existing Breast wall

In this project road from Ch 0.000 Km to Ch 11.000 Km, there are only 1162.00 m Breast Wall exists either in the form of stone masonry at different stretches. The existing Breast walls are in good condition. Details are shown in Table 3.

Table 3: List of Existing Breast Wall

Sl No.	Chainage		Breast Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
1	0+000	0+100	-	35.059	Stone Masonry
2	0+200	0+300	-	-	Stone Masonry
3	0+300	0+400	17.838	-	Stone Masonry
4	0+400	0+500	19.808	-	Stone Masonry
5	0+500	0+600	4.022	4.246	Stone Masonry
6	0+600	0+700	40.519	7.395	Stone Masonry
7	0+700	0+800	34.704	10.528	Stone Masonry
8	0+800	0+900	-	6.347	Stone Masonry
9	0+900	1+000	-	17.762	Stone Masonry
10	1+000	1+100	26.24	49.153	Stone Masonry
11	1+200	1+300	-	-	Stone Masonry
12	1+400	1+500	23.656	-	Stone Masonry

Sl No.	Chainage		Breast Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
13	1+500	1+600	44.68	-	Stone Masonry
14	1+900	2+000	81.67	22.934	Stone Masonry
15	2+000	2+100	-	-	Stone Masonry
16	2+100	2+200	-	-	Stone Masonry
17	2+200	2+300	-	-	Stone Masonry
18	2+300	2+400	-	-	Stone Masonry
19	2+700	2+800	17.635	-	Stone Masonry
20	2+900	3+000	-	-	Stone Masonry
21	3+000	3+100	9.513	-	Stone Masonry
22	3+100	3+200	7.868	13.9595	Stone Masonry
23	3+400	3+500	-	-	Stone Masonry
24	3+700	3+800	33.576	-	Stone Masonry
25	3+800	3+900	9.416	-	Stone Masonry
26	3+900	4+000	23.94	-	Stone Masonry
27	4+300	4+400	-	9.864	Stone Masonry
28	4+400	4+500	-	-	Stone Masonry
29	4+500	4+600	12.784	13.24	Stone Masonry
30	4+600	4+700	-	3.747	Stone Masonry
31	4+700	4+800	2.958	13.074	Stone Masonry
32	4+800	4+900	-	26.982	Stone Masonry
33	4+900	5+000	-	48.498	Stone Masonry
34	5+000	5+100	-	25.834	Stone Masonry
35	5+100	5+200	-	24.162	Stone Masonry
36	5+300	5+400	-	2.131	Stone Masonry
37	5+400	5+500	55.148	-	Stone Masonry
38	5+500	5+600	20.442	12.511	Stone Masonry
39	5+800	5+900	22.965	15.024	Stone Masonry

Sl No.	Chainage		Breast Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
40	6+000	6+100	-	-	Stone Masonry
41	6+100	6+200	-	-	Stone Masonry
42	6+200	6+300	7.381	6.456	Stone Masonry
43	6+300	6+400	9.319	1.489	Stone Masonry
44	6+500	6+600	14.527	5.807	Stone Masonry
45	6+600	6+700	1.513	-	Stone Masonry
46	6+700	6+800	13.632	9.374	Stone Masonry
47	6+800	6+900	-	1.487	Stone Masonry
48	6+900	7+000	-	11.791	Stone Masonry
49	7+200	7+300	-	17.654	Stone Masonry
50	7+300	7+400	-	20.703	Stone Masonry
51	7+700	7+800	2.73	8.364	Stone Masonry
52	7+900	8+000	-	5.679	Stone Masonry
53	8+000	8+100	-	1.501	Stone Masonry
54	8+200	8+300	1.491	-	Stone Masonry
55	8+400	8+500	2.841	-	Stone Masonry
56	8+500	8+600	2.781	-	Stone Masonry
57	8+600	8+700	20.769	-	Stone Masonry
58	8+800	8+900	5.655	-	Stone Masonry
59	8+900	9+000	4.389	7.756	Stone Masonry
60	9+300	9+400	-	-	Stone Masonry
61	9+400	9+500	4.732	-	Stone Masonry
62	9+700	9+800	18.241	-	Stone Masonry
63	9+800	9+900	-	-	Stone Masonry
64	10+200	10+300	5.941	-	Stone Masonry
65	10+300	10+400	1.216	-	Stone Masonry
66	10+500	10+600	-	-	Stone Masonry

Sl No.	Chainage		Breast Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
67	10+600	10+700	-	-	Stone Masonry
68	10+700	11+000	32.074	42.788	Stone Masonry
Total Length			**1162.0**		

2.4.7 Existing Retaining Wall

In this project road from Ch 0.00 Km to Ch 11.000 Km, there are only1124.61 m Retaining Wall mostly made of stone masonry at different stretches are in good condition. Details are shown in Table 4.

Table 4: List of existing Retaining Wall

Sl No.	Chainage		Retaining Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
1	0+000	0+100	-	-	Stone Masonry
2	0+200	0+300	-	25.614	Stone Masonry
3	0+300	0+400	-	80.72	Stone Masonry
4	0+400	0+500	-	-	Stone Masonry
5	0+500	0+600	-	23.383	Stone Masonry
6	0+600	0+700	-	57.988	Stone Masonry
7	0+700	0+800	-	15.162	Stone Masonry
8	0+800	0+900	30.394	-	Stone Masonry
9	0+900	1+000	29.392	-	Stone Masonry
10	1+000	1+100	-	-	Stone Masonry
11	1+200	1+300	-	26.927	Stone Masonry
12	1+400	1+500	-	-	Stone Masonry
13	1+500	1+600	-	-	Stone Masonry

Sl No.	Chainage		Retaining Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
14	1+900	2+000	-	-	Stone Masonry
15	2+000	2+100	-	61.055	Stone Masonry
16	2+100	2+200	16.034	-	Stone Masonry
17	2+200	2+300	-	33.308	Stone Masonry
18	2+300	2+400	-	27.005	Stone Masonry
19	2+700	2+800	-	-	Stone Masonry
20	2+900	3+000	-	17.145	Stone Masonry
21	3+000	3+100	-	17.443	Stone Masonry
22	3+100	3+200	-	-	Stone Masonry
23	3+400	3+500	-	42.937	Stone Masonry
24	3+700	3+800	-	-	Stone Masonry
25	3+800	3+900	-	34.601	Stone Masonry
26	3+900	4+000	-	-	Stone Masonry
27	4+300	4+400	-	-	Stone Masonry
28	4+400	4+500	13.539	-	Stone Masonry
29	4+500	4+600	-	-	Stone Masonry
30	4+600	4+700	17.795	-	Stone Masonry
31	4+700	4+800	-	-	Stone Masonry
32	4+800	4+900	-	-	Stone Masonry
33	4+900	5+000	80.938	-	Stone Masonry
34	5+000	5+100	36.469	-	Stone Masonry
35	5+100	5+200	43.78	-	Stone Masonry
36	5+300	5+400	-	-	Stone Masonry
37	5+400	5+500	-	35.228	Stone Masonry

Sl No.	Chainage		Retaining Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
38	5+500	5+600	-		Stone Masonry
39	5+800	5+900	-		Stone Masonry
40	6+000	6+100	-	18.803	Stone Masonry
41	6+100	6+200	-	21.731	Stone Masonry
42	6+200	6+300	-	-	Stone Masonry
43	6+300	6+400	-	-	Stone Masonry
44	6+500	6+600	-	-	Stone Masonry
45	6+600	6+700	-	-	Stone Masonry
46	6+700	6+800	-	-	Stone Masonry
47	6+800	6+900	-	-	Stone Masonry
48	6+900	7+000	-	-	Stone Masonry
49	7+200	7+300	-	-	Stone Masonry
50	7+300	7+400	-	-	Stone Masonry
51	7+700	7+800	-	-	Stone Masonry
52	7+900	8+000	-	-	Stone Masonry
53	8+000	8+100	-	-	Stone Masonry
54	8+200	8+300	-	-	Stone Masonry
55	8+400	8+500	-	-	Stone Masonry
56	8+500	8+600	-	-	Stone Masonry
57	8+600	8+700	-	-	Stone Masonry
58	8+800	8+900	-	-	Stone Masonry
59	8+900	9+000	-	-	Stone Masonry
60	9+300	9+400	28.275	38.797	Stone Masonry
61	9+400	9+500	-	41.511	Stone Masonry

Sl No.	Chainage		Retaining Wall		Type of Structure
			Left	Right	
	From	To	Length (m)		
62	9+700	9+800	-	-	Stone Masonry
63	9+800	9+900	-	62.019	Stone Masonry
64	10+200	10+300	-	-	Stone Masonry
65	10+300	10+400	-	-	Stone Masonry
66	10+500	10+600	-	73.31	Stone Masonry
67	10+600	11+000	-	73.31	Stone Masonry
Total Length			**1124.61**		

2.4.8 Existing Pavement Composition

The said road is a very old road that was initially constructed not based on traffic on the section but as a heritage route. Afterward, several maintenances work of the different specifications have been undertaken over the road. Specification adopted for such maintenance widely varies from year to year as well as from stretches to stretches. But during heavy rain in the year 2014, the alignment is damaged in different stretches. Trial Pit Investigation has been conducted for detailing pavement composition at different locations and on average following composition is found as existing hard crust as mentioned in table 6.

The total thickness of the hard crust varies in between 110 mm – 580 mm where existing crust comprises of GSB consists of compacted granular materials having thickness 70 mm to 320 mm thick (average 213 mm), partly disintegrated base course with WBM materials of 70 mm to 200 mm thick (average 146 mm) and Bituminous/ Binder course varying from 30 mm to 80 mm thick (average 50 mm). From Km 4.500 to Km 7.500 and from Km 10.000 to Km 11.500, no Gravel surface exists. in table 5 below:

Table 5: Details of Existing Pavement Composition

Location	Description of	Thickness (mm)

	Layers	Individual (mm)	Surface (Bituminous) in mm	Base Course in mm	Sub-Base Course in mm	Total
RD 0.000 / TP 1 (LHS)	Bituminous	80	80	200	300	580
	WBM	200				
	Metal Soling	300				
RD 0.500 / TP 2 (LHS)	Bituminous	50	50	150	200	400
	WBM	150				
	Metal Soling	200				
RD 1.000 / TP 3 (RHS)	Bituminous	60	60	200	300	560
	WBM	200				
	Metal Soling	300				
RD 1.500 / TP 4 (LHS)	Bituminous	60	60	190	300	550
	WBM	190				
	Metal Soling	300				
RD 2.000 / TP 5 (RHS)	Bituminous	50	50	200	230	480
	WBM	200				
	Metal Soling	230				
RD 2.500 / TP 6 (RHS)	Bituminous	50	50	100	270	420
	WBM	100				
	Metal Soling	270				
RD 3.000 / TP 7 (LHS)	Bituminous	60	60	70	70	200
	WBM	70				
RD 3.500 / TP 8 (RHS)	Bituminous	60	60	120	120	300
	WBM	120				
RD 4.000 / TP 9 (LHS)	Bituminous	40	40	70	150	260
	WBM	70				

Location	Description of Layers	Thickness (mm)				
		Individual (mm)	Surface (Bituminous) in mm	Base Course in mm	Sub-Base Course in mm	Total
	Metal Soling	150				
RD 4.500 / TP 10 (LHS)	Metal Soling	320			320	320
RD 5.000 / TP 11 (RHS)	WBM	80		80	260	340
	Metal Soling	260				
RD 5.500 / TP 12 (LHS)	WBM	200		200	250	450
	Metal Soling	250				
RD 6.000 / TP 13 (RHS)	WBM	200		200	270	470
	Metal Soling	270				
RD 6.500 / TP 14 (LHS)	WBM	200		200	220	420
	Metal Soling	220				
RD 7.000 / TP 15 (LHS)	Metal Soling	180			180	180
RD 7.500 / TP 16 (RHS)	Metal Soling	140			140	140
RD 8.000 / TP 17 (RHS)	Bituminous	30	30	150	190	370
	WBM	150				
	Metal Soling	190				
RD 8.500 / TP 18 (LHS)	Bituminous	30	30	70	170	270
	WBM	70				
	Metal Soling	170				
RD 9.000 / TP 19 (RHS)	WBM	200		200	240	440
	Metal Soling	240				
RD 9.500 / TP	Bituminous	40	40	150		190

Location	Description of Layers	Thickness (mm)				
		Individual (mm)	Surface (Bituminous) in mm	Base Course in mm	Sub-Base Course in mm	Total
20 (RHS)	WBM	150				
RD 10.000 / TP 21 (LHS)	Metal Soling	200			200	200
RD 10.500 / TP 22 (LHS)	Metal Soling	250			250	250
RD 11.000 / TP 23 (RHS)	Metal Soling	200			200	200
RD 11.500 / TP 24 (LHS)	Metal Soling	110			110	110
RD 12.000 / TP 25 (RHS)	Bituminous	40	40	70	150	260
	WBM	70				
	Metal Soling	150				
Average Thickness from Km 0.000 to Km 12.000			**50**	**146**	**213**	
Minimum Thickness from Km 0.000 to Km 12.000			**30**	**70**	**70**	**110**
Maximum Thickness from Km 0.000 to Km 12.000			**80**	**200**	**320**	**580**

2.4.9 RoW Details of the Sub-Project Road

Project Manager (Transport, Jammu Division) vide letter no PIU/T/ERA/2021/865 dated 16.03.3021 issued a non-encumbrance certificate which confirms that the available existing RoW is 6.00 meters and sub-project does not require land for the proposed upgradation (annexure 3). The proposed improvement and up-gradation work will be carried out within the available land.

2.4.10 Major Utilities Along the Existing Road

A detailed road inventory survey was carried out at 100 m intervals mainly the proposed alignment. Detailed information was collected and utilized for planning, design, and cost estimate.

An inventory of the project road has been carried out through dimensional measurement and visual inspection. Features like chainage, terrain and land-use, the height of fill or depth of cut, the width of pavement and shoulders, important road junctions and geometric deficiencies, utilities, etc., were recorded. Details are provided in annexure-III of DPR.

These surveys were carried out by visual observation supplemented with sample measurements using tape etc. The road inventory has been referenced to the existing km posts established along the roadside.

Following parameters were recorded during the road inventory survey:

- Terrain: The project road passes through hilly terrain. The terrain along the project road has been classified as per IRC: 52.
- Land Use: The project road traverses through the settlements of Deawan and Shandi. The land use along the project road is Open and Agricultural.
- Carriageway/ Roadway Width: The existing road is of single carriageway having varying widths 2.75 m to 3.0 m. Details of the existing carriageway and surface type are summarized in the following Table 6.

Table 6: Carriage way width along the project corridor

Sl. No.	Chainage (km)		Length (km)	Av Road Width (m)
	From	To		
1	0+000	1+000	1+000	4.100
2	1+000	2+000	1+000	4.000
3	2+000	3+000	1+000	3.600
4	3+000	4+000	1+000	3.600
5	4+000	5+000	1+000	3.150
6	5+000	6+000	1+000	3.150
7	6+000	7+000	1+000	3.000
8	7+000	8+000	1+000	3.200

Sl. No.	Chainage (km)		Length (km)	Av Road Width (m)
	From	To		
9	8+000	9+000	1+000	3.000
10	9+000	10+000	1+000	3.200
11	10+000	11+000	1+000	3.000

- Horizontal Curves: Existing alignment is followed to widen and strengthen the existing road and it is found that mostly the required ruling design speed of 40 km/hour is maintained. The existing carriageway will be provided with the required grade after making the provision of a profile corrective course with proper cambers over the existing carriageway surface. Due to land constraints, most of the curve radius is less than 60, henceforth 0.6 m to 0.9 m extra widening provide at those locations as per IRC norms. Horizontal & Vertical Curve details are mentioned in annexure IV. Details of extra widening are given in annexure-IV.
- Road Junctions: There are 25 minor junctions along the project road. Improvement of junction also not possible to follow within such constraint of ROW.

However, a necessary road sign has to be provided where speed is restricted wherever required.

Horizontal Curves:

Pavement Condition Survey

From the result of the survey, the following inference could be drawn.

- The pavement is generally in poor shape.
- There is appreciable rutting throughout the section.
- Alignment is generally full of potholes and some sections are completely failed in all respects.
- Alligator cracks are also present.
- The structural strength of the pavement is generally in bad condition.
- The pavement drainage system is inadequate.
- The sub-grade soils are mostly Sandy.
- The existing pavement condition is poor.

The information was collected in the form of percentage area cracking, pot-holed and raveling pavements, and pavement edge fretting by length (m).

2.5 Proposed Activities (Improvement & Up-gradation)

Table 7: Proposed Technical Description in the Sub-Project Road

Sl.No.	Description of item	Details	
1	Road length	Existing – 11.00 km.	Design – 11.00 km
2	Road Configuration	Existing: - 2.75 m to 3.0 m wide carriageway	Proposed: - 3.75 m wide carriageway
3	Terrain	Hilly	
4	Land use pattern	Mostly Open and Agricultural	
5	Existing Surface of carriageway	Flexible Bituminous pavement upto 4.0 Km and Rest mostly gravel	
7	Existing Formation Width	6.0 m	
8	Right of Way (ROW)	6.0 m – 7.0 m	
9	Pavement Condition	Poor	
10	New Flexible Pavement thickness	OGPC-25 mm, WBM Grade II – 75 mm, WBM - 150 mm, GSB-150 mm	
11	Design CBR	8.03 % (Av CBR)	
12	Junctions	Minor- 25	
13	Traffic	T7 (6 ESAL to 10 EASL) – IRC SP 72 -2015	
14	Cross drainage structures	<u>Existing Culvert- 75</u> HP Culvert – 53Nos, Slab Culvert – 22Nos, Damaged Culvert – 11 Nos. Causeway – 6 Nos	<u>Proposed Culvert- 61</u> HP Culvert – 45 Nos (Reconstruction), Box Culvert – 8 Nos (Reconstruction by 2x2), Damaged Culvert – 8 Nos (Replaced by 2 x 2 Box Culverts), Causeway – 6 Nos (Bridge)
15	Settlement	Chilah, Kanna Chhargal, Panjoa, and Shandi	

2.5.1 Carriageway Width

In general, the proposed cross-section comprises of 3.75 m wide carriageway with 1.000 m wide granular hard shoulder on either side of the c/w. The camber on either side of the carriageway and hard shoulder is 2.5 % & on the shoulder it is 3.0 %. The proposed cross-sections are presented in TCS-1 & TCS - 2 having 3.75 m CW

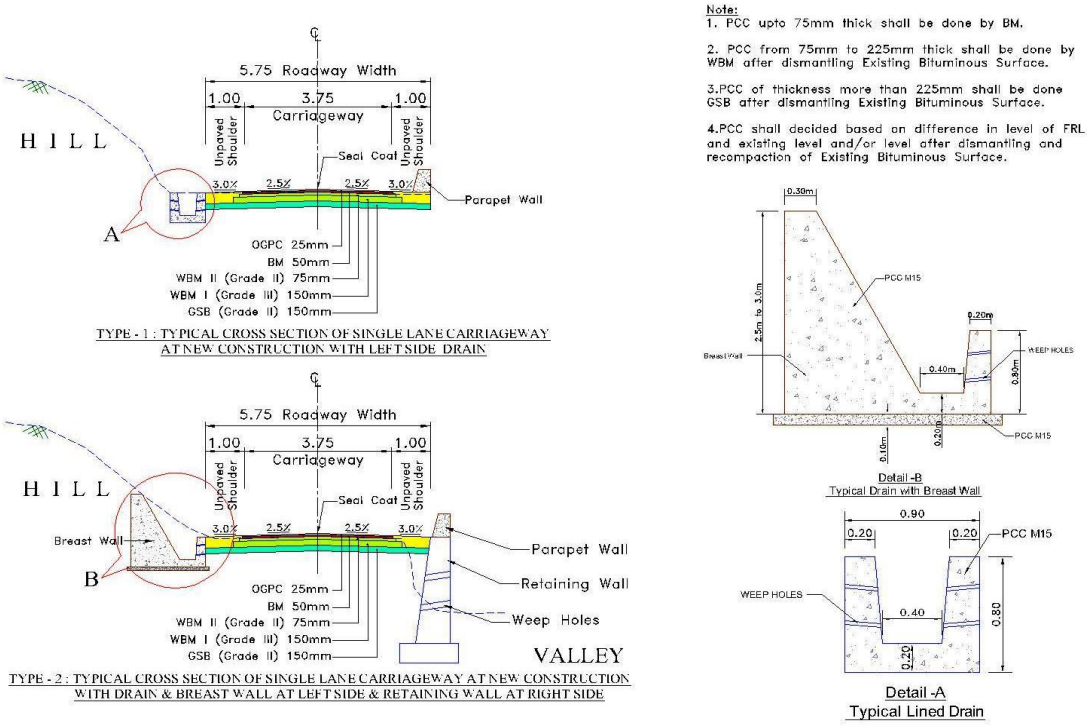


Figure 2 proposed cross-sections

2.5.2 Horizontal and vertical alignment

Existing alignment is followed to widen and strengthen the existing road and it is found that mostly the required ruling design speed of 30 km/hour is maintained. The existing carriageway will be provided with the required grade after making the provision of a profile corrective course with proper cambers over the existing carriageway surface. Due to land constraints, most of the curve radius is less than 60, henceforth 0.6 m to 0.9 m extra widening provide at those locations as per IRC norms. Horizontal & Vertical Curve details are mentioned in annexure IV. Details of extra widening are given in Table

Table 8: details of extra widening stretch

HIP No.	HIP	Radius	Design Speed (V kmph)	Hand of Curve	e%	Extra Widening

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
1	0+200.347	50	30	Left	7.00	1.2
2	0+140.189	300	40	Right	2.50	0.6
3	-0+939.035	100	25	Right	2.78	0.9
4	0+174.860	60	30	Right	6.67	1.2
5	0+098.866	100	40	Right	7.00	0.9
6	0+734.169	400	40	Right	2.50	0
7	1+077.114	400	30	Left	2.50	0
8	0+284.101	30	20	Right	5.93	1.5
9	0+453.774	50	30	Left	7.00	1.2
10	0+409.781	60	30	Left	6.67	1.2
11	0+154.362	60	30	Right	6.67	1.2
12	0+418.909	30	20	Left	5.93	1.5
13	0+490.262	50	30	Right	7.00	1.2
14	0+525.658	60	30	Left	6.67	1.2
15	0+505.840	65	30	Left	6.15	0.9
16	1+364.908	400	40	Right	2.50	0
17	0+634.921	100	40	Left	7.00	0.9
18	0+669.127	100	40	Right	7.00	0.9
19	0+705.928	400	40	Right	2.50	0
20	0+851.017	2	5	Right	5.56	1.5
21	0+873.925	25	20	Left	7.00	1.5
22	0+753.263	70	35	Right	7.00	0.9
23	0+961.889	50	30	Left	7.00	1.2
24	1+056.612	25	20	Right	7.00	1.5
25	1+076.922	70	35	Left	7.00	0.9
26	1+162.706	22	20	Left	7.00	1.5
27	1+351.043	38	25	Right	7.00	1.5
28	1+339.914	25	20	Left	7.00	1.5
29	1+527.719	43	25	Right	6.46	1.2
30	1+456.570	20	20	Left	7.00	1.5
31	1+957.965	200	40	Left	3.56	0.6
32	-0+072.896	65	25	Right	4.27	0.9
33	1+333.528	100	40	Left	7.00	0.9
34	1+661.317	100	40	Left	7.00	0.9
35	1+958.067	25	20	Left	7.00	1.5
36	26+168.636	50	30	Right	7.00	1.2
37	1+870.682	50	30	Right	7.00	1.2
38	1+204.986	100	40	Right	7.00	0.9
39	2+183.229	100	40	Right	7.00	0.9
40	0+760.006	400	40	Right	2.50	0

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
41	2+153.676	48	25	Left	5.79	1.2
42	2+106.899	100	40	Left	7.00	0.9
43	2+128.273	60	30	Left	6.67	1.2
44	2+718.435	200	40	Right	3.56	0.6
45	2+497.667	100	30	Right	4.00	0.9
46	2+233.677	200	40	Right	3.56	0.6
47	2+559.082	27	20	Right	6.58	1.5
48	3+363.023	50	30	Right	7.00	1.2
49	2+658.963	30	20	Left	5.93	1.5
50	2+716.727	120	40	Right	5.93	0.6
51	1+639.106	50	30	Right	7.00	1.2
52	2+865.070	60	30	Left	6.67	1.2
53	3+096.738	22	20	Right	7.00	1.5
54	3+054.207	30	20	Left	5.93	1.5
55	3+176.555	35	25	Left	7.00	1.5
56	3+119.413	50	30	Left	7.00	1.2
57	1+288.970	30	20	Left	5.93	1.5
58	3+349.670	30	20	Right	5.93	1.5
59	3+253.517	13	15	Left	7.00	1.5
60	3+293.136	15	15	Right	6.67	1.5
61	3+270.012	15	15	Right	6.67	1.5
62	3+351.186	30	20	Left	5.93	1.5
63	3+387.190	15	15	Left	6.67	1.5
64	3+432.097	35	25	Right	7.00	1.5
65	3+564.957	200	35	Right	2.72	0.6
66	3+607.086	200	35	Left	2.72	0.6
67	3+666.510	200	35	Right	2.72	0.6
68	3+844.849	70	35	Right	7.00	0.9
69	4+022.715	100	40	Left	7.00	0.9
70	3+866.493	35	25	Right	7.00	1.5
71	3+897.127	25	20	Left	7.00	1.5
72	3+881.280	25	20	Right	7.00	1.5
73	3+946.346	50	30	Left	7.00	1.2
74	3+731.113	30	20	Right	5.93	1.5
75	3+829.145	30	20	Left	5.93	1.5
76	4+043.050	30	20	Right	5.93	1.5
77	4+019.244	50	30	Left	7.00	1.2
78	4+071.558	30	20	Right	5.93	1.5
79	3+847.919	100	40	Right	7.00	0.9
80	4+062.502	100	40	Right	7.00	0.9

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
81	4+250.454	35	25	Left	7.00	1.5
82	3+981.205	50	30	Right	7.00	1.2
83	4+280.153	60	30	Left	6.67	1.2
84	4+126.443	50	30	Right	7.00	1.2
85	4+545.232	100	40	Left	7.00	0.9
86	4+196.544	90	40	Right	7.00	0.9
87	4+381.511	40	25	Left	6.94	1.5
88	4+184.196	50	30	Left	7.00	1.2
89	5+564.465	200	40	Left	3.56	0.6
90	4+561.312	15	15	Right	6.67	1.5
91	4+531.193	50	30	Left	7.00	1.2
92	4+688.423	15	15	Right	6.67	1.5
93	4+726.399	25	20	Left	7.00	1.5
94	4+735.989	25	20	Right	7.00	1.5
95	4+780.216	15	15	Left	6.67	1.5
96	4+698.580	40	25	Left	6.94	1.5
97	4+807.247	12	15	Right	7.00	1.5
98	4+885.515	20	20	Left	7.00	1.5
99	4+727.486	50	30	Right	7.00	1.2
100	5+150.061	100	40	Left	7.00	0.9
101	4+640.687	30	20	Left	5.93	1.5
102	5+014.628	50	30	Left	7.00	1.2
103	5+034.608	10	15	Left	7.00	1.5
104	5+050.126	40	25	Left	6.94	1.5
105	5+058.054	25	20	Left	7.00	1.5
106	5+091.219	25	20	Right	7.00	1.5
107	5+247.837	50	30	Left	7.00	1.2
108	5+132.109	25	20	Left	7.00	1.5
109	5+282.049	14	15	Right	7.00	1.5
110	5+423.209	100	40	Left	7.00	0.9
111	5+363.241	50	30	Left	7.00	1.2
112	4+822.235	100	25	Right	2.78	0.9
113	5+450.787	22	20	Right	7.00	1.5
114	5+455.048	30	20	Left	5.93	1.5
115	5+797.156	30	20	Right	5.93	1.5
116	5+624.326	30	20	Left	5.93	1.5
117	5+699.382	100	25	Right	2.78	0.9
118	5+622.790	20	20	Left	7.00	1.5
119	5+644.055	20	20	Right	7.00	1.5
120	3+881.389	200	35	Right	2.72	0.6

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
121	5+783.469	100	25	Right	2.78	0.9
122	5+349.126	42	25	Left	6.61	1.2
123	6+087.760	20	20	Left	7.00	1.5
124	6+012.890	30	20	Left	5.93	1.5
125	6+178.698	20	20	Right	7.00	1.5
126	6+557.968	100	25	Left	2.78	0.9
127	6+167.862	22	20	Right	7.00	1.5
128	6+311.490	45	25	Left	6.17	1.2
129	6+333.805	15	15	Right	6.67	1.5
130	6+380.109	10	15	Left	7.00	1.5
131	6+383.427	30	20	Right	5.93	1.5
132	6+386.153	100	25	Right	2.78	0.9
133	6+398.551	50	25	Left	5.56	1.2
134	6+362.230	32	20	Right	5.56	1.5
135	6+420.876	40	25	Left	6.94	1.5
136	6+460.401	100	25	Right	2.78	0.9
137	7+020.084	50	25	Left	5.56	1.2
138	6+477.471	20	20	Right	7.00	1.5
139	6+432.713	100	25	Left	2.78	0.9
140	6+764.074	70	25	Right	3.97	0.9
141	6+715.638	13	15	Left	7.00	1.5
142	7+386.036	100	25	Right	2.78	0.9
143	6+795.028	15	15	Right	6.67	1.5
144	6+970.780	20	20	Left	7.00	1.5
145	4+008.811	50	25	Right	5.56	1.2
146	6+919.908	40	25	Left	6.94	1.5
147	7+105.187	120	25	Right	2.50	0.6
148	5+562.817	60	25	Right	4.63	1.2
149	7+036.325	20	20	Right	7.00	1.5
150	6+970.115	30	20	Left	5.93	1.5
151	7+160.350	30	20	Right	5.93	1.5
152	7+089.451	100	25	Left	2.78	0.9
153	7+105.586	100	25	Right	2.78	0.9
154	7+245.003	70	25	Left	3.97	0.9
155	6+767.474	100	25	Right	2.78	0.9
156	7+375.944	30	20	Right	5.93	1.5
157	7+395.177	50	25	Left	5.56	1.2
158	7+569.761	20	20	Right	7.00	1.5
159	7+427.985	40	25	Left	6.94	1.5
160	7+547.227	12	15	Right	7.00	1.5

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
161	7+633.565	13	15	Left	7.00	1.5
162	7+661.174	15	15	Right	6.67	1.5
163	7+718.383	12	15	Right	7.00	1.5
164	7+854.208	20	20	Left	7.00	1.5
165	7+747.102	200	35	Left	2.72	0.6
166	7+225.917	50	25	Left	5.56	1.2
167	7+858.490	25	20	Right	7.00	1.5
168	7+874.668	22	20	Left	7.00	1.5
169	7+972.726	17	15	Right	5.88	1.5
170	7+998.342	50	25	Left	5.56	1.2
171	8+019.341	50	25	Left	5.56	1.2
172	8+047.414	15	15	Left	6.67	1.5
173	8+333.283	100	25	Right	2.78	0.9
174	8+131.589	30	20	Left	5.93	1.5
175	8+230.420	20	20	Right	7.00	1.5
176	8+155.810	30	20	Left	5.93	1.5
177	8+142.646	30	20	Right	5.93	1.5
178	8+285.511	100	25	Right	2.78	0.9
179	8+228.631	40	25	Right	6.94	1.5
180	8+334.604	45	25	Left	6.17	1.2
181	8+357.395	100	25	Left	2.78	0.9
182	8+437.547	40	25	Right	6.94	1.5
183	8+390.171	100	25	Right	2.78	0.9
184	8+320.197	60	25	Left	4.63	1.2
185	8+516.907	30	20	Right	5.93	1.5
186	8+910.724	20	20	Left	7.00	1.5
187	8+582.734	20	20	Right	7.00	1.5
188	8+340.139	100	25	Left	2.78	0.9
189	8+200.836	100	25	Right	2.78	0.9
190	7+893.794	100	25	Left	2.78	0.9
191	7+369.077	100	25	Right	2.78	0.9
192	8+672.758	25	20	Right	7.00	1.5
193	8+686.817	50	25	Left	5.56	1.2
194	8+731.494	20	20	Right	7.00	1.5
195	8+726.764	20	20	Left	7.00	1.5
196	8+494.653	50	25	Left	5.56	1.2
197	8+803.107	12	15	Right	7.00	1.5
198	9+222.953	70	25	Right	3.97	0.9
199	8+902.805	30	20	Left	5.93	1.5
200	8+911.575	45	25	Right	6.17	1.2

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
201	8+970.413	100	25	Left	2.78	0.9
202	8+985.057	25	20	Left	7.00	1.5
203	9+022.883	15	15	Left	6.67	1.5
204	9+013.418	50	25	Right	5.56	1.2
205	9+113.477	12	15	Right	7.00	1.5
206	9+121.082	15	15	Left	6.67	1.5
207	9+157.402	25	20	Right	7.00	1.5
208	9+146.558	60	25	Right	4.63	1.2
209	9+144.133	60	25	Left	4.63	1.2
210	9+288.237	30	20	Right	5.93	1.5
211	9+330.256	13	15	Left	7.00	1.5
212	9+309.800	30	20	Left	5.93	1.5
213	9+316.352	30	20	Right	5.93	1.5
214	9+324.548	30	20	Right	5.93	1.5
215	9+397.370	15	15	Right	6.67	1.5
216	9+431.121	10	15	Left	7.00	1.5
217	9+159.719	50	25	Right	5.56	1.2
218	9+442.896	65	25	Right	4.27	0.9
219	9+514.971	30	20	Left	5.93	1.5
220	9+488.011	30	20	Left	5.93	1.5
221	9+627.817	50	25	Left	5.56	1.2
222	9+695.930	30	20	Right	5.93	1.5
223	10+090.132	300	40	Right	2.50	0.6
224	10+168.943	50	25	Right	5.56	1.2
225	9+881.792	30	20	Left	5.93	1.5
226	9+921.299	50	25	Right	5.56	1.2
227	9+883.706	60	25	Left	4.63	1.2
228	9+894.473	30	20	Left	5.93	1.5
229	10+050.189	20	20	Left	7.00	1.5
230	9+967.366	25	20	Left	7.00	1.5
231	10+227.728	100	25	Left	2.78	0.9
232	10+002.308	12	15	Right	7.00	1.5
233	10+135.985	20	20	Right	7.00	1.5
234	10+322.679	50	25	Left	5.56	1.2
235	10+257.231	50	25	Right	5.56	1.2
236	10+198.800	35	25	Left	7.00	1.5
237	10+268.841	100	25	Right	2.78	0.9
238	10+266.947	15	15	Left	6.67	1.5
239	10+304.741	50	25	Right	5.56	1.2
240	10+393.011	20	20	Left	7.00	1.5

HIP	HIP	Radius	Design Speed	Hand of	e%	Extra
241	10+415.555	20	20	Right	7.00	1.5
242	10+565.416	50	25	Right	5.56	1.2
243	10+570.407	50	25	Left	5.56	1.2
244	9+942.284	100	25	Right	2.78	0.9
245	10+585.838	50	25	Left	5.56	1.2
246	10+763.791	18	15	Right	5.56	1.5
247	10+673.404	30	20	Left	5.93	1.5
248	10+720.318	22	20	Left	7.00	1.5
249	10+715.851	15	15	Right	6.67	1.5
250	10+561.844	60	25	Left	4.63	1.2
251	10+848.360	30	20	Right	5.93	1.5
252	10+904.802	25	20	Left	7.00	1.5
253	10+919.769	50	25	Left	5.56	1.2
254	11+054.847	40	25	Right	6.94	1.5
255	10+962.631	100	25	Right	2.78	0.9
256	10+972.990	100	25	Right	2.78	0.9

2.5.3 Improvement of Sight Distance

Improvement of sight distance on the proposed alignment has been taken care of while designing the alignment. However, a necessary road sign has to be provided where speed is restricted wherever required.

2.5.4 Improvement of Cross Drainage Structures

There are 75 nos. of CD structure in the project road, out of which 53 no. HP culverts and 22 no Slab culverts exist. Out of these 53 nos HP culverts, 45 nos are replaced by 1200 mm dia HP as the existing ones are choked due to siltation and in poor condition. Moreover, 8 Nos fully damaged HP culverts are replaced by 2x2 Box Culverts. In addition to that, 8 nos of Slab Culverts need to be reconstructed by 2x2 Box culvert depending upon existing width, and rest are retained. The details are mentioned in table 9.

Table 9: Details of Proposed Culverts

Sl No.	Existing Structures			Proposed Structure		
	Chainage	Types	Dia/Span(m)	Types	Dia/Span(m)	Remarks
1	0+100	Slab Culvert	1.7 x 2.8			Retained depend upon Width

Sl No.	Existing Structures			Proposed Structure		
	Chainage	Types	Dia/Span(m)	Types	Dia/Span(m)	Remarks
2	0+384	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
3	0+515	Damage Culvert	-	Box	2 x 2	
4	0+565	Slab Culvert	2.8 x 7.1			Retained depend upon Width
5	0+772	Causeway	28	Bridge		
6	0+985	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
7	1+067	Pipe Culvert	2 x 0.9	Pipe	2 x 1.2	
8	1+170	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
9	1+460	Slab Culvert	2.9 x 1.2			Retained depend upon Width
10	1+508	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
11	1+571	Slab Culvert	2.0 x 1.4			Retained depend upon Width
12	1+800	Causeway	75	Bridge		
13	1+965	Slab Culvert	1.3 x 1			Retained depend upon Width
14	2+092	Slab Culvert	2.2 x 2.3			Retained depend upon Width
15	2+222	Slab Culvert	3.4 x 4.3			Retained depend upon Width
16	2+332	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
17	2+650	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
18	2+717	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	

Sl No.	Existing Structures			Proposed Structure		
	Chainage	Types	Dia/Span(m)	Types	Dia/Span(m)	Remarks
19	3+115	Slab Culvert	5.5 x 1.8			Retained depend upon Width
20	3+170	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
21	3+250	Slab Culvert	1.9 x 1.3			Retained depend upon Width
22	3+400	Damage Culvert	-	Box	2 x 2	
23	3+450	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
24	3+600	Causeway	30	Bridge		
25	3+778	Pipe Culvert	1 x 1.0	Pipe	1 x 1.2	
26	3+887	Pipe Culvert	1 x 1 x 1.2	Pipe	1 x 1.2	
27	4+000	Damage Culvert	-	Box	2 x 2	
28	4+140	Damage Culvert	-	Box	2 x 2	
29	4+231	Slab Culvert	5.3 x 3.3			Retained depend upon Width
30	4+345	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
31	4+388	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
32	4+500	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
33	4+564	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
34	4+768	Slab Culvert	1.2 x 3.0			Retained depend upon Width
35	4+850	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
36	4+932	Slab Culvert	1.3 x 1.2			Retained depend upon

Sl No.	Existing Structures			Proposed Structure		
	Chainage	Types	Dia/Span(m)	Types	Dia/Span(m)	Remarks
						Width
37	5+082	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
38	5+179	Slab Culvert	1.9 x 2.5			Retained depend upon Width
39	5+300	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
40	5+482	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
41	5+700	Slab Culvert	1.9 x 1.4			Retained depend upon Width
42	5+850	Pipe Culvert	6 x 0.9	Pipe	1 x 1.2	
43	6+010	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
44	6+227	Slab Culvert	4.2 x 1.0			Retained depend upon Width
45	6+325	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
46	6+400	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
47	6+510	Damage Culvert	-			
48	6+572	Pipe Culvert	1 x 1 x 1.2	Pipe	1 x 1.2	
49	6+638	Pipe Culvert	1 x 1 x 1.2	Pipe	1 x 1.2	
50	6+725	Slab Culvert	2.8 x 3.3			Retained depend upon Width
51	6+745	Pipe Culvert	1 x 1 x 1.2	Pipe	1 x 1.2	
52	6+800	Culvert	-			
53	7+113	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
54	7+300	Causeway	55	Bridge		

Sl No.	Existing Structures			Proposed Structure		
	Chainage	Types	Dia/Span(m)	Types	Dia/Span(m)	Remarks
55	7+516	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
56	7+600	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
57	7+724	Slab Culvert	2.8 x 0.5			Retained depend upon Width
58	7+967	Slab Culvert	1.8 x 2.3			Retained depend upon Width
59	8+100	Damage Culvert	-	Box	2 x 2	
60	8+250	Pipe Culvert	1 x 1.0	Pipe	1 x 1.2	
61	8+393	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
62	8+464	Pipe Culvert	1 x 1.0	Pipe	1 x 1.2	
63	8+481	Pipe Culvert	1 x 1 x 1.2	Pipe	1 x 1.2	
64	8+532	Pipe Culvert	1 x 1 x 1.2	Pipe	1 x 1.2	
65	8+594	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
66	8+694	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
67	8+825	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
68	8+985	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
69	9+035	Slab Culvert	2.6 x 3.9			Retained depend upon Width
70	9+307	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
71	9+440	Pipe Culvert	1 x 1.0	Pipe	1 x 1.2	
72	9+535	Pipe Culvert	1 x 0.6	Pipe	1 x 1.2	
73	9+587	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
74	9+700	Causeway	45	Bridge		

Sl No.	Existing Structures			Proposed Structure		
	Chainage	Types	Dia/Span(m)	Types	Dia/Span(m)	Remarks
75	9+838	Damage Culvert	-	Box	2 x 2	
76	9+950	Causeway	41	Bridge		
77	10+340	Damage Culvert	-	Box	2 x 2	
78	10+628	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	
79	11+000	Pipe Culvert	1 x 0.9	Pipe	1 x 1.2	

2.5.5 Protective works of the valley/Hill slope

A new construction concept has been adopted for the entire stretch. Existing Protective Structure which in good condition are retained. Apart from that, additional 200 m Retaining Wall (PCC or Plum Concrete) proposed at different stretches as per site condition. Detail of protective works is shown in table 11.

Table 10: List of Protective Work (Retaining Wall)

Chainage		Retaining Wall			
		Left	Right	Left	Right
From	To	Length (m)		Height (m)	
5+930	5+970	40.00	-	1.1	-
7+580	7+620	40.00	40.00	1.1	2
9+280	9+320	40.00	40.00	2.74	3.79
Total Length		**120.00**	**80.00**		

Table 11: List of protective work (Breast wall)

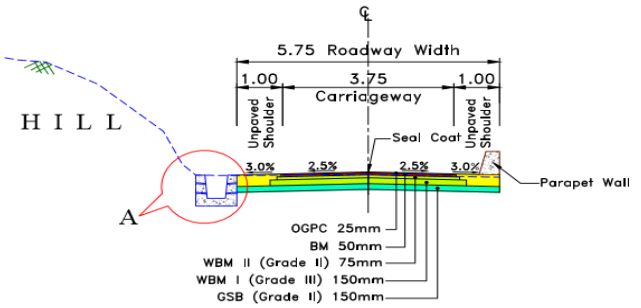
Chainage			
From	To	Length	Height
Ch From	Ch. To	Length	Height

1.626	1.639	13	2
1.89	1.906	16	2
2.21	2.225	15	2
2.423	2.44	17	2
2.66	2.671	11	2
3.09	3.107	17	2
3.035	3.066	31	2
3.856	3.886	30	2
3.856	3.906	50	2

2.5.6 Drainage Works and drainage Capacity

In this project road from Ch 0.00 Km to Ch 11.000 Km, there are only 3275 m existing PCC drain at different stretches. In addition to that, 7250 m length drain and 200m Breast wall drain are required at different stretches. Existing Drains are in good condition but filled with siltation, clearance of drain is very much required.

A. Catchment Area (A)



TYPE - 1 : TYPICAL CROSS SECTION OF SINGLE LANE CARRIAGEWAY AT NEW CONSTRUCTION WITH LEFT SIDE DRAIN

Half of Carriageway	1.875	m
Paved Shoulder	0	m
Un Paved Shoulder	1	m
Turfing (Extra widening)	1.5	m

Adjacent Build up/ Rock width		30	m
Total Width contributing		**34.375**	m
Total Length contributing		500	m
	Area	1.71875	hec

B. Average coefficient of runoff (Pav)

Type of Surface	Coefficient of runoff (P)	Width of Road
Paved Shoulder	0.9	1.875
Unpaved	0.4	1
Adjacent Build up lane or Rock area	0.3	31.5
	Pav	0.336

C. Time of concentration (tc)

Tc= (.87XL3/H)^0.385	0.332	Hour

L-distance from the most remote point to outlet in km

H- fall in level from most remote point to outlet in m 1.9 m

Tc= 20.00 Minutes

D. Critical rainfall intensity Ic =

	25 year 24 hour rainfall (mm) from Flood Estimation Report=		220.1 mm/ h	22.01	cm/h, *(Flood Estimation Report)*
IRC:SP:13	**Io**=Rainfall record failing that from Local Data =	$I_o = \frac{F}{2}\left(1 + \frac{1}{T}\right)$		12	cm/h
IRC:SP:13	**Ic**=Rainfall Intensity "*Ic=D35/10*2/(C32+1)*"=	$I_C = I_o\left(\frac{2}{t_C + 1}\right)$		17.34	cm/h

E. Discharge

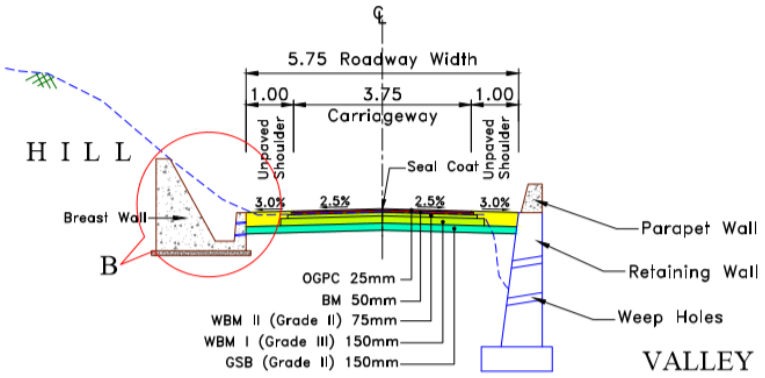
A- Catchment Area	1.719	
Pav - Coefficient of runoff for the given catchment characteristics	0.336	
f - spread factor of converting point rainfall into areal mean rainfall	0.86	
Ic - Rainfall intensity in cu/hr	17.34	cm/h

Q=0.028 Pav x f x A x Ic

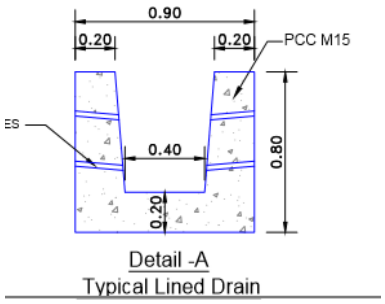
Q (25 Yr-frequency)	0.24	m^3/s

Q = 0.028 P_mxI xA, Design Discharge for

Required Discharge Capacity	**0.28**	m^3/s



TYPE - 2 : TYPICAL CROSS SECTION OF SINGLE LANE CARRIAGEWAY AT NEW CONSTRUCTION WITH DRAIN & BREAST WALL AT LEFT SIDE & RETAINING WALL AT RIGHT SIDE

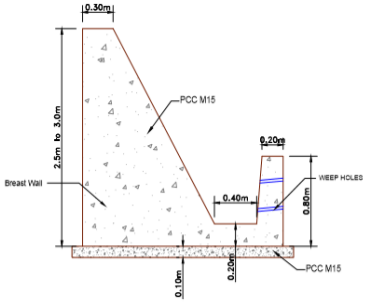


Detail -A
Typical Lined Drain

F. Hydraulic Parameters

Targeted discharge	0.28	m^3/s
Longitudinal slop	0.07	*Max 7%*
Bed width (B)	0.4	*m*
Side slop (H:1V)	0.17	
Top width (T)	0.5	*m*
Depth of flow (d)	0.6	*m*
Area (A)	0.27	m^2
Wetted Perimeter (P)	1.65	*m*
Hydraulic radius	0.16	*m*

Manning's coefficient (n)	0.04	*As per Table-7.1*
Velocity (V)		
v= 1/n X R^2/3 X S^1/2	2.00	m/s
Maximum Discharge Capacity (QA)	**0.541**	m^3/s



G. Check for Critility

Normal velocity	2.00	m/s
Flow regime		

H. Recommendation

Adopted bed width for drain	0.4	m
Adopted bed of flow	0.4	m
Free boarded	0.15	m
Adopted depth of drain	0.45	m
Top width of drain	0.5	m
Effective Area of drain	0.2025	m^2
Standard Discharge Capacity	**0.406**	

Summary

Required Discharge Capacity	**0.28**
Standard Discharge Capacity	**0.41**
Maximum Discharge Capacity (QA)	**0.54**

Required Design discharge within Standard Design Discharge

2.5.7 Pavement Design

After doing the pavement investigation and pavement condition survey, it has been studied thoroughly. After that pavement design has been done as per the following considerations:

- Rehabilitation on existing pavement
- Reconstruction of existing pavement

The consultants have worked out the designs for all the above cases based on results of survey/investigations about traffic, axle load spectrum, pavement condition, and strength, subgrade/material properties, etc.

The design life adopted in the analysis is 10 years for flexible pavement from the date of opening the road to traffic. Pavement design for various cases has been illustrated in the following paragraphs.

2.5.8 Rehabilitation of existing pavement

The pavement with mostly Earthen. Some stretches are Flexible BT surfaces. Design of flexible pavement for new construction has been done following "Tentative Guidelines for the Design of Flexible Pavement" (IRC SP: 72-2015).

The following Survey has been conducted and procedure followed for design and construction:

1. Conducted the Traffic Study and based on PCU, lane configuration finalized. In the case of land constraint, lane configuration has been restricted up to the availability of space between properties of both sides.
2. In case land availability allows providing required lane configuration to upgrade (widening), rehabilitation and reconstruction considered for these stretches. For the widening portion, mostly concentric widening is considered. After both edge trimming, prepare the original ground for construction of embankment, followed by sub-grade, GSB, WMM, DBM, and BC.
3. Raising of Existing Carriageway is not done where roadside establishment exists. On those stretches, reconstruction has been proposed. Where lane configuration is not feasible for the upgrade, the carriageway has been restricted up to the availability of space between properties of both sides.
4. The existing condition of the road is poor. Hence, the BBD test was not carried out. Existing bituminous layer to be dismantled and re-compaction to be done after dismantling bituminous layer. Re-compacted level shall be compared for design level and WBM/GSB (depending upon the level difference of FRL and level after re-compaction). Existing Base and Subbase layers are generally more than the required thickness than that of new pavement. Widening portion to be constructed from the subgrade as per the design.

5. Axle Load survey was conducted to find out VDF. Wherever Axle load survey not done standard VDF value considered based on terrain and traffic as per IRC SP 72-2015.

2.5.9 Traffic Safety and Other Appurtenances

Following road furniture and miscellaneous items have been designed keeping safety aspects in mind.

I. Road Markings

Road Markings on the carriageway and the objects within and adjacent to the roadway are used as a means of guiding and cont Hilly the traffic. They promote road safety and ensure the smooth flow of traffic in the required paths of travel.

The location and type of marking lines, material, and colour are followed using IRC: 35-2015 – "Code of Practice for Road Markings".

The road markings were carefully planned on carriageways, intersections, and bridge locations.

II. Road Signs

Road signs were planned to supply information, to regulate traffic by imparting messages to the drivers. The type, locations, sizes were planned using IRC: 67-2012 "Code of Practice for Road Sign". Details of Road Signages is given in table 12.

Table 12: Details of Road Signages

Sl no	Sign		Size	Nos
	Fig No	Description		
1	14.02	Give Way	900 Equilateral	2
2	14.23	Overtaking Prohibited	600 Equilateral	0
3	15.01	Left Hand Curve	600 Equilateral	6
4	15.02	Right Hand Curve	600 Equilateral	6
5	15.03	Right Hairpin Curve	600 Equilateral	0
6	15.04	Left Hairpin Curve	600 Equilateral	0
7	15.05	Right Reverse Bend	600 Equilateral	0
8	15.06	Left Reverse Bend	600 Equilateral	0
9	15.07	Series of Bends	600 Equilateral	95

Sl no	Sign		Size	Nos
	Fig No	Description		
10	15.09	Side Road Right	600 Equilateral	0
11	15.10	Side Road Left	600 Equilateral	0
12	15.18, 15.19, 15.20, 15.21	Intersection	600 Equilateral	4
13	15.23	Narrow Road Ahead	600 Equilateral	0
14	15.24	Road Widens	600 Equilateral	0
15	15.34	School Ahead	600 Equilateral	2
16	15.35	Build Up Area	600 Equilateral	2
17	15.72	Chevron(Normal)		0
18	15.76	Object Hazard(Left)	90 cm x 30 cm rectangular	156
19	15.77	Object Hazard(right)	90 cm x 30 cm rectangular	156
20	16.02	Directional Sign		4
21	16.04	Directional Sign	60 cm x 90 cm rectangular	0
22	16.06	Place Identification Sign	60 cm x 45 cm rectangular	14
23	14.37	Maximum Speed Limit	600 mm dia	226
24	15.19	Major Road Ahead	600 Equilateral	0
25	15.30,15.31	Start & End of Dual Carriageway	600 Equilateral	0
26	17.07	Hospital Ahead	600 Equilateral	0
Total				**673**

III. Delineators

The role of delineators is to provide visual assistance to driver about alignment of the road ahead, especially at night. Reflectors are used on the delineators for better night visibility. IRC: 79-1981 "Recommended Practice for Road Delineators" was followed to plan locations details. Two types of road delineators were planned i.e. hazard markers and object markers. Hazard markers are to define obstructions like guardrails, and abutments adjacent to the carriageway, for

instance at culverts and bridges. Object markers are used to indicate hazards and obstructions within the vehicle flow path, at channeling islands close to intersections.

IV. Parapet Wall

Parapet walls are provided about 4600m including painting along the edge of the shoulders at the valley side throughout the project stretch excluding the settlement areas. These are provided to prevent the vehicles from toppling over.

V. Convex Mirror

Roadside Convex Safety Mirrors are widely used by both commercial and private properties to help eliminate blind spots on approach roads, junctions and entrances. Convex mirrors are ideal for use in road safety applications, because the domed effect of the mirror will give a wider-angle view and allows the driver to see down the road from a wider range of parked positions.

Typically, a 600mm diameter convex mirror is useful when viewed no more than 6 Metres or 20 feet away. Above this distance you need to use a bigger mirror

Sl no.	Location	Sl no.	Location	Sl no.	Location
1	0+854	28	7+033	55	10+460
2	1+192	29	7+512	56	10+635
3	1+469	30	7+615	57	10+749
4	2+993	31	7+682	58	10+803
5	3+257	32	7+697		
6	3+295	33	7+736		
7	3+317	34	7+780		
8	3+404	35	7+934		
9	4+594	36	7+970		
10	4+711	37	8+067		
11	4+807	38	8+157		

Sl no.	Location	Sl no.	Location	Sl no.	Location
12	4+865	39	8+536		
13	4+893	40	8+553		
14	5+031	41	8+752		
15	5+313	42	8+785		
16	5+472	43	8+838		
17	5+626	44	9+043		
18	5+672	45	9+100		
19	5+963	46	9+153		
20	6+095	47	9+301		
21	6+183	48	9+395		
22	6+280	49	9+439		
23	6+322	50	9+975		
24	6+599	51	10+090		
25	6+746	52	10+120		
26	6+817	53	10+336		
27	6+864	54	10+395		

3. Legal and Regulatory Framework

This section deals with the laws, regulations and policies, of Government of India, the State Government and the World Bank, related to environment and social issues. Only the laws, regulations and policies relevant to the project are discussed here. This section needs to be updated as when new laws, regulations and policies are made and enforced or the existing ones are revised.

3.1 Operational Policies of World Bank

The safeguard policies, the triggers for each policy, as well as the status of their relevancy for the proposed project are presented in the table below:

Table 13: World Bank's Operational Policies

Operational Policy	Key Features	Applicability
Operational Policy	**Triggers**	**Status**
Involuntary Resettlement (OP 4.12)	Physical relocation and land loss resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location.	Not Applicable The sub-project has no impact on any private asset.
Indigenous Peoples (OP 4.10)	If there are indigenous peoples in the project area, and potential adverse impacts on indigenous peoples are anticipated, and indigenous peoples are among the intended beneficiaries.	Not Applicable The sub-project does not adversely impact any Schedule caste/tribe population.
Physical Cultural Resources (OP 4.11)	The policy is triggered by projects which, prima facie, entail the risk of damaging cultural property (e.g. any project that includes large-scale excavations, movement of earth, surface environmental changes or demolition).	Not applicable No impact on any cultural resources.

3.2 World Bank's Environment Health and Safety Guidelines

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The EHS Guidelines contain the performance levels and measures that are generally

considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks that may occur in the sub-project on the basis during pre- construction, construction and operation phases.

3.3 National & Policies of U.T of J&K

Table 14: National and Policies of U.T of J&K

S.No.	Acts/Policies/Rules	Relevance to this project	Applicability in the sub-project
1	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 The old act is Land Acquisition Act, 1894 and it is replace by new Act RFCTLARR,2013	The Act has provisions to provide fair compensation to those whose land is taken away, brings transparency to the process of acquisition of land to set up factories or buildings, infrastructural projects and assures rehabilitation of those affected.	Not Applicable. This sub-project does not have any adverse impact on the private assets.
2	State Land Acquisition Act 1990 (1934 AD)	The Sate Land Acquisition Act 1990 (1934 AD) is in force in state of Jammu and Kashmir. This Act provides the legal framework for land acquisition for public purposes in J&K. It enables the State Government to acquire private lands for a public purpose, and seeks to ensure that no person is deprived of land except under the Act.	Not Applicable. This sub-project does not have any adverse impact on the private assets.

S.No.	Acts/Policies/Rules	Relevance to this project	Applicability in the sub-project
3	Jammu and Kashmir Common Lands (Regulation) Act, 1956	An Act to regulate the rights in common lands. Provide relief to the user of the lands, used for common purposes like roads, streets, lanes, pathways, water channels, drains, wells, tanks or any other source of water supply to the villagers in general. Provision for prohibition of encroachments over such common lands and public places and eviction thereof and in case of encroachments, to restore the rights of the users. Provision for assigning land for extension of "Village Abadi", if existing land is in adequate for habitation of the villagers at any point of time.	Not Applicable. This sub-project does not require common land.

3.4 Other Central and State acts which may be applicable in the Sub-project:

- Minimum Wages Act, 1948
- Contract Labor Act, 1970
- The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013
- The Bonded Labor System (Abolition) Act, 1976
- Child Labor (Prohibition and Regulation) Act 1996 along with Rules, 1988
- Children (Pledging of Labor) Act, 1933 (as amended in 2002)
- The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995
- The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Rules, 1996
- Untouchability Offences Act, 1955
- The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989
- The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rules, 1995

- Disaster Management Act 2005: specifies that while providing compensation and relief to victims of disasters there shall be no discrimination on the grounds of sex, caste, community, descent or religion.
- The Jammu and Kashmir Protection of Human Rights Act 1997
- The Jammu and Kashmir Natural Calamities Destroyed Areas Improvement Act, 1955:
- The Jammu and Kashmir Right to Information Act 2004
- Backward Classes Commission Act, 1997
- Persons with Disabilities Act, 1998
- J&K Reservation Act, 2004

4. Socio-Economic Profile of the Project Impact Area

4.1 Physical features

Jammu district is situated in the sub- mountainous region and at the foot hills of the Himalayas. The northern and the north-western areas form a part of the Himalayan foot-hills with a number of low-lying ridges, strike and transverse valleys. The hills, in general, have their southern slope comparatively gentler than the northern prominent hill scraps. The hills gradually merge in plains where topography is gently undulating and flat. The mean sea level increases from 325 meters at Jammu to 1,207 meters at Kalidhar near Chauki Chaura.

4.2 Location and size

Jammu district is located between 74º-24" and 75º -18" east longitude and 32°-50" and 33°-30" north latitude. It is bounded in the north and north- east by the tehsils of Reasi and Udhampur district, in the east south- east partly by tehsil Ramnagar of Udhampur district and Samba district, in south and south-west by Gurdaspur and Sialkot district of Rawalpindi (Pakistan) and in the north-west by tehsil Nowshehra of district Rajouri and parts of tehsil Bimber now under the occupation of Pakistan.

Jammu is the most populous district of the State. Having recorded a population of 1,529,958, it accounts for 12.16 per cent of the total population of the State and ranks first in terms of population. It encompasses an area of 2342 sq.km and thus the density i.e population per sq. km works out to 653. Barring Srinagar, all other districts have recorded lower density than that of Jammu.

4.3 Physiography

The district has been divided into four sub-micro regions on the basis of geo- physical conditions of the district, the details of each region are given below:

Jammu Siwalik West

The region is located in the north-western corner of the district forms a part of the slpoes of siwalik Range which run at the top of the district.

The area is comprised of the lower hills of Siwalik which are locally called as Kalidhar mountains which separate the district Jammu from district Rajouri. The road leading to Rajouri and punch districts passes through the Kalidhar mountains. Because of the

[2] Source: https://censusindia.gov.in/2011census/dchb/DCHB_A/01/0121_PART_A_DCHB_JAMMU.pdf

irregular and uneven topography, the land is full of rivers / nallas. The forest areas are full of pine trees, shisham and a variety of shrubs. The average height of the region is round about 608 meters with Kalidhar peak rising as high as 1024 meters. The main river of the sub-micro region is Chenab which enters just in the right-hand top corner of the region and leaves to enter in the next region only after travelling about 4 Kilometres. The next important river of the region is Munawar Wali Tawi followed by Taooi Khad. Apart from these, there are also a number of small rivers /rivulets and streams flowing through the region. The area of the region is not easily accessible being comprised of undulating topography. However, the important road joining the districts of Rajouri and Punch passes through the Sub-micro region and connecting many places en -route.

Chenab –Tawi Plain:

The region is located around the two main rivers of the district viz; river Chenab and river Tawi and includes plain areas only. The region is spread over the south-western and middle parts of the district. The region occupies a large part of tehsil Jammu but areas of Akhnoor and Ranbir Singh Pora tehsils also fall in the sub-micro region.

The region has international boundary with Pakistan in the south and south-western parts and territory illegally occupied by the Pakistan is in the west. District Udhampur touches the region in the north near the area where river Chenab enters the district. The region is situated at an average height of below 750 meters having undulating area in the north-eastern side and plain areas in the south-west which is very fertile due to the fact that the major rivers accompanied by their tributaries bring the fertile soil with their waters which get settled in the plain areas. The important rivers which flow in the region are Chenab, Tawi and Munawar Wali Tawi. But there are also a number of streams forming tributaries of the above rivers during rainy season. The accessibility to the sub –micro region is very good with almost every place connected with one type of road or the other. National Highway 1A enters the region near

Bari-Brahamna and leaves for the district Udhampur in the north. A broad-gauge railway line also runs in this region up to Jammu in the southern parts.

Jammu Siwalik East:

The region forms a part of the region of range, running in the northern part of the district. The region is split into two by the river Chenab and the plain areas on the either side of it. The region is spread over the upper north eastern parts of the district, with an average height of about 600 meters. The height of about 600 meters in the north gets gradually

merged with the plains, forming a sub-montane belt. The seasonal torrents which are large in number flow down the slopes of Siwalik and bring with the slit, gravel, boulders, etc which they spread in plains.

The main river of the region is Tawi Basantar and Devak, besides a number of small and large perennial and non- perennial streams and rivulets originating from Siwalik. Forests are spread over a large part of the region leaving a few patches mostly on the banks of rivers/streams for cultivation. The accessibility to the region cannot said to be good. The rainy season makes the accessibility more difficult.

Jammu Foot – Hill Plain:

The sub-micro region is situated in the southernmost part of the district and has undulating areas which are contiguous with Punjab plain in the south and Siwalik range in the north. The region has international boundary with Pakistan on its west and south whereas district Samba falls towards its south-eastern side. Chanab-Tawi Plain Jammu Siwalik East are located on its north-western and north-eastern sides respectively.

The sub-micro region is spread over a major part of tehsil Ranbirsingh Pora, whole of Bishna, south-western part of Samba tehsil of Samba district and south-eastern parts of Jammu where the maximum contour height does not exceed 500 meters. The land is very fertile and cultivation is plenty. There are no forests in the region but the growth of shrubs and scrubs is dense. The main rivers of sub-micro region are Basantar river and Aik Nalla which along with many tributaries spread sand, gravel, loamy soil and boulders in the plain areas of the region.

The accessibility to the region is exceptionally good as compared to other areas of the district with National Highway No.1A passing from east to west and connecting many towns and villages of the areas. Apart from this, there are also a number of other roads of varying specifications giving access to its important places. A broad-gauge railway line also passes through this region.

4.4 Drainage

In order to make the environment clean, healthier and hygienic, the Government of Jammu and Kashmir took a decision to create a new department which will address all the problems coming out of waste water of households. In this regard, in the year 1979 U.E.E Department was formed headed by Chief Engineer. J&K UEED Srinagar with one Circle office at Srinagar and one Circle office at Jammu.

The major rivers flowing through the district are Chenab, Jammu Tawi, Munawar Tawi and Basantar. These rivers act as major drainage lines in the area and enter outer plain part of the district. The Munawar Tawi coming from Rajouri district and drains a very little part in the extreme west of the district and then enters Pakistan. The Chenab River enters from Udhampur and drains the central part of the district and here it divides into many distributaries before leaving the district. Jammu Tawi River coming from Doda district and drains Jammu district. Other than these rivers, innumerable seasonal nalas traverse the area which are generally boulder laden and have broad shallow channels having water only for short time after rains. All major rivers coming from the hills pass through Outer Plains and enter the Pakistan territory.

4.5 Underground Water Resources

The ground water potential can be described by dividing it into three belts based on the nature of underlying sediments and the hydrological conditions:

1. The Siwalik hill ranger: The steep dip and the compactness of the formation in the Siwalik hill range afford very little opportunity for the rain water to percolate down and so most of the water funds its way to the numerous hill streams. As such, there is very little ground water in these formations especially in the upper reaches. However, the system of joints faults etc let out any stored water in an even continuous flow through the channel of springs.
2. The Kandi belt: In this belt which runs parallel to hills, the sediments are of the nature of boulders, pebbles and gravel with minor partings. This belt absorbs most of the surface run off from the hilly region and also the precipitation over this area. The nature of sediments and deposition of the kandi belt made the zone of saturation lie at great depths. The depth to water table may be high as 120 m below ground level. In the proximity of hills, tube well ranging in depth from 100 to 180 m tap about 50- to 60-meter-thick aquifer and yield meagre quantities of about 20,000 litre per hour. Away from the hills the geohydrological setting becomes comparatively favourable and shallow tube wells 50m to 100 m deep are capable of yielding 80,000 liters per hour for a five to six meter drawn down.
3. The Sirowal belt: The southward extension of the Kandi belt is the Sirowal zone composed of very fine sediments. The ground water in this belt occurs both under water table and confined conditions. Tube wells tapping these sand gravel acquifers are capable of yielding about 1,50,000 litres per hour

4.6 Climate

The climate of the district is more or less similar to that of the adjoining districts of Samba & Kathua and some districts of Punjab. The only difference is that the district lies at the terminus of a series of mountains. May, June and July are the hottest months with mean daily temperature ranging between 24.9°C and 41.7°C and reaches up to 47°C. The nearest meteorological observatory is located in Water Management and Research Centre (SKUAST) at Pounichak and taken as representative of the study area. The sub humid to sub-tropical district receives normal annual rainfall of 1246 mm. January is the coldest month and temperature comes as low as 1.3°C. Most of the rainfall is received through the southwest monsoon which lasts from the last week of June to end of September. During remaining period rainfall is sporadic and scanty.

4.7 Soils

Two types of soils are mainly observed in the district viz. Litho sol and Alluvial soil and description of soils are given below.

1. **Lithosols**

   These soils are found on steep slopes in the foot hills of Jammu district. The soil is gravelly loam to gravelly silty loam. The pH of the soil is nearly neutral in nature i.e.7.1 to 7.8. The soils have a good water holding capacity.

2. **Alluvial soils**

   The alluvial soils are mostly found in the flood plains of Ravi, Chenab, Jhelum and Sind rivers and their tributaries. The soils are found in plains of Jammu district. These soils have been divided into two groups viz. old alluvial and new alluvial. The old alluvial soils are calcareous and neutrals to alkaline in their reaction (pH 7.6- 8.4) and low to medium in organic carbon and nitrogen. The pH of the new alluvial soil ranges between 7.0-7.7 and is calcareous with low in organic carbon and nitrogen

4.8 Geology

A complete sequence of the Siwalik group of rocks ranging in age from Middle Miocene to lower Pleistocene is exposed in the eastern, northern and north-western parts of district. The principal rock types noted within the district are the sandstone, siltstone, shale, Pseudo conglomerate and boulder beds. The great bulk formation in the district are unfossiliforous but certain localities are rich in fossils. These include both plant and vertebrate fossils.

4.9 Rivers

The main river in the district is Chenab which enters in the District at Ihstihari (Padder) and leaves it near main Disi Kund (Lunder) besides this there are some other small rivers such as Marsoo Dhar, Kalnai and Neeru. These rivers flow through gorges and are mainly exploited for generation of Hydel Power. There is immense potential for opening of water based industrial units as the river Chenab and its tributes flowing through the District has the capacity of generating 1500 MW electricity.

4.10 Flora and Fauna

Flora

The forests of Jammu Forest Division represents typical subtropical vegetation. The lower altitudinal zonation is dominated by shrubs which occupy considerable area of this division. In this zone, broadleaved trees are also found mostly scattered and sometimes in patches. As we go higher towards the outer reaches of the ridges, these scrubs are found to be mixed with scattered trees of Chir. As we go further higher, pure Chir patches are found. The shrubs found in lower part of division are mostly dense.

Fauna

The division in the past contained few games reserves popularly known as “Rakhs” Offering a variety of Fauna in the tract. These “Rakhs” being restricted areas, provided adequate protection and suitable habitat for wild animals of the areas.

However due to increasing human and livestock pressure over a period of time, the natural habitat of wild animals shrank rapidly with the result that the number of wild animals and their variety depleted considerably. Jammu Forest Division has three wildlife sanctuaries namely Nandini, Ramnagar and Mansar-Surinsar and two deer parks, one at Manda, Jammu and another at Mansar besides few wetlands’ reserves. The management of these sanctuaries, deer parks and wetland reserves lied completely with the Wildlife Protection Department.

4.11 Population

The total population of the district is 1,529,958 constituting of 813,821males and 716,137 females.

4.12 Sex Ratio

As per census 2011 the sex ratio was worked out to be 880.

4.13 Workers

According to 2011 census the working population in the district was 151912 out of which 101144 are male and 50768 are female.

4.14 Literacy

From amongst the sub-districts, Jammu has registered the highest literacy rate at 85.10 per cent which is higher than the district average

4.15 Cropping Patterns

The main food crops of rabi season are wheat grain and barley and those of Kharif season rice, maize and bajra. The details of these food crops during 2008-09 are given in the following table.

Table 15: Cropping Patterns

Sl.No.	Name of the Food Crops	Area Sown (000 Ha)
1.	Wheat	83005
2.	Rice	47993
3.	Maize	23536
4.	Bajra	7453
5.	Pulses	4877
6.	barley	345
7.	Fruits & Vegetables	784
8.	Condiment & Spices	85

Sowing of high yielding varieties seeds of wheat, paddy crops continued extensively during the year 2008-09. Seeds of high yielding varieties issued to farmers tremendously pushed up the yield of crops, namely; paddy, maize, wheat etc.

4.16 Irrigation

The major sources of irrigation in Jammu district are surface and ground water sources. As per Digest of Statistics 2009-10, the canal irrigation accounts for 567.26 Sq. Km., pond irrigation accounts for 0.07 Sq. Km. The area irrigated by wells 15.69 Sq. Km. Net area irrigated by other sources is 41.05 Sq. Km. In Jammu area, two major irrigation schemes exist. 1.Ranbir Canal 2. New Pratap Canal. In Akhnoor Tehsil, New Pratap canal is major source of irrigation purpose. In Kandi area, there is water scarcity where ponds are playing an important role

4.17 Natural wealth

Except for the occurrence of bentonite clay, building stones, no other mineral of economic importance is found in the district. The bentonite deposits occur as a thin band between Kulwalta and Ratanpurn within the upper Siwalik. High grade bentonite is used as a drilling mud and as decolorizing agent. In addition, it is also used in petroleum, paper, paint and rubber industries and for sealing of dams, reservoirs and irrigational channels. From time immemorial man has used stones to build places, houses, temples and other religious structures etc. Obviously, not all stones can be used as building material. To be useful as building stone, the rock must be hard, must not crumble down under heavy weight and must withstand action of sun and rain. The lower Shiwalik sand stones are hard compact and because of vast reserves are extensively used as building stones and road metal. Clay is the basic raw material from which we build our houses in the villages. The potter designs it into beautiful and useful pots which to this day are important in our everyday life. Bricks and tiles are also made from clay. The Shiwalik formation of the Jammu area possess vast deposits of clay which can be utilized for cement and in pottery industry. White clay bands are found in middle and upper Siwalik at various places.

4.18 Animal Husbandry

Livestock is playing very vital role in the economic development of the State as well as Jammu divison. The data relating to the different activities being performed by the department are collected from the Directorate of Sheep and Animal Husbandry. The rearing of livestock is a very critical and core activity in the economic profile of the state.

Although it is adopted as a subsidiary occupation by majority of the rural population, yet it constitutes a vital activity from the stand point of the economic welfare of the farmers. Moreover, the nomadic, Gujjar and Bakerwal population depend exclusively on sheep rearing for its livelihood. Live stock activity has a contribution of about 11% in the Gross Domestic

Product of the state. It offers promising employment opportunities and handsome economic returns especially in rural mountainous areas of the State. Most of the livestock population, particularly sheep have been transformed into high quality by using latest insemination techniques and through improved quality livestock imported from other countries. Still a good portion of livestock is local and of inferior quality which needs improvement in both quality and quantity. Various steps are being taken to improve the quality and quantity of livestock

It may however, be pointed out that bulk of our livestock population is migratory and is recorded on de-facto basis. There is scope of good potential for livestock rearing in the district. As per the 2007 Livestock census, there were 189926 cattle, 188513 buffaloes, 40668 sheep, 112747 goats, 6041 horses, 78 ponies, 200 mules and 42 donkeys.

4.19 Socio Economic Profile of Sub-Project villages

The socio-economic profile of the village falling under the proposed sub-project is given below:

Village Chilah- Chilah is a medium size village located in Jammu Tehsil of Jammu district, Jammu and Kashmir with total 155 families residing. The Chilah village has population of 786 of which 438 are males while 348 are females as per Population Census 2011.

In Chilah village population of children with age 0-6 is 86 which makes up 10.94 % of total population of village. Average Sex Ratio of Chilah village is 795 which is lower than Jammu and Kashmir state average of 889. Child Sex Ratio for the Chilah as per census is 1150, higher than Jammu and Kashmir average of 862.

Chilah village has lower literacy rate compared to Jammu and Kashmir. In 2011, literacy rate of Chilah village was 66.43 % compared to 67.16 % of Jammu and Kashmir. In Chilah Male literacy stands at 77.64 % while female literacy rate was 51.66 %.

Village Khana Chorgol- Khana Chorgol is a large village located in Jammu Tehsil of Jammu district, Jammu and Kashmir with total 766 families residing. The Khana Chorgol village has population of 4068 of which 2189 are males while 1879 are females as per Population Census 2011.

In Khana Chorgol village population of children with age 0-6 is 571 which makes up 14.04 % of total population of village. Average Sex Ratio of Khana Chorgol village is 858 which is lower than Jammu and Kashmir state average of 889. Child Sex Ratio for the Khana Chorgol as per census is 720, lower than Jammu and Kashmir average of 862.

Khana Chorgol village has higher literacy rate compared to Jammu and Kashmir. In 2011, literacy rate of Khana Chorgol village was 70.09 % compared to 67.16 % of Jammu and Kashmir. In Khana Chorgol Male literacy stands at 80.99 % while female literacy rate was 57.74 %. l

Village Aitham- Aitham is a medium size village located in Jammu Tehsil of Jammu district, Jammu and Kashmir with total 322 families residing. The Aitham village has population of 1688 of which 884 are males while 804 are females as per Population Census 2011.

In Aitham village population of children with age 0-6 is 248 which makes up 14.69 % of total population of village. Average Sex Ratio of Aitham village is 910 which is higher than Jammu and Kashmir state average of 889. Child Sex Ratio for the Aitham as per census is 1033, higher than Jammu and Kashmir average of 862.

Aitham village has higher literacy rate compared to Jammu and Kashmir. In 2011, literacy rate of Aitham village was 74.31 % compared to 67.16 % of Jammu and Kashmir. In Aitham Male literacy stands at 83.86 % while female literacy rate was 63.57 %.

Village Panjoa- Panjoa is a medium size village located in Jammu Tehsil of Jammu district, Jammu and Kashmir with total 167 families residing. The Panjoa village has population of 891 of which 516 are males while 375 are females as per Population Census 2011.

In Panjoa village population of children with age 0-6 is 109 which makes up 12.23 % of total population of village. Average Sex Ratio of Panjoa village is 727 which is lower than Jammu and Kashmir state average of 889. Child Sex Ratio for the Panjoa as per census is 912, higher than Jammu and Kashmir average of 862.

Panjoa village has higher literacy rate compared to Jammu and Kashmir. In 2011, literacy rate of Panjoa village was 73.27 % compared to 67.16 % of Jammu and Kashmir. In Panjoa Male literacy stands at 84.10 % while female literacy rate was 57.89 %.

5. Analysis of Alternatives

For this sub-project, the analysis of alternatives has been made, considering the "with and without project scenarios" which considered the potential social impacts, both positive and negative, of the sub-project.

5.1 'Without' and 'With' Project Scenario'

5.1.1 'Without' Project Scenario

Project Road takes off from 7th km of Sidhra Surinsar Mansar Road and ends at 11th Km of this alignment near village Shandi which follow hilly terrain. After 11th Km, this road is under construction. From connectivity point of view, this particular road has high importance since it gives connectivity to locally famous religious tourist places which have high cultural significance also.

Existing Pavement mostly gravel surface after Km 4.000 to Km 7.500 and from 10.000 to Km 11.000. Due to non-existence of throughout CC drain, pavement badly damaged and slope eroded at several locations. Necessary protection work requires at several stretches with provision of CC drain. There are 6 locations where road is discontinued due to existence of channel/water way and connectivity breaks during monsoon period. After development of this road, significant traffic flows through the routes which also indirectly help to enhance the economy of that area.

5.1.2 'With' Project Scenario

The proposed sub-project will provide all weather road connectivity to the locals and tourist as well. There are 6 locations where road is discontinued due to existence of channel/water way and connectivity breaks during monsoon period. 6 nos of Bridges of length 30 m, 60 m, 40 m, 60 m, 45 m and 50 m has been proposed. After the development of the project stretch, traffic can be routed from Kalu Chak Purmandal Road at Khada Mandana towards Katra from Nagrotra to avoid entering in Jammu.

The reconstruction of the proposed road will be a great help to the farmers to transport agricultural products, safe and secure school journey for children and school teachers as well. The local people will get year-round access to basic services such as health centre/hospital, markets, working place. The project will not cause adverse impacts for the local people including women and there is no cultural heritage and forest that will be affected. Project will create employment opportunities for the local youths in the sub-project. Many new income opportunities and small enterprises may flourish once the road

gets constructed. With the improved roads and the travel time to the place of work will get reduced for many workers traveling outside the habitations on a daily basis.

The sub-project will not require any private land acquisition and is not impacting any other private asset. Encumbrance free certificate issued by the Project Manager (Transport, Jammu division) reveals that the existing road was constructed by the PWD, (R&B) department in the past and the available RoW for the sub-project is 6.00 meters (annexure 3).

6. Stakeholder's Consultation

Stakeholder's Consultation is basically concerned with involving, informing and consulting the public in planning, implementation and other decision-making activities. It tries to ensure that due consideration is given to public views, concerns, and preferences when decisions were made.

One of the prime aims of the stakeholder engagement exercise is to ensure that all relevant stakeholders are provided with the opportunity to express their concerns and opinions in the project development; at planning, implementation and operation phase and in the efforts to minimize the potential unexpected opposition of the proposed project and potential adverse effects to the environment and society at large.

6.1 Identification of Stakeholders

Stakeholder's identification is the process of identifying stakeholders considering the legitimate representatives or the project-affected groups and whose views should take precedence in stakeholder consultations. Project related information has been shared with all the concerned stakeholders on 12.07.2019, 18.12.2020, and 19.12.2020. This was the first step to identify stakeholders who will be involved in the consultative process. Design of the project was shared with the locals and Gram Sabha. They were consulted and transect walk also done for identifying stakeholders. Since the sub-project does not have any adverse impact in terms of land or asset acquisition, therefore, the stakeholders were the people of the Project corridor, Gram Panchayat, PIU and PMU.

6.2 Objective of Stakeholder's Consultation

The main objective of this exercise is to engage the locals in the project activities, to inform them especially, the local people and gram panchayat about the project and its likely impacts. The specific objectives of the consultations are geared towards:

- Informing the stakeholders about the project and its potential impacts.
- Obtaining local and traditional knowledge that may be useful in decision making.
- Facilitating consideration of alternatives, mitigation measures and trade-offs (if any).
- Ensuring that important impacts are not overlooked and benefits are maximized.
- Reducing chances of conflict through early identification of contentious issues.

- Providing an opportunity for stakeholders to influence the Project design and operational plan in a positive manner.
- Improving transparency and accountability of decision making.
- Increasing public confidence in the SIA process.

6.3 Approach for Consultation

A very sensitive and pro people approach was adopted to engage locals in the sub-project activities. Project design along with other project related information were shared with them in order to instil faith and confidence among them about the proposed project and its activities.

Following steps were taken to engage stakeholders.

1. Site visits and informal meetings with the local to know their views and perceptions about the sub-project.
2. Reconnaissance survey and transect walks.
3. Involving Gram Panchayat in the consultations.
4. Sharing of project design with the locals.
5. Understanding their needs and requirement.
6. Collection of Baseline information.

6.4 Details of Public Consultation

The public consultation was conducted by following the World Bank's ESMF prepared for JTFRP. The purpose and objective of the consultations were the involvement of residents/ stakeholders and to make them aware of the proposed activity of the subproject.

The public consultation was conducted on 12.7.2019 and thereafter on 18.12.2020 and on 19.12.2020 in the area of Kana Chargal, Shandi and Panjoa villages (annexure 8). JTFRP consultants, Social Safeguards expert, Gram Sabha head along with local people were present in the meeting. Detail discussions were held over JTFRP and its funding and other requirements and signature sheets has been annexed as annexure 8. Major outcome during consultation was that people are aware that no private land or structure is being acquired for the sub-project. However, they stated that in case EA require any private land, people should be compensated for same. Gram Sabha head and others requested to construct protection walls wherever EA does land cutting since the road is passing through hilly terrain and land cutting without giving protection walls can lead to soil erosion.

6.5 Information Shared

Public Meeting (12.7.2019)

The following information was shared with the people:

- Project Proposal and funding agency
- Requirement of land and social safeguard policies of World Bank
- Role of people in the project
- Grievance Redressal
- Social Management Plan

Public Meeting (18.12.2020)

- Project Proposal and funding agency
- Requirement of land and social safeguard policies of World Bank
- Role of people in the project
- Grievance Redressal
- Social Management Plan

Public Meeting (19.12.2020)

- Project Proposal and funding agency
- Requirement of land and social safeguard policies of World Bank
- Role of people in the project
- Grievance Redressal
- Social Management Plan

6.6 Consolidated Feedback

During the consultation process about the proposed sub-project, people have expressed keen interest in the proposed sub-project. The local people are expecting a good road to be developed and are aware of the upcoming work.

Following feedback received from the People:

- Construction of speed breakers at habitations and schools.
- Drainage should be constructed along the road.
- Link road connecting with the sub-project road should have adequate height/slope.
- Height of culverts should be raised so that road should be accessible during rainy season.

- Employment during execution of the sub-project should be provided to the local youth.
- PHE stations at approximately 10.5 Kms required protection.
- Payment of compensation in case need of private land arises at any stage of the sub-project.
- Protection walls wherever EA does land cutting.
- Curve improvement near Panchayat Ghar at Kanna Chargal.

7. Analysis of Social Impacts

7.1 Impact on Land

The total length of the sub-project road for reconstruction is 11.00 kms. The average width of the existing carriageway varies from 2.75 m to 3.00 m with an average shoulder width and formation width of 6 m. The proposed carriageway is 3.75 m with a 1.000 m wide granular hard shoulder on either side of the carriageway.

Project Manager (Transport) vide letter no PIU/T/ERA/2021/865 dated 16.03.3021 issued a non-encumbrance certificate in which it is confirmed that available RoW is 6.00 meters, it also confirmed that no additional land acquisition is required for the proposed work (annexure 3). Approved DPR and the site visits envisaged that the sub-project does not require land acquisition either private or government for proposed sub-project. Further, neither any structure such as residential, commercial nor any CPR falls in the available RoW which is 6.00 meters.

The revenue record of the proposed sub-project could not be obtained from the concern department by JK ERA. Since the revenue record of the proposed sub-project was not available, therefore PMU, JTFRP published a notice in the two local newspapers namely "Amar Ujala" and "State Times" on 19.09.2021 and 20.9.2021 respectively, informing general people and those who are likely to be benefitted/affected in particular, about the upgradation of this road sub-project within the existing right of way under World Bank funding (annexure 4). It also called for any objection from the local people regarding use of RoW, along with supporting documentary evidence within 07 days of publication of the notice in the newspaper. The office of Director safeguards did not receive any objection or claim from anyone even after the lapse of one month of the publication of notice in two local newspapers. Thereafter, Director Safeguards issued an official letter vide no. ERA/DSG/PS/88-93 dated 25.10.2021 regarding encumbrance free RoW detailing therein the process followed to reconfirm the ROW ownership status (annexure 5).

Therefore, on the basis of certificate issued by Project Manager (Transport, Division Jammu), site visits, approved DPR and notice published in the newspaper it can be said that the sub-project does not have any adverse impact on the assets such as structures, land or on livelihood of anyone.

However, if during execution, there is any unanticipated impact of the sub-project on any asset, the issue shall be addressed as per the provisions of Environment & Social

Management Framework (ESMF) for the project, applicable policies of the WB and that of U.T of J&K.

7.2 Impacts on Structures

As per the design of the sub-project no structure Residential, Commercial or Religious is falling in the alignment of the road. Further, there is no Community Property Resource in the alignment. Project Manager (Transport) vide letter no PIU/T/ERA/2021/865 dated 16.03.3021 provided non-encumbrance certificate and confirmed that no private or public structure exists on the existing alignment (annexure 3). Strip plan of the road (annexure 6) also confirms that there is no structure inside the alignment of the proposed road.

7.3 Impacts on Livelihood

There are no commercial structures either temporary or permanent in the proposed alignment of the road. Further, there is no squatter on the road earning livelihood by using the available RoW and none has encroached upon the road. Therefore, sub-project has no impact on the livelihood of anyone.

8. Mitigation Measures

8.1 Social Management Plan

The Social Impact Assessment study does not envisage any significant adverse impact of the sub-project i.e., there is no involuntary displacement and land acquisition. Further, there is no temporary or permanent impact of any kind on the livelihood of people. Structures (culverts etc.) proposed shall be improved in the existing RoW. Technical department from PMU & PIU have made required modifications in design at initial stages to avoid negative impact as a part of mitigation measures.

DPR for the sub-project has been approved. The Social Management Plan suggests the mitigation measures needs to be adopted during execution to deal with unanticipated impact of the sub-project.

8.2 Objectives

The prime objective of the Social Management Plan is to mitigate the various adverse social impacts which may arise during the pre-construction, construction, and post-construction phases of the sub-project. The objective of SMP in preconstruction, construction & post-construction stages are as follows;

Pre-construction Stage

To discuss the design and technical proposal with the stakeholders to know their suggestions and inputs. To inform them about the project, its funding, land requirements, and policies and guidelines of funding agencies applicable to the project.

Construction Stage

To ensure that the provision of the SMP (Social Management Plan) is strictly followed and implemented by strengthening implementation arrangement.

To address the construction stage social issues if any arises due to various project activities en route the corridor and particularly at habitations through specific measures that need to be applied across and certain specific measures that shall be determined on a case-by-case basis.

Post-construction Stage

To ensure that all the issues that arose during the construction stage shall be addressed properly. In case land and other assets utilized by the EA or contractor shall be restored to the satisfaction of communities and owners of that assets.

8.3 Scope

The Social Management Plan (SMP) in the sub-project, consists of the set of mitigation, monitoring and institutional measures to be taken during the pre-construction, construction, and operation stages of the project to eliminate adverse social impacts, to compensate them, offset them, or to reduce them to acceptable levels following the mitigation hierarchy. The plan also includes the actions needed for the implementation of these measures.

The major components of the Social Management Plan are:

- Mitigation of potentially adverse impacts;
- Integration of SMP with Project in construction and operation phases;
- Institutional Capacity Building and Training;
- Monitoring during project implementation and operations;

8.4 Context for the SMP

This Social Management Plan for "Tutiyan Di Khui to Khada Mandana road" is based on Social Impact Assessment study during which site visits were carried out in the project corridor. Consultations and meetings were conducted with the people and project design was discussed and evaluated on the ground.

The sub-project does not have any impact on private land and all the construction activities will be carried out within the available ROW. Project Manager (Transport) vide letter no PIU/T/ERA/2021/865 dated 16.03.3021 issued a non-encumbrance certificate in which it is confirmed that available RoW is 6.00 meters, it is also confirmed that no additional land acquisition is required for the proposed work (annexure 3). There would be no impact on the CPRs and any other religious property due to any sub-project activities. There can be few temporary impacts due to construction activities and to address these impacts, a Social Management Plan has been prepared which lays down mitigation measures that needs to implemented for any impact on site. SMP will be implemented by the contractor under the supervision of PMU & PIU, JTFRP.

8.5 Methodology for SMP Preparation

The comprehensive social management approach for the project involves following key steps and processes.

- Screening of social impacts during the SIA study

- Public consultation with the stakeholders.
- Discussion of Technical Proposal with the stakeholders.
- Transect walk to identify probable issues.
- Development of measures aimed at avoiding, mitigating, and offsetting, or reducing impacts to levels that are socially accepted during implementation and operation of the project road.

8.6 Probable social issues that may arise during the construction stage

9. Loss of land due to land-slides resulting from hill cutting activities;
10. Cracks in structures or damage due to construction work e.g. hill cutting activities;
11. Temporary – short duration or prolonged disruption to services such as water supply, power supply;
12. Temporary Disruption to access from houses or shops to the road;
13. Temporary Disruption to traffic movement leading to time delays;
14. Dust emissions during construction leading to impacts on crops and trees resulting in lower yield or growth;
15. Likelihood of minor accidents due to the slight increase in traffic movement following road improvements;
16. Possibility of gender-based violence arising from the influx of migrant labor for construction works – a common practice in Jammu & Kashmir; and
17. Likelihood of spread of HIV/AIDS among construction workers and roadside community.

8.7 Social Management Plan

Based on the findings and issues identified during SIA study, Social Management Plan has been prepared for the sub-project. The mitigation measures for the potential impacts are presented in form of a matrix according to the sequential flow of activities in the project life cycle. These measures would be further updated by Contractor during the implementation of the SMP. The Social Management Plan will be a part of Bid document.

Table 16: Social Management Plan

Sl.No.	Project Phase/Activity	Issues/ Potential impacts	Proposed Mitigation Measures	Responsibility	Monitoring Agency/ Frequency
Planning/Pre-construction Phase					
1	**Pre-construction**	• Sharing of design with the community.	• Consultation with local community and stakeholder	Contractor	PIU

Sl.No.	Project Phase/Activity	Issues/ Potential impacts	Proposed Mitigation Measures	Responsibility	Monitoring Agency/ Frequency
	phase	• Utilization of private land temporarily, if required. • Provision of alternative access to the community for commuting wherever required. • Restoration and relocation of Common Property Resources if any	engagement. • Written consent from the community or owner of the land required for stocking construction material temporarily. • Involving locals (Gram Sabha) wherever any issue arises.		
Construction Phase					
2	**Influx of labor**	• Construction Camp Locations Selection, Design, and Lay-out. • Conflict with the community due to social and cultural differences with the host community. • The potential impact of spreading infectious diseases from labor to the local or vice versa. • Possibility of Sexual abuse and assault in the labor camps or otherwise. • Drug abuse, gambling, etc.	• Minimize labor influx as much as possible by engaging the local labour force. • Ensure labor camps for the labor (Away from religious places and localities to the extent possible). • Awareness of the health and sanitation for the labor. • Ensure the least contact between the host community and the labor. • Awareness of sexual assault & drug abuse.	Contractor	PIU/ PMU Monthly Monitoring
		• Facilities for the Labour in camp and on the worksite	• Providing accommodation facilities to the migrant laborers with proper ventilations. • Provision for safe drinking water and appropriate cooking arrangement at labor camps; • Provision of Separate toilet and bathing facilities for men and women • Provision of medical facility which includes first aid kit at the camp site and also ambulance facility to take patients to the hospital in case of emergency. • Proper drainage facility at the camp site along with water sewerage treatment facilities. No waste water should be discharge to any surrounding area without required permission and	Contractor	PIU/ PMU Monthly Monitoring

Sl.No.	Project Phase/Activity	Issues/ Potential impacts	Proposed Mitigation Measures	Responsibility	Monitoring Agency/ Frequency
			proper treatment. • Provision of prayer rooms as per the religious beliefs of the workers. • Safe storage facilities for the gas cylinder, petroleum, and other chemicals, used by laborers. • Proper solid waste collection and disposal system at the camp site. • The camp should have proper security arrangements, like a Security fence. • Preparing a code of conduct for the migrant workers. • Conducting awareness programme about sexually transmitted diseases among the migrant workers, laborers and for the community around project site; • Awareness program on COVID-19. • Provision of hand sanitizer, masks in the labor camps. • Provision of separate accommodation for COVID-19 infected labors or persons engaged by the contractor. • Provision of crèche on site for children. • Training programs for construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS. • Labour Registration. • Awareness program for labor rights • No employment of child labor.		
		• Registration of Complaints received from labor.	• Arrangement to register and redress the grievance of workers. • Grievance Redressal System for the project to address	Contractor	PIU/ PMU Monthly Monitoring

Sl.No.	Project Phase/Activity	Issues/ Potential impacts	Proposed Mitigation Measures	Responsibility	Monitoring Agency/ Frequency
			such issues including sexual harassment at the workplace		
		• Equality of opportunity to work. • Equal Pay for equal work • Preference to the Women Laborers	• To be ensured throughout the project cycle. • Maintenance of payment registers by the contractor.	Contractor,	PIU/ PMU Monthly Monitoring
3	**Community Health and Safety**	• Injury & sickness due to construction work and movement of heavy vehicles, contamination, or other natural or human-made hazards.	• Provision of access to the community, shops, religious places during the construction phase. • Better marking and signage. • Provision of alternative transportation routes for vehicles and ambulances wherever required. • Undertaking regular surveillance at the site to check on Hygiene conditions for disease control. • Treating mass awareness on HIV and STDs and COVID-19. • Ensure the least contact between the labor and the local population. • Sharing grievance redressal system with the community and displaying contact numbers at the site to register any grievances due to the project. • contamination of water bodies due to stocking of construction material etc. • Safeguarding pedestrians' safety including women, children. • During construction of side, drains provide temporary/safe access to shops, kids, hospital/clinic, religious places, etc. • Community Consultation	Contractor	PIU/ PMU Monthly Monitoring
4	**Occupational health and safety**	• Injury and sickness of labor	• Provide training on health and safety to all the workers. • Provide PPE to workers as per work requirements. • Regular checking of body temperature and other symptoms among the laborers for COVID-19 and maintaining a register.	Contractor	PIU/ PMU Monthly Monitoring

Sl.No.	Project Phase/Activity	Issues/ Potential impacts	Proposed Mitigation Measures	Responsibility	Monitoring Agency/ Frequency
			• Awareness program on COVID-19. • Provision of hand sanitizer, masks in the labor camps and on the sites. • Displaying of COVID-19 help line numbers on-site as well as in labor camps. • Provide separate toilets for male and female labor at the construction site • Provide safe drinking water at the construction site. • Providing a separate resting area at the site for breaks during the work period • Provide adequate lighting in the construction area and along the roads. • Conduct an initial health screening of the laborers working at the construction site, especially those who are coming from outside the project area. • Provide first aid facility at the construction site • Provide HIV awareness programming, including STI (Sexually Transmitted Infections) and HIV information, education, and communication for all workers on regular basis.		
5	**Gender-Based Violence**	• Sexual Exploitation and Abuse (SEA) • Workplace Sexual Harassment • Human Trafficking • Non-SEA	• Awareness program for the Contractors, Local Communities, and laborers on national laws. • Introducing a worker's code of conduct. • Displaying of various legal provisions on-site, in labor camps, and at prominent locations in the project area. • Ensure that complaints of GBV are registered and maintained confidentially in a register. • Strict code of conduct for workers with no tolerance for physical or verbal abuse of women or children.	Contractor	PIU/ PMU Monthly Monitoring
Post Construction Phase					
6	**Rehabilitation**	• Handing over	• Consultation with the	Contractor	PIU/PMU

Sl.No.	Project Phase/Activity	Issues/ Potential impacts	Proposed Mitigation Measures	Responsibility	Monitoring Agency/ Frequency
	of site used for camp, storage etc.	temporarily used private/ community land to the landholders/ community by the contractor without restoration work and payment of dues/ lease amount. • Non-removal of debris and other construction material from the site.	private party or Community and restoration of their land. • Removing left over construction material from the site. • Payment of lease amount/rent, if any due, to the private party or community for utilization of their resources.		Within one Month

8.8 Gender Action Plan

8.8.1 Status of Women in J&K

Women constitute around 47% of the total population of the State. The development of women, no doubt, has been a part of the development planning process right from the inception of Five-Year Plans but the shift in approach from welfare to development toward women took place in a focused manner in the 6th and 7th Five Year Plans. The 8th Five Year Plan promised to ensure that benefits of development do not by-pass women. The 9th Five Year Plan changed the strategy for women from development to empowerment and emphasis on preparation of a separate Women Component Plan (WCP) by identifying specific Schemes/Projects having a direct bearing on the welfare and development of Women. The 10th Five Year Plan further strengthened the implementation of the Women Component Plan (WCP).

Moreover, the Women and Child Development Department in the Ministry of Social Justice and Empowerment has also enjoined upon the states to monitor closely the flow of benefits of various schemes for the empowerment of women on regular basis. These initiatives have helped in improving the status of women in various spheres to a great extent, but the imbalance still exists which needs to be addressed over the years. The 11th Plan had taken numerous steps forward. However, the targets set out could be only partially achieved. In the 12th plan, the Government's priority would be to consolidate the existing initiatives and interventions relating to women, build upon the achievements and also move beyond to respond to new challenges. The female population of J&K State slashed down from 47.15% of the total population in 2001 to 46.88% in 2011. As per details from Census 2011, Jammu and Kashmir have a population of 1.25 Crore souls over the figure of 1.01 Crore in the 2001 census. The total population of Jammu and Kashmir as per the 2011 census is 12,548,926 of which male and female are 6,665,561 and 5,883,365 respectively indicating a reduced sex ratio of 883. The corresponding figures of male and female as per Census 2001 were 5,360,926 and 4,782,774 respectively indicating a sex ratio of 892. Sex ratio (females per thousand of males) is an important indicator of the social conditions particularly for women's status in any society.

The low sex ratio shows indulgence of artificial interventions, distorting the biological trend and natural balance in terms of the number of females per thousand males. An important concern in the present status of Jammu and Kashmir's demographic transition relates to the adverse sex ratio. The sex-ratio as per census 2011 was 883 which is a matter of great concern and needs to be addressed on priority. Education of the women is very

effective tool for women's empowerment not only from the point of view of literacy, but it has inter-linkage with other social parameters viz. population growth, health care, education of children, etc. It enables rural women to acquire new knowledge and technology, required for improving and developing their tasks in all fields, besides availing new opportunities and combating emerging challenges of a dynamic society.

Female education is essential for higher standards of health and improved "maternal competence" which leads to lower infant mortality. It also raises women's economic productivity. Despite its linkage to so many positive outcomes and the progress made over the past 50 years, female literacy remains low in J&K State as compared to men. Jammu and Kashmir's literacy rate has increased by 13% in the last decade i.e. from 55% in the 2001 Census to 68% in the 2011 Census. While female literacy has increased from 42.22% in the 2001 Census to 58.01% in 2011. Gender differential still exists both in rural and urban areas but it is comparatively higher in rural areas. This can be attributed to some factors viz., lack of access to schools, parents feeling insecure about sending girl children to schools, their engagement in agricultural and other domestic activities, etc. Though still being at a disadvantageous position, the womenfolk are breaking the barriers/shackles to get an equal share in basic human rights. With a higher growth rate than male literacy, the goal is expected to be achieved in near future.

8.8.2 Legal Provision Related to Women in J&K

- J&K Protection of Women from Domestic Violence Act, 2010
- Jammu and Kashmir Juvenile Justice (Care and Protection of Children) Act, 2013
- State Commission for Women Act, 1999

8.8.3 Strategy

Suggestive Actions to be taken in the sub-project

- Ensure participation of vulnerable groups in the project activities.
- Ensuring facilities in construction camps.
- Carrying out other responsibilities towards vulnerable groups.

Suggestions for increasing the Women's Participation in the sub-project

- Allow women to take part in the consultation process. Ensure that the women are consulted and invited to participate in group-based activities, to gain access and control over the resources.

- Encourage women to evaluate the project outputs from their point of view and their useful suggestions should be noted for taking necessary actions for further modifications in the project creating better and congenial situation for increasing participation from women.
- Devise ways to make other vulnerable to participate in the project activities.

Involvement during Construction

Wherever possible, women's involvement in construction activities should be encouraged in order to help them have access to benefits of project activities.

Ensuring Facilities in Construction Camps

Foreseeing the involvement of women, both direct and indirect in the construction activities, PMU, PIU & PMC shall ensure certain measures that are required to be taken by the construction contractor towards welfare and well- being of women and children during the construction phase such as:

- **Temporary Housing:** During the construction, the families of laborers/workers should be provided with residential accommodation suitable to nuclear families.

  Health Centre: Health problems of the workers should be taken care of by providing basic health care facilities as and when required by labour.
- **Day Crèche Facilities:** It is expected that among the women workers there will be mothers with infants and small children. Provision of a day crèche may solve the problems of such women, who can leave behind their children in such a crèche and work for the day in the construction activities. If the construction work involves women in its day-night schedules, the provision of such a crèche should be made available on a 24-hour basis.
- **Proper Scheduling of Construction Works:** Owing to the demand for fast construction work, it is expected that a 24 hours-long work-schedule would be in operation. Engaging women labour during night services should be avoided by the project or can be permitted only after getting written request from the women labour. In this case crèche facilities in the construction camps must be extended to them in the night. If unavoidable, crèche facilities in the construction camps must be extended to them in the night shifts too.
- **Control on Child Labor:** Minors, i.e., persons below the age of 14 years, should be restricted from getting involved in construction activities. It will be the

responsibility of the Social and Environmental experts of PMU, JTFRP to ensure that no child laborer is engaged in the activities. PMU& PIU shall keep strong vigilance to ensure the cessation of such exploitation.

8.8.4 Avoiding Gender based violence

The contractor will prepare and implement robust measures to address the risk of gender-based violence that include:

- Mandatory and repeated training and awareness-raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women;
- informing workers about national laws that make sexual harassment and gender-based violence a punishable offense which is prosecuted;
- introducing a Worker Code of Conduct as part of the employment contract and including sanctions for non-compliance (e.g., termination), and (iv) contractors adopting a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence.

8.9 Labor influx and Labor Management

Since the construction activities are mostly labor intensive by nature, therefore, it is also envisaged that both local and migrant labor shall be employed by the project. These migrant laborers will be accommodated in a temporary campsite within the project area.

8.9.1 Objectives

The influx of migrant labor will have both negative and positive impacts on the nearby community and local environment. The labor will be accommodated in a temporary campsite within the project area which can have a significant interface with the host community. The influx of migrant workers would lead to a transient increase of population near the project area for a limited time. This would put pressure on the local resources such as roads, fuel for cooking, water, etc. Hence, a plan has been designed to demonstrate the:

- Potential impacts associated with the influx on the host population and receiving environment are minimized;
- Provision of safe and healthy working conditions, and a comfortable environment for migrant labor; and
- To ensure compliance with the national labor laws, including guidance provided on the latest COVID 19 epidemic in the country.

8.9.2 General Requirements

All migrant workers are envisaged to be accommodated in a proper temporary campsite within the project area. If migrant workers are accompanied by their families, provisions should be made accordingly. As per the National Acts, the inclusion of requirements for labor camp to be established by contractors during the construction phase of the project. Contractor(s) shall ensure implementation of the following measures to minimise the potential negative impacts of worker accommodation and workers on local communities:

. **Cleanliness and Sanitization:** Pest extermination, vector control, and disinfection are to be carried out throughout the living facilities in compliance with local requirements and/or good practice. In light of the COVID-19 outbreak and increased risks to community health and safety and occupational health and safety, the contractor needs to put in place a COVID-19 safeguards measures.

- **Complaints and incident reporting:** A formal Complaints Procedure will be implemented to ensure the timely and transparent response to complaints as received from labor.

- **Labor education:** The workforce will be sensitized to local social and cultural practices through the provision of an induction course for all employees that stipulates expected behaviour;
- **Labor behaviour in the campsite provided:** A Code of Behaviour governing appropriate behaviour in the accommodation facilities to be kept in place and to be strictly enforced. The contractor shall ensure implementation of the "rules of engagement" between laborers living in the campsite and community and shall be implemented by construction contractors for all engaged laborers.
- **Labor Compensation and Accommodation:** JTFRP shall ensure that laborers are provided with benefits such as leave, weekly rest day, etc. Accommodation to be provided for the construction labor which covers facilities (including catering facilities, dining areas, washing and laundry facilities, etc.) and supporting utilities.

8.9.3 Hiring & Recruitment Procedures

- The manpower wherever possible shall be locally recruited by the contractor. The following general measures shall be considered for the workforce during their employment tenure:
- The implementing agency in consultation with the PMU will include a code of conduct relating to the accommodation to be signed with the contract document of contractors.
- The contractor shall not employ any person below the age of 18 years nor will have any forced labor; The construction laborers will be provided with documented information regarding their rights under national labor and employment law such as but not limited to Factories Act, Minimum Wages Act, 1948 Trade Unions Act, and Workmen's Compensation Act; 1923
- The first priority for employment of labor should be given those impacted by the project such as landowners who have lost land / donated land;
- No discrimination shall be done by the construction contractor for recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, termination of employment or retirement, and disciplinary practices;
- The contractor to ensure that work hours are set at eight hours a day, 48 hours a week, with a weekly rest day for all engaged labor;

- Every labor is entitled to a maximum of only two hours a day as Overtime (OT) work. OT pay is twice the hourly remuneration;
- The project will ensure that equal wages for male and female workers for work of equal nature or value is maintained;
- A grievance redressal mechanism for workers to be put in place by the contractor to raise workplace concerns. The workers to be informed about the grievance mechanism at the time of recruitment; and
- The Contractor to ensure that they develop and implement a procedure to review the performance of their sub-contractors.
- The procedure developed should include regular inspection of the campsites, maintaining information of labor sourced by sub-contractors;

8.9.4 Worker's Accommodation

The EA has to supervise and monitor the activities performed by their contractor and accommodation facilities provided in the campsite. The following measures shall be provided:

- The laborers to provide with accommodation made of insulating material and locally available building material, etc. along with storage of personal belongings;
- The migrant workers with families will be provided with individual accommodation comprising bedroom, sanitary, and cooking facilities;
- The units to be supported by common latrines and bathing facilities duly segregated for male and female labor; A minimum of 1 unit to 15 males and 1 unit for 10 females shall be provided;
- The contractor shall provide a canteen facility with the facility to cook food of appropriate nutritional value respecting religious/cultural backgrounds;
- All doors and windows shall be lockable and mobile partitions/curtains shall be provided for privacy;
- Dust bins to be provided for collection of garbage and to be removed daily;
- It is also required to provide first aid box in adequate numbers; and

- Ventilation should be appropriate for the climatic conditions and provide workers with a comfortable and healthy environment to rest and spend their spare time.

8.9.5 Security

The contractors shall put in place the following security measures to ensure the safety of the workers. The following measures shall be incorporated:

- Access to the campsite shall be limited to the residing workforce;
- The contractor shall be responsible for deploying an adequate number of guards;
- Adequate, day-time night-time lighting shall be provided;
- The security personnel shall be provided with training to respect the community traditions and in dealing with, use of force, etc.; and
- The rental accommodation shall be provided with firefighting equipment and portable fire extinguishers.

8.9.6 Provisions for Drinking Water

- Access to an adequate and convenient supply of free potable water is a necessity for workers. The domestic water conforming to the IS 10500:2012 supply shall be made available by the contractor.
- The direct usage of water from bore well should not be allowed;
- The Contractor(s) should regularly monitor the quality of drinking water. In case of non-compliance with the Drinking Water Specifications, additional treatment shall be provided, or alternative sources of water supply shall be arranged; and
- All storage container of drinking water to be monitored from becoming polluted or Contaminated.

8.9.7 Cooking Arrangements

- Places for food preparation are designed to permit good food hygiene practices, including protection against contamination between and during food preparation;
- Adequate personal hygiene including a sufficient number of washbasins designated for cleaning hands with clean, running water; and
- All kitchen floors, ceiling and wall surfaces adjacent to or above food preparation and cooking areas are built using durable, non-absorbent, easily cleanable, non-toxic materials;

- Food preparation tables are equipped with a smooth, durable, easily cleanable, non-corrosive surface made of non-toxic materials.
- To ensure that the fuel need of laborers in the project area does not interfere with the local requirements, necessary arrangements for the supply of fuel to the laborers shall be done by the contractor.

8.9.8 Waste Water Generation

- There will of generation of wastewater from the campsite. About 80% of the water used shall be generated as sewage/wastewater.
- Contractors to ensure that the campsite is equipped with a septic tank and soak pit for disposal of sewage. It is also recommended that the stormwater and sewage system should be separated. The surface water drainage shall include all necessary gutters, downpipes, gullies, traps, catch pits, manholes, etc.
- Sanitary and toilet facilities are constructed of easily cleanable materials. Sanitary and toilet facilities are required to be cleaned frequently and kept in working condition.

8.9.9 Medical facilities

The following medical facilities shall be provided by contractors for the construction workers:

- A first-aid centre shall be provided for the labor within the construction site equipped with medicines and other basic facilities;
- Adequate first aid kits shall be provided in the campsite in an accessible place. The kit shall contain all type of medicines and dressing material;
- The contractor shall identify and train an adequate number of workers to provide first aid during medical emergencies;
- Regular health check-ups shall be carried out for the construction laborers every six month and health records shall be maintained;
- Labors should have easy access to medical facilities and first aider; where possible, nurses should be available for female workers;
- First aid kits are adequately stocked. Where possible a 24/7 first aid service/facility is available.

- An adequate number of staff/workers is trained to provide first aid; and
- Information and awareness of communicable diseases, AIDS, etc. shall be provided to workers.

9. Monitoring and Evaluation

The Project requires detailed supervision, monitoring, and evaluation of the impact on the environment and social aspects. Monitoring is the periodical checking of planned activities, which provides midway inputs, facilitates changes, if necessary, and provides feedback to Project Authority for better management of project activities. It helps in making suitable changes and modifications in safeguard documents during project implementation. Evaluation on the other hand assesses whether the activities have achieved the intended goal and objectives. Thus, monitoring and evaluation are critical to measuring the project performance and fulfilment of project objectives.

To carry out this, PMU has made specific arrangements. The executing agency has a dedicated unit to deal with the social and environmental safeguards. This unit is headed by Director Safeguards who is assisted by full-time Social Safeguards and Environmental Experts. To ensure compliance with the World Banks' social safeguard issues Director Safeguards will monitor and evaluate routine activities. Half-yearly Environmental and Social Audit, of ESMF implementation, will be done by the Technical Audits and Quality Control Consultants. Progress on social safeguards and other issues will be flagged in the MPR and QPRs.

9.7 Safeguards Supervision

This will be done by PMU with the support of PIU and consultants. All the sub-projects will be visited at regular intervals by PMU to check if all safeguard requirements are met and to identify any issues that need to be addressed. PMU should submit quarterly progress reports to The World Bank on safeguards implementation.

9.8 Concurrent Monitoring and Quarterly Reporting

The concurrent internal social monitoring will be done as part of the regular monitoring by the PIU, Implementing Agencies, and TAQAC. However, PMU, with the help of an in-house Social Specialist will do the regular social monitoring of sub-projects for safeguards compliance.

9.9 Safeguards Monitoring Plan

Apart from the quarterly monitoring reports submitted to the World Bank, once every year, the PMU will prepare a report of the social safeguards in the project districts including data and analysis of relevant parameters. This report also should give a listing of relevant new

legislation and regulations that have a bearing on the social performance of the project. PMU will submit this report to The World Bank.

9.10 Independent Safeguard Audits

The PMU will appoint Independent Project Implementation Quality Audit Consultants with expertise in social safeguards to conduct a half-yearly project quality audit, which will include Social Audit of selected sub-projects for compliance with the ESMF.

9.11 Right to Information and Disclosure

The Jammu and Kashmir Right to Information Act 2004 gives the right to persons to obtain any document or information relating to the affairs of the state or public body. In addition to the provisions of the above Act, the JTFRP provides for voluntary disclosure of information and project documents in English, Hindi, and Urdu on the Government and implementing agencies' websites for public consumption.

10. Grievance Redressal Mechanism

Grievance Redressal Mechanism is a process to address people's grievances related to land acquisition, resettlement, and rehabilitation, or any other social issue arising out of the project-related activities; executing agency will establish two bodies, one at a local level (site level) and another at District level. In case, the grievances are not resolved at these two levels, then they will be forwarded to R&R Committee at the Divisional level for this project which will be established under the Divisional Commissioner, Jammu/Srinagar. The grievances will be registered at the Project site. The local level grievance committee will try to resolve the case in a maximum of 14 days. In case the aggrieved person is not satisfied with the decision delivered at the local level or the grievance/s is not resolved, the same shall be forwarded to the district level committee, headed by District Collector. No grievance can be kept pending for more than a month which means the committee has to meet every month. Executing Agency through PMU, JTFRP will monitor the implementation of the decision of the committee. In case the aggrieved party is not satisfied with the proposed redressal measures, it can approach the Divisional Level Redressal Committee, headed by Divisional Commissioner, Jammu/Srinagar. If the aggrieved party is not satisfied with the decision delivered or the committee is not successful in resolving the grievance/s, they can approach the court of law on their own expenses. The committees' composition is detailed below:

10.7 Composition of Grievance Redress Committee (GRC) at various levels of the project

A. **Grievance Redress** Committee **at Local Level:** This committee/cell will work at the local level i.e. site level. This will be comprised of the following members:
    a. Engineer from PMU
    b. Assistant Executive Engineer (PIU)
    c. Site Engineer (PIU)
    d. Local Revenue officer
    e. Social Safeguard Officer
    f. Ward Member/Halqa Panchayat member
    g. Women representative (Retired Officer/Academicians/Development Professional)

B. **Grievance Redress Committee at District Level:** In case of grievance/s are not addressed at the local level or PAP/ aggrieved person is not satisfied with the decision delivered at the local level, he/she can approach the grievance redressal committee constituted at the district level. The following will be the composition of the committee.
    a) District Collector

b) Director/Head PIU (Convener)
c) Nodal officer of the Project Component (PMU)
d) Nodal Officer (Social Safeguards, PMU)
e) Representative of PRIs
f) A Prominent Women (Retired Officer/Academicians/Development Professional)
g) A senior representative of SC/ST Welfare Board

C. **Division Level Redressal Committee (DLC)**: In case, grievance/s are not addressed at the local and district level, the same will be forwarded to the Divisional Level Redressal Committee through PMU. The committee will provide a major platform to people who might have objections for the decisions taken at the two previous levels. The committee will look into the grievances of the people and will assign responsibilities to implement the decisions of the committee. This Committee (after formation) will be convened by the Chief Executive Officer, ERA/JTFRP, and headed by Divisional Commissioner Jammu/Srinagar. This committee should meet every quarter to solve any grievance/s and will decide within 03 months of receiving the grievance/complaint. Nodal Officer (Social Safeguards) will coordinate the meetings. This committee will also provide policy-related directions to the Grievance Redressal Committee and the participating departments about land acquisition and resettlement and rehabilitation.

The following will be the composition of the committee:

a. Divisional Commissioner, (Chair)
b. Chief Executive Officer, JPFRP/JK ERA (Convener)
c. Heads of participating departments
d. Director Technical (PMU/JTFRP)
e. A senior representative, one each from BC & EBC and SC & ST Welfare
f. A senior representative of the revenue department
g. A senior representative of the Disaster Management Department
h. Social Safeguard Specialist (Nodal officer, PMU)
i. A prominent women representative (Retired/ Development Professional/Academician)
j. A PRI representative
k. A representative of PAPs who can articulate well.

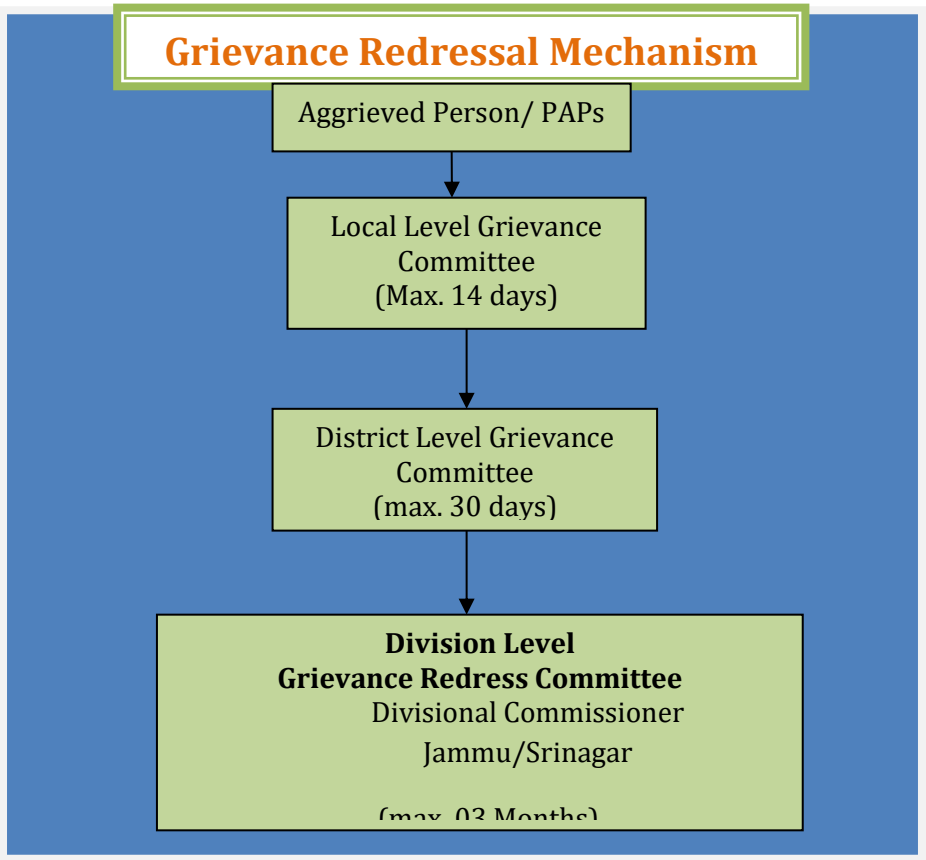


Figure 3: Structure of GRM

10.8 Approach to GRC

Project Affected Person/aggrieved party can approach GRC for the redress of their grievances through **any** of the following modes:

1. **Web-based:** The grievance corner will be provided at the website of PIU/PMU so that the affected person can register their complaint online.
2. **Telecom-based:** If needed a toll-free number will be issued by the PMU/ PIU so that affected people can register their complaints through telephone / mobile phone to the PIU/PMU office.
3. **Through LGC:** The LGC will collect the problems & issues of the community or affected persons and pass on the same to PIU/PMU and try to resolve them. A grievance register will be maintained by the contractor/PIU at each site office. The phone number of the concerned engineer shall be displayed at the site so that the aggrieved person can contact the concerned site engineer in case of an emergency.
4. **Through PMU:** PAPs/aggrieved party can register/file grievance/s directly to the PMU also. PMU will enroute the same through PIU to the site engineer who will try to resolve it within the stipulated time and the rest process will follow.

Besides the grievance redress mechanism of JTFRP, the state has an online grievance monitoring system known as Awaz-A-Awam (People's voice). The PAPs can also lodge their grievance online at http://www.jkgrievance.nic.in.

10.9 Legal Options to Aggrieved persons/PAPs

In case PAPs are not satisfied with the decision of GRC at the local/district level and Divisional Level committee, they are free to approach the court of law on their own will and expenses at any time to redress their grievance/s. The general public and PAPs specifically will be informed about the Grievance/s redress committee and mechanism through public consultations, disclosures, and distribution of PIBs. All PIBS will be translated into Urdu and will be distributed to the PAPs.

11. Institutional Arrangement

11.7 Institutional arrangement in the project

A project steering committee has been set up for the overall strategic guidance and monitoring of the project. It is headed by Chief Secretary and comprises of all involved line departments and additionally departments of planning, environment and social welfare. A Project Management Unit (PMU) for the project (JTFRP), housed in Jammu & Kashmir Economic Reconstruction Agency (JK ERA) is responsible for the overall management of the "Jhelum Tawi Flood Recovery Project (JTFRP)". This PMU is headed by Chief Executive Officer (CEO). Social Development Specialist has been positioned in PMU to provide assistance and support to Director Safeguards to address all safeguard-related issues during documentation, execution, and implementation of ARAP and monitoring.

The Chief Executive Officer (JKERA/JTFRP) will be responsible for overall coordination, reporting, technical assistance, monitoring, and budgeting of all the components associated with the project. The CEO will have the administrative and financial powers for the implementation of the project including the implementation of ARAP wherever required. The Chief Executive Officer (CEO) will be supported by Director Technical, Director Safeguards, Director Planning and Coordination, Director Disaster Management, Executive Engineers, AEEs, and Social Development Specialist. The PMU will be responsible for providing overall policy guidance, training, and capacity-building support to PIU (JK ERA) to ensure compliance with World Bank's Safeguard Policies and applicable Union Territories and other acts, notifications, guidelines, etc. Director Safeguards with the assistance of a Social Development Specialist in EA will ensure that all social safeguards issues are complied with as detailed out in Social Management Plan. Social issues will be coordinated by Social Development Specialist (SDS) within the PMU and PIU. PMU will be assisted by Project Management Consultants (Technical Assistance and Quality Audit Consultants) for technical support and advice, monitoring and impact evaluation, etc.

11.8 Implementation Stage

The sub-project does not involve involuntary displacement, land acquisition, and livelihood loss either temporary or permanent. The Project Implementation Unit is headed by the Project Manager (Transport) in JK ERA. Overall civil work shall be carried out under his supervision and guidance. Director Safeguards with the support of Social Development Specialist in PMU, JK ERA will ensure compliance with the WB policies and other provisions

applicable to the project. For this sub-project, Only Social management Plan needs to be implemented during the execution of the sub-project.

Annexures

Annexure1: Environment and Social Screening Data Sheets

Part A: General information

1. Name of the Sub-Project	**Improvement & Up-Gradation of Tutian Di Khui to Khada Madana in Jammu district**	
2. Type of Proposed Activity (tick the applicable option and provide details)		
• Road	√	
• Bridge		-
• Fire Station		-
• Hospital/Health Facility		-
• Educational Institute		-
• Building for Livelihoods		-
• Flood Infrastructure Related		
• Other Public Building		-.
• Any Other (Please Specify)		-
3. Location of the Proposed Sub-Project		
• Name of the Region	Jammu, U.T of Jammu and Kashmir	
• Name of the District	Jammu	
• Name of the Block	Nagrota	
• Name of the Settlement	Chilah, Kanna Chargal Panjoa, and Shandi	
• Latitude	32°46'0.26"N (Start of the Road) and 32°42'20.48"N (End of the Road)	

• Longitude	74°54'52.40"E (Start of the Road) and 74°59'2.92"E (End of the Road)
4a. Proposed Nature of Work (tick the applicable options)	
• Minor Repairs	-
• Major Repairs/Rehabilitation	-
• Upgrading/Major Improvement	√
• Expansion of the facility	-
• New Construction	-
• Any Other	-
4b. Size of the Sub-Project (approx. area in sq. m/ha. or length in m/km, as relevant)	11.00 kms
5. Land Requirement (in hect./sq.mt.)	
• Total Requirement	No land acquisition is required. Work will be carried out in the available RoW, which is 6.00 meters
• Private Land	Nil
• Govt. Land	Nil
• Forest Land	Nil
6. Implementing Agency Details (Sub-Project level)	
• Name of the Department/Agency	PIU-ERA (Jammu)
• Name of the contact person	Mr. Nand Kishore Gupta
• Designation	Project Manager (Transport)
• Contact Number	9419187368
• E-mail Id	pmjkusdipjmu2@gmail.com
7. Screening Exercise Details	

• Date on which it was carried out	12th July, 2019, 18.12.20 & 19.12.20
• Name of the Person	Vikash Sharma/ CharanJeet Singh
• Contact Number	+9419125803/9419893392
• E-mail Id	jkerasocial@gmail.com jcharan.sim@gmail.com

Part B (1): Environment Screening

Question	Yes	No	Details
1. Is the sub-project located in whole or part within 1 km of the following environmentally sensitive areas?			
a. Biosphere Reserve		No	-
b. National Park		No	-
c. Wildlife/Bird Sanctuary		No	-
d. Wildlife/Bird Reserve		No	-
e. Important Bird Areas (IBAs)		No	-
f. Habitat of migratory birds (outside protected areas)		No	-
g. Breeding/Foraging/Migratory route of Wild Animals (outside protected areas)		No	-
h. Area with threatened/rare/ endangered fauna (outside protected areas)		No	-
i. Area with threatened/rare/ endangered flora (outside protected areas)		No	
j. Reserved/Protected Forest		No	-

k. Other category of Forest	Yes		The part of the Road passes adjoining the forest area.
l. Wetland		No	
m. Natural Lakes		No	
n. Rivers/Streams	Yes		Sardan Nallah which is a dry bed stream is coming within the 1 km of the project road -Khanna, Chadgal, Doon, Shanti
Question	**Yes**	**No**	**Details**
o. Swamps/Mudflats		No	-
p. Zoological Park		No	-
q. Botanical Garden		No	
2. Is the Sub-Project located in whole or part within 500 mts. of any of the following sensitive features?			
a. World Heritage Sites		No	-
b. Archaeological monuments sites(under ASI's central/state list)		No	-
c. Historic Places/Monuments/ Buildings/Other Assets (not listed under ASI list but considered locally important or carry a sentimental value)		No	
d. Religious Places (regionally or locally important)		No	-
e. Reservoirs/Dams		No	-
f. Canals		No	-

g. Public Water Supply Areas from Rivers/Surface Water Bodies/Ground Water Sources		No	-
h. What is the High Flood Level in the sub-project area?	-		
i. Is any scheduled/protected tree like Chinar, Mulberry or Deodar likely to be affected/ cut due to the project?		No	
j. Is the sub-project located in a landslide/heavy erosion prone area or affected by such a problem?		No	
k. Is sub-project located in an area that faces water paucity or water quality issues?		No	

Part B (2): Result/Outcome of Environmental Screening Exercise

1.	Environment Impact Assessment Required	No
2.	Environment Clearance Required	No
3.	Forest land Clearance/Diversion Required	No
4.	Tree Cutting Permission Required	No
5.	ASI (Centre/State) Permission Required	No
6.	Permission from ULB/Local Body/Department Required	No
7.	Any other clearance/permission required	Consent to Establish (CTE) and Consent to Operate (CTO) from SPCB will be required for Hot mix Plants, Wet Mix Plants, Stone Crushers, PUC's and other fitness certificates of equipment etc.

Part C (1): Social Screening

1. Does the Sub-Project activity require acquisition of land?			
Yes		No	√
Give the following details:	Private Land (sq,m/ha.)		Nil
	Govt. Land (sq.m/ha.)		Nil
	Forest Land (sq.m/ha.)		Nil
2. Does the proposed Sub-Project activity result in demolition/removal of existing structures?			
Yes		No	√
If so, give the following details:			
• Number of public structures/buildings		Nil	
• Number of common property resources (such as religious/cultural/ drinking water/wells/etc.)		Nil	
• Number of private structures (located on private or public land)		Nil	
3. Does the proposed project activity result in loss of crops/trees?			
Yes		No	√
4. Does the proposed Project activity result in loss of direct livelihood/ employment?			
Yes		No	√
5. Does the proposed activity result in loss of community forest/pastures on which nearby residents/local population are dependent?			
Yes		No	√
If yes, give the details of the extent of area to be lost (in acres/hect.).		-	
6. Does the proposed Project activity affect scheduled tribe/caste communities?			
Yes		No	√

Part C (2): Result/Outcome of Social Screening Exercise

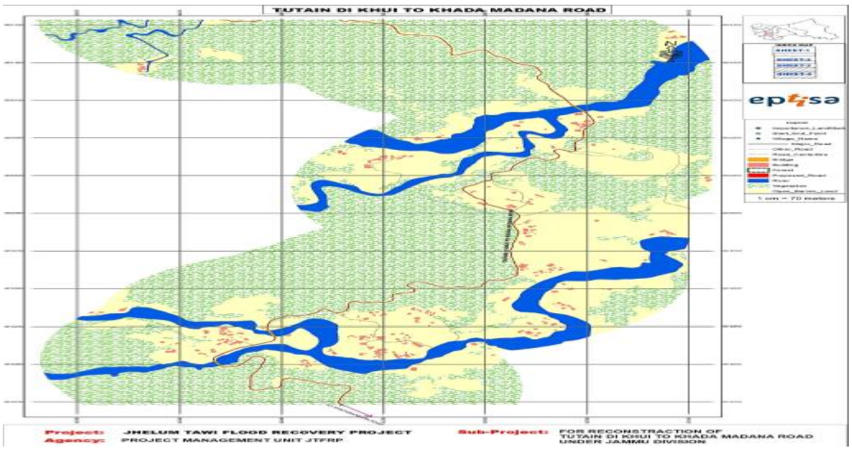
S.No.	Result/Outcome	Outcome
1.	Answer to all the questions is 'No' and only forest land is being acquired	No SIA/RAP required
2.	Answer to any question is 'Yes' and the sub-project does not affect more than 200 people (i.e., either complete or partial loss of assets and/or livelihood)	No Abbreviated RAP is required
3.	Answer to any question is 'Yes' and the sub-project affects more than 200 people (i.e., either complete or partial loss of assets and/or livelihood)	No SIA/RAP Required

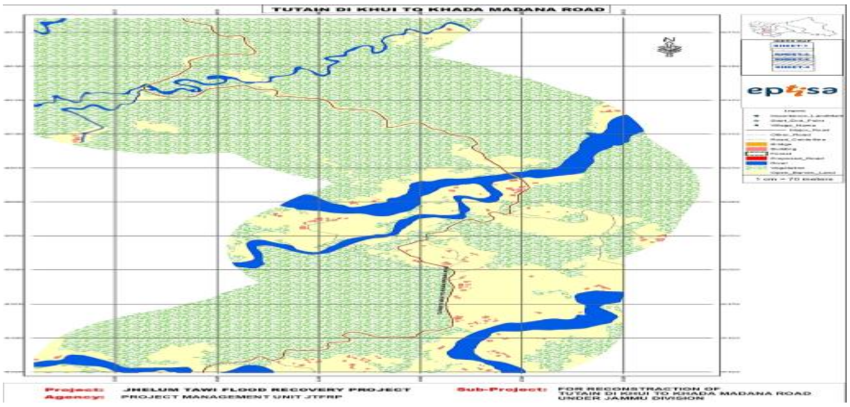
Outcome of Screening:

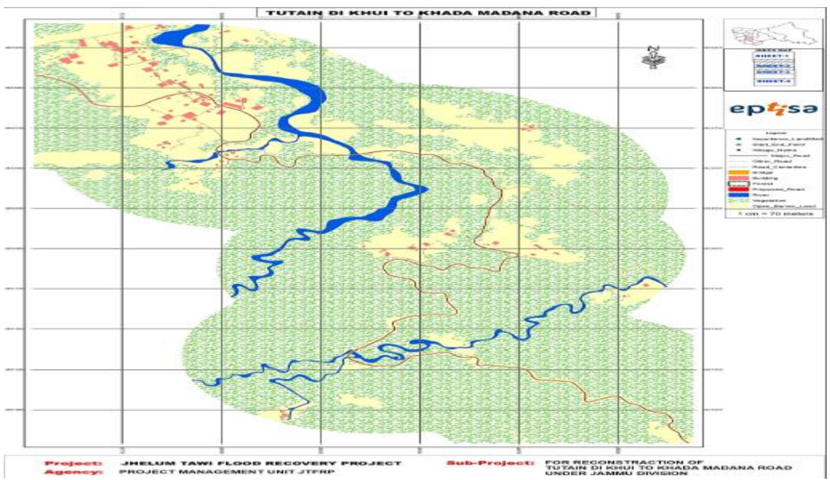
As per the screening exercise, the proposed sub project does not have significant social and environmental issues. The proposed sub-project is only the "Improvement & Up-gradation of the existing road and does not involve land acquisition of private or government land. Wherever the required land width is not available, the construction will be carried out in the available land width. Modification in the design has been completed as a part of the mitigation measures.

However, in order to assess the temporary impacts, existence of squatters and encroachers on the site SIA required for the proposed subproject. SIA study will also assist as tool for preparation of Social Management Plan for the sub-project.

Annexure 2: GIS MAPs of the Sub-Project Road







Annexure 3: Encumbrance Free RoW Certificate issued by PIU

Office of the Project Manager (Transport)
J&K Economic Reconstruction Agency
2nd Floor, JKPCC Building, Rail Head Complex
Jammu

ERA

JEHLUM & TAWI FLOOD RECOVERY PROJECT

To Whom It May Concern

Subject: Non-encumbrance certificate.

Certified that the below mentioned sub-projects are being upgraded in the existing available Right of Way under World Bank funding for already existing established roads taken over from PW(R&B) Department. Further, no acquisition of land is required under the sub-projects:

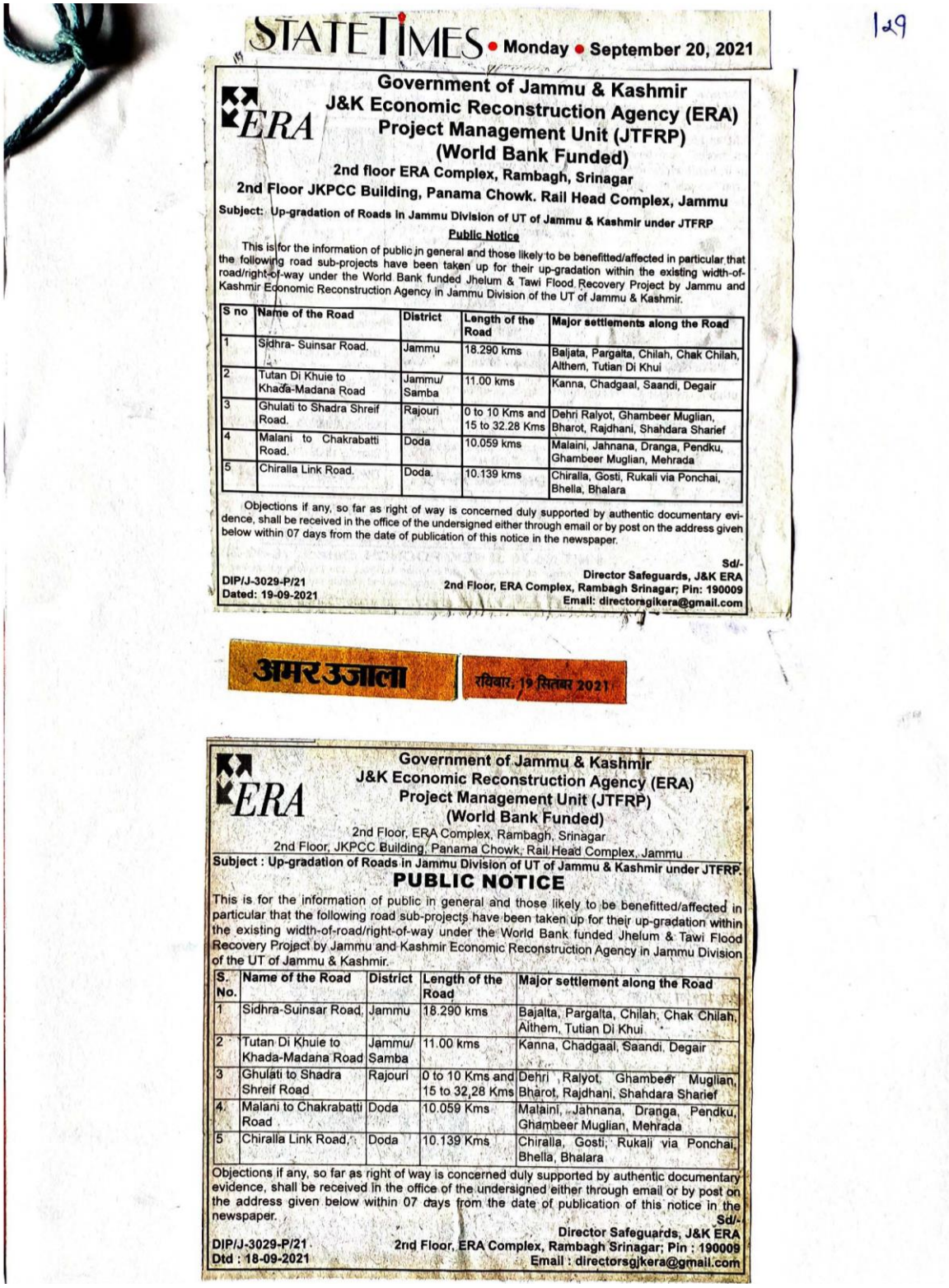
S.No.	Name of the road/Sub-project	Length	ROW information	Remarks
1	Sidhra-Surinsar road (Lot-1)	18.290 Kms.	15 m	It stands notified vide prevention of Ribbon development Act 2007, SRO 106 of 1969
2	Chirala Link Road	10.139 kms	10 m	Handing over note of Executive Engineer (PWD(R&B) Division Bhaderwah (Enclosed)
3	Malaini to Chakrabatti road	10.06 Kms	10m	-Do -
4	Deva Mai to Ohli Mandir Road	4.9 kms	6.0m	As per records 2.472 ha of land has been acquired from forest depptt. for 4 kms of road length (copy enclosed)
5	Anji Panasa Road	4.25 kms	6.0 m	Information provided by then SE/Nodal Officer vide email dated: 01-05-2019 (enclosed)
6	Tutan Di Khuei to Khada Madana Road	11.0 Kms	6.0 m	-Do -
7	Gulati to Shahdra Sharief road	27.280 kms	6.5 m	Information provided by then SE/Nodal Officer vide email dated: 01-05-2019 (enclosed). However as per the revenue record provided by the Land Collector ERA, Jammu, the ROW is 10 mtrs from Shahadra to Gambhir Muglan

Hence the RoW is encumbrance free.

No: PM/T/ERA/2021/865
Date: 16.03.2021

Project Manager (Transport)
J&K ERA, Jammu

Annexure 4: Newspaper Notification



STATE TIMES • Monday • September 20, 2021

Government of Jammu & Kashmir
J&K Economic Reconstruction Agency (ERA)
Project Management Unit (JTFRP)
(World Bank Funded)
2nd floor ERA Complex, Rambagh, Srinagar
2nd Floor JKPCC Building, Panama Chowk. Rail Head Complex, Jammu

Subject: Up-gradation of Roads in Jammu Division of UT of Jammu & Kashmir under JTFRP

Public Notice

This is for the information of public in general and those likely to be benefitted/affected in particular that the following road sub-projects have been taken up for their up-gradation within the existing width-of-road/right-of-way under the World Bank funded Jhelum & Tawi Flood Recovery Project by Jammu and Kashmir Economic Reconstruction Agency in Jammu Division of the UT of Jammu & Kashmir.

S no	Name of the Road	District	Length of the Road	Major settlements along the Road
1	Sidhra- Suinsar Road.	Jammu	18.290 kms	Baljata, Pargalta, Chilah, Chak Chilah, Althem, Tutian Di Khui
2	Tutan Di Khuie to Khada-Madana Road	Jammu/ Samba	11.00 kms	Kanna, Chadgaal, Saandi, Degair
3	Ghulati to Shadra Shreif Road.	Rajouri	0 to 10 Kms and 15 to 32.28 Kms	Dehri Ralyot, Ghambeer Muglian, Bharot, Rajdhani, Shahdara Sharief
4	Malani to Chakrabatti Road.	Doda	10.059 kms	Malaini, Jahnana, Dranga, Pendku, Ghambeer Muglian, Mehrada
5	Chiralla Link Road.	Doda.	10.139 kms	Chiralla, Gosti, Rukali via Ponchai, Bhella, Bhalara

Objections if any, so far as right of way is concerned duly supported by authentic documentary evidence, shall be received in the office of the undersigned either through email or by post on the address given below within 07 days from the date of publication of this notice in the newspaper.

Sd/-
Director Safeguards, J&K ERA
2nd Floor, ERA Complex, Rambagh Srinagar; Pin: 190009
Email: directorsgjkera@gmail.com

DIP/J-3029-P/21
Dated: 19-09-2021

अमर उजाला रविवार, 19 सितंबर 2021

Government of Jammu & Kashmir
J&K Economic Reconstruction Agency (ERA)
Project Management Unit (JTFRP)
(World Bank Funded)
2nd Floor, ERA Complex, Rambagh, Srinagar
2nd Floor, JKPCC Building, Panama Chowk, Rail Head Complex, Jammu

Subject : Up-gradation of Roads in Jammu Division of UT of Jammu & Kashmir under JTFRP.

PUBLIC NOTICE

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S. No.	Name of the Road	District	Length of the Road	Major settlement along the Road
1	Sidhra-Suinsar Road,	Jammu	18.290 kms	Bajalta, Pargalta, Chilah, Chak Chilah, Aithem, Tutian Di Khui
2	Tutan Di Khuie to Khada-Madana Road	Jammu/ Samba	11.00 kms	Kanna, Chadgaal, Saandi, Degair
3	Ghulati to Shadra Shreif Road	Rajouri	0 to 10 Kms and 15 to 32,28 Kms	Dehri Ralyot, Ghambeer Muglian, Bharot, Rajdhani, Shahdara Sharief
4.	Malani to Chakrabatti Road	Doda	10.059 Kms	Malaini, Jahnana, Dranga, Pendku, Ghambeer Muglian, Mehrada
5	Chiralla Link Road,	Doda	10.139 Kms	Chiralla, Gosti, Rukali via Ponchai, Bhella, Bhalara

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Sd/-
Director Safeguards, J&K ERA
2nd Floor, ERA Complex, Rambagh Srinagar; Pin : 190009
Email : directorsgjkera@gmail.com

DIP/J-3029-P/21
Dtd : 18-09-2021

Annexure 5: Reconfirmation of encumbrance free RoW by PMU

Government of Jammu and Kashmir
J&K Economic Reconstruction Agency
Jhelum Tawi Flood Recovery Project
2nd floor ERA Complex, Rambagh, Srinagar
2nd Floor JKPCC Building Railhead Complex Jammu

Subject: Encumbrance-free sites for up-gradation of roads under JTFRP (Jammu Division).

Whereas J&K ERA (J) as PIU for the road sub-projects in Jammu Division certified the Right of Way for all the 07 roads being encumbrance-free vide PM/T/ERA/2021/865 dated 16.03.2021 and ERA/PM/T/2021/2197 dated31/07/2021. The revenue records of 02 roads viz., 1. Construction of *Anji Panasa Road, 2. Deva Mai Ohli Mandir Road (Reasi)* were available and as such their documentation viz a viz environment and social aspects was cleared by the World Bank.

However the RoW provided by the PIU (J), in absence of relevant land records could not be verified for 05 roads viz.,

1. *Sidhra-* Surinsar *Road, 2. Tutain Di khuie to khada Madana Road, 3. Ghulati to Shahdra Shareif Road, 4. Malani to Chakrabatti Road and 5. Chiralla Link Road.*

The matter was discussed and deliberated upon in-house and with the team of the World Bank in different meetings for resolution. It was resolved that PMU would notify the issue in the local newspapers and invite objections from people likely to be benefitted or affected for their livelihood & assets due to execution of these sub-projects under JTFRP. Accordingly, notification for inviting objections was issued in two daily newspapers on 19th September 2021 and 20th September 2021 in State Times (English) and Amar Ujala (Hindi), respectively, (for 05 roads mentioned above), detailing the road's name, its scope, and the villages/habitations likely to be affected/benefitted.

The objections were supposed to be received in the office of Director Safeguards (Kashmir) within seven days after publication of the notification by Post or through Email. Despite lapse of more than a month no objection has been received in the office of Director Safeguards either through email or post.

Therefore, RoW within which the roads are being up-graded/constructed is deemed to be encumbrance-free.

No:- ERA/DSG/PS/88-93
dtd:- 25.10.2021

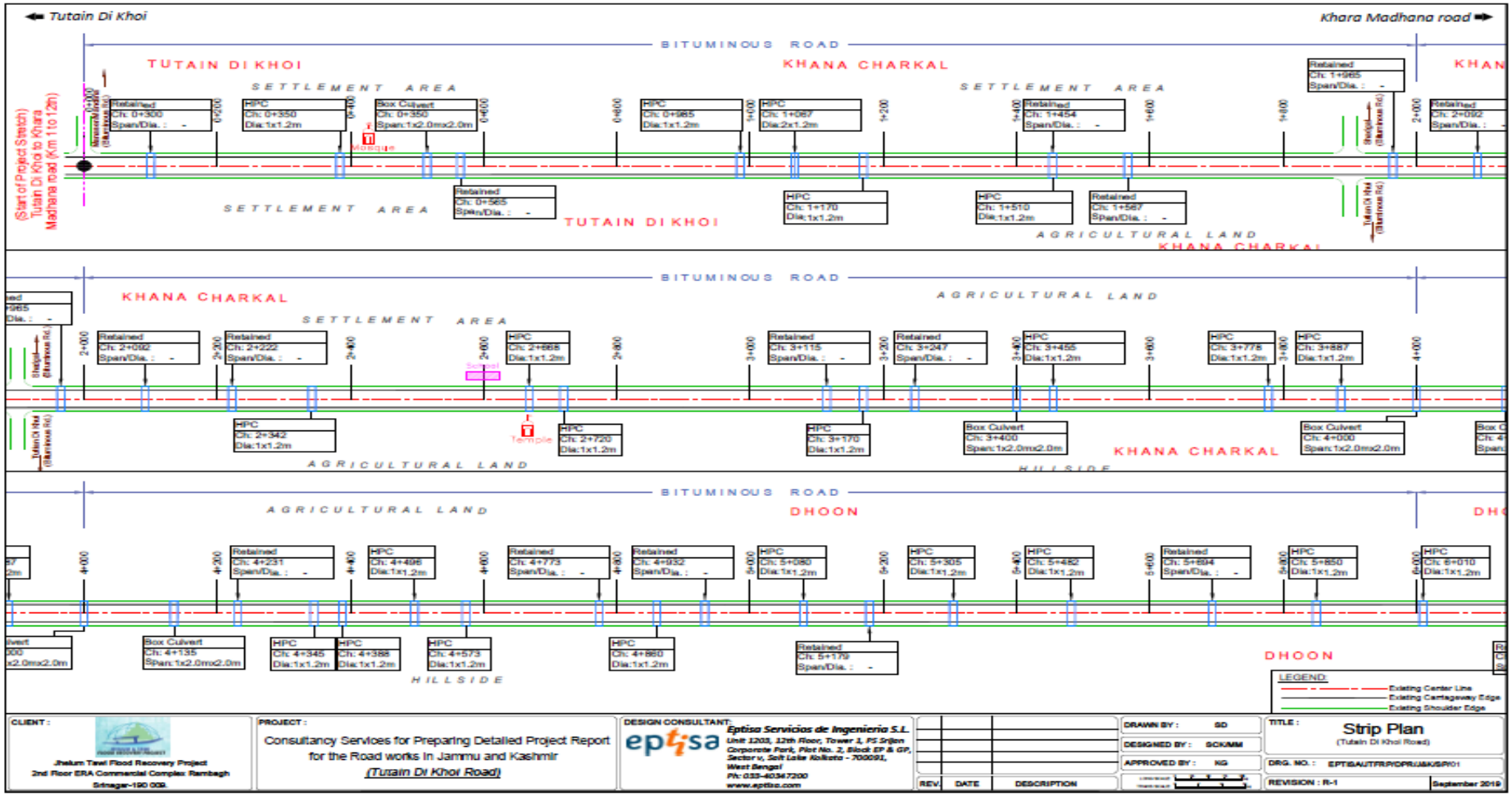
Director Safeguards,
JK ERA/JTFRP

Copy to:-

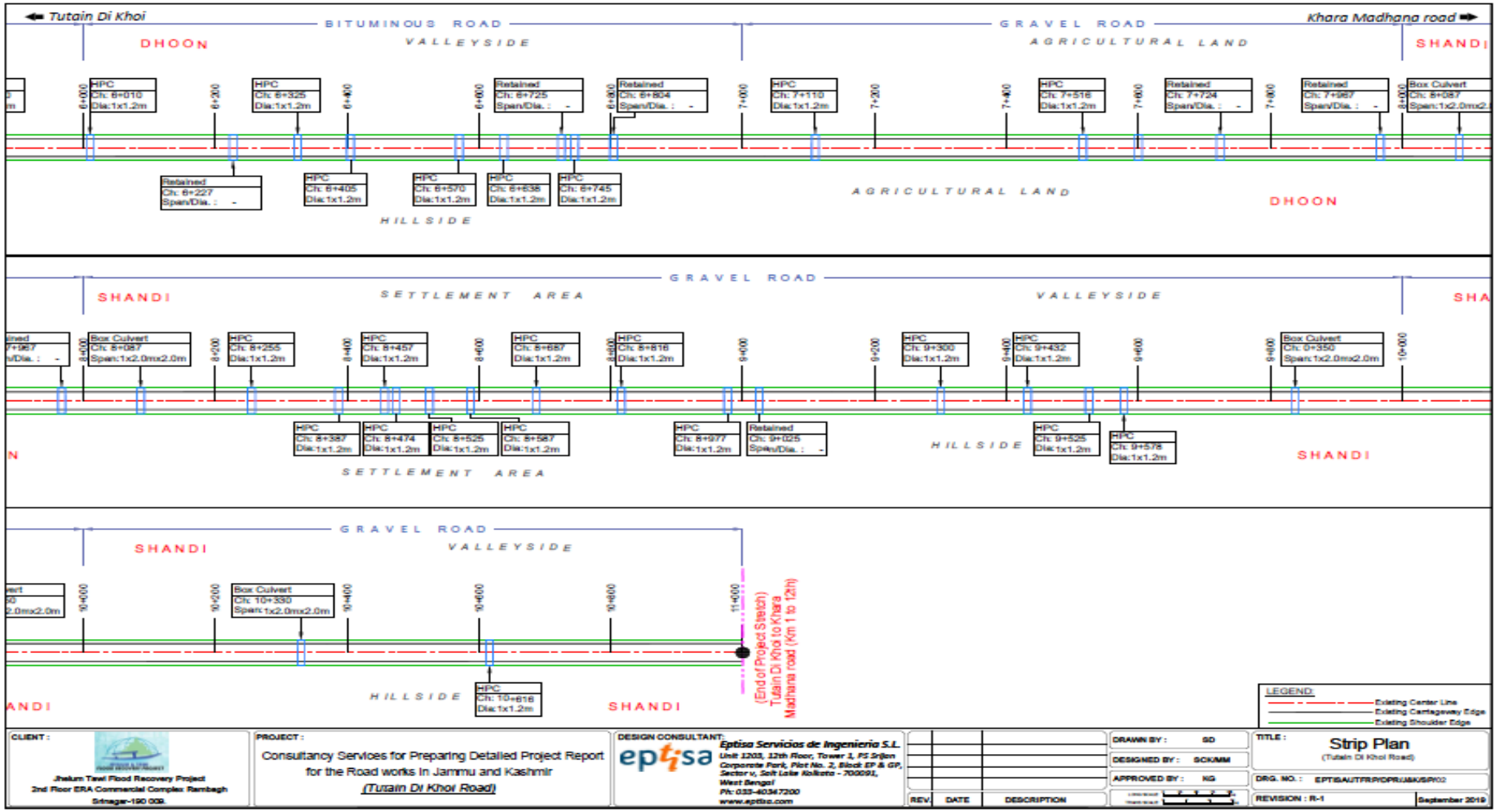
1. Chief Executive Officer, J&K ERA for kind information
2. Director Jammu, J&K ERA for information
3. Project Manager (T), J&K ERA Jammu for information
4. Environmental Expert, J&K ERA for information
5. Social Expert, J&K ERA for information
6. Team Leader, TAQAC for information

Annexure 6: Strip Plan and Profile

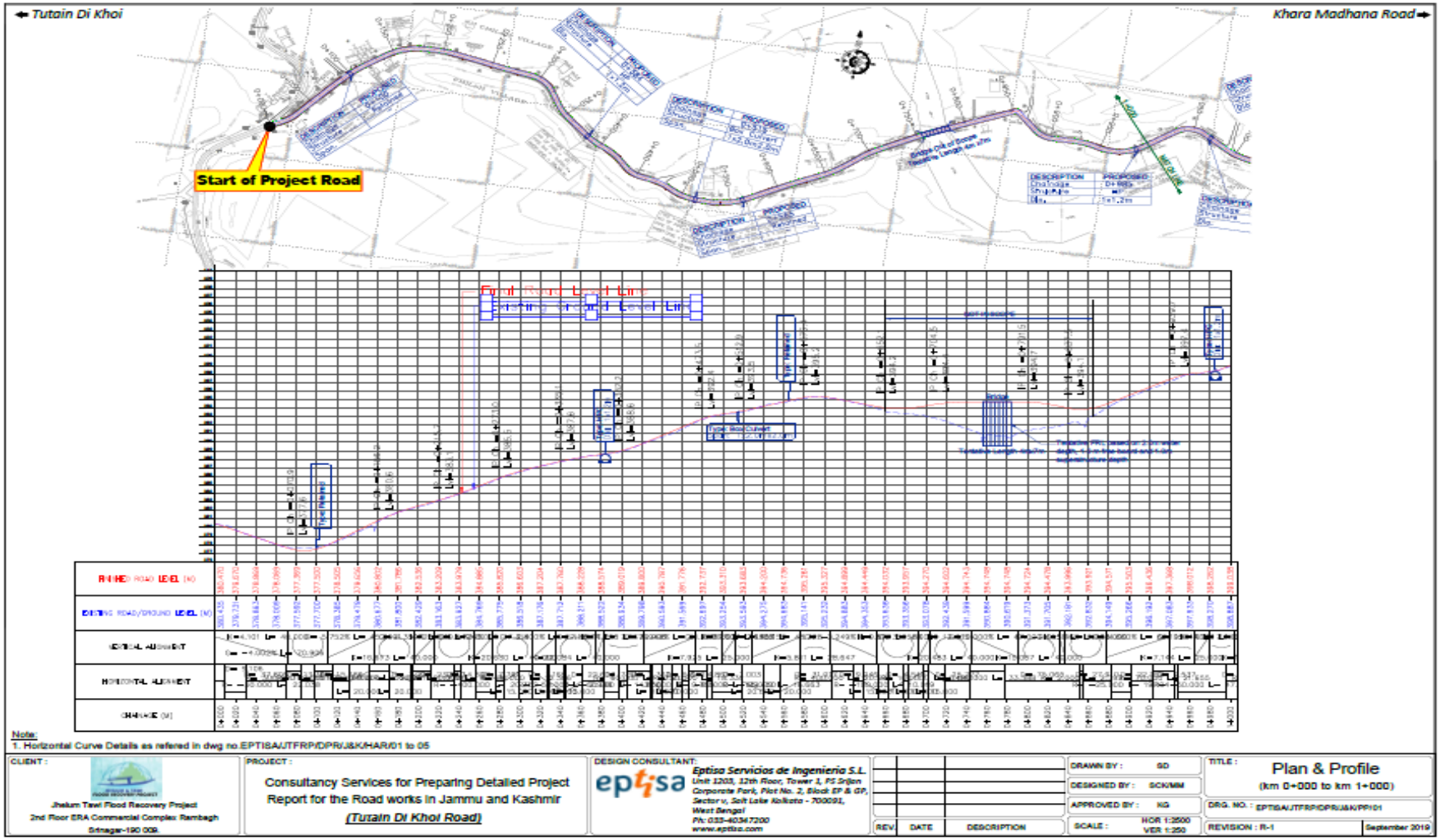
Strip Plan



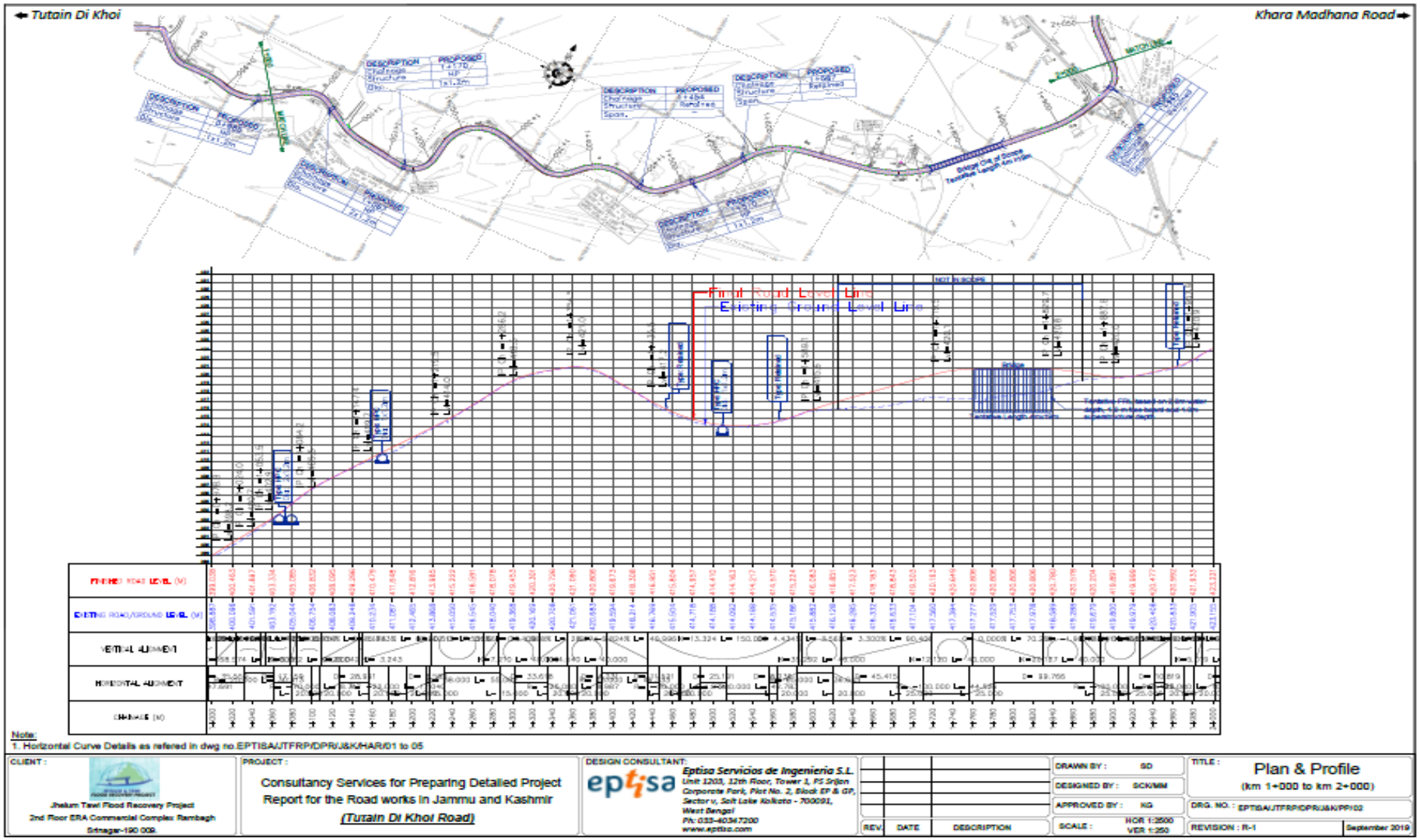
Strip Plan Contd.



Plan & Profile



Plan & Profile Contd.



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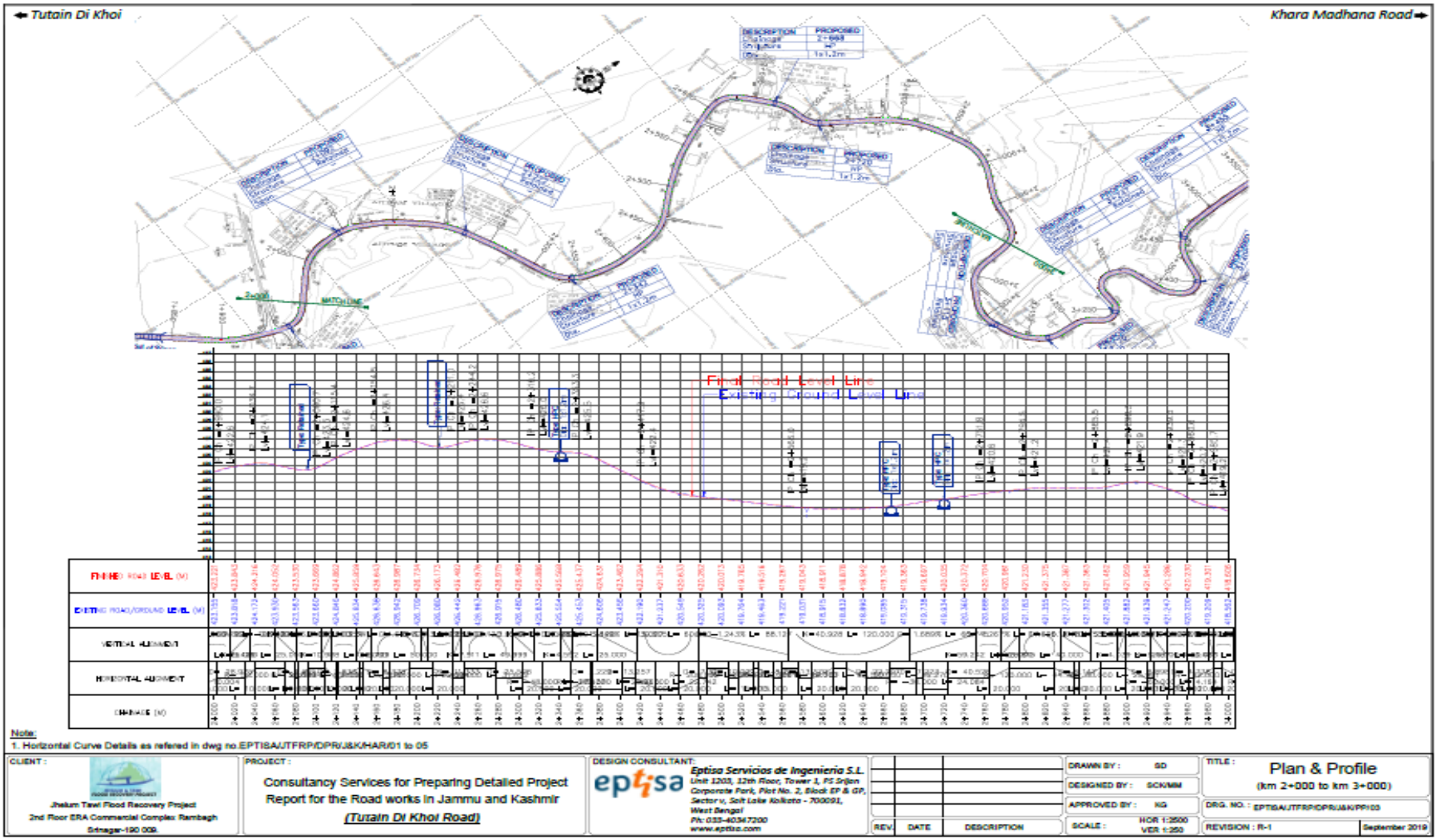

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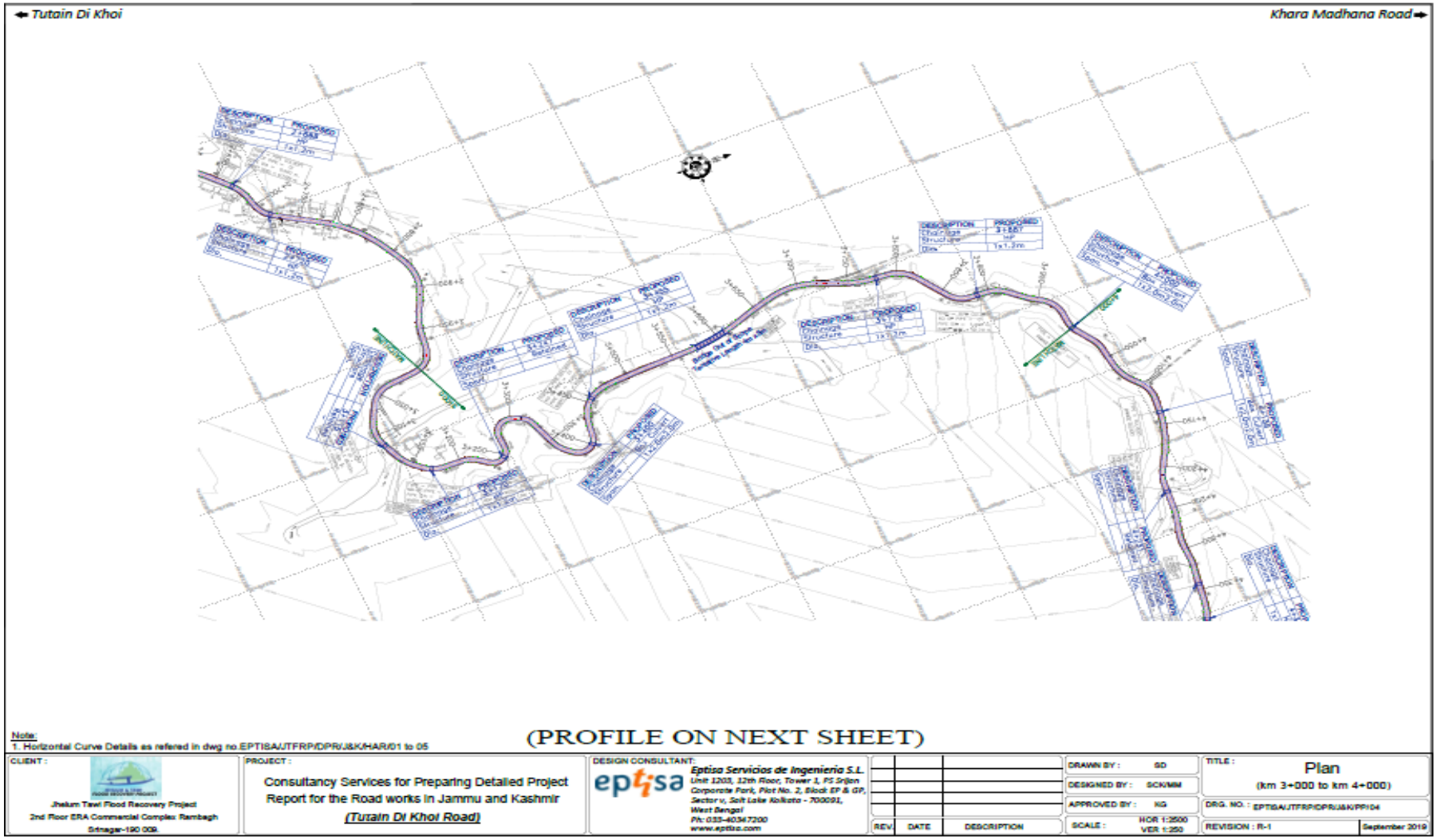

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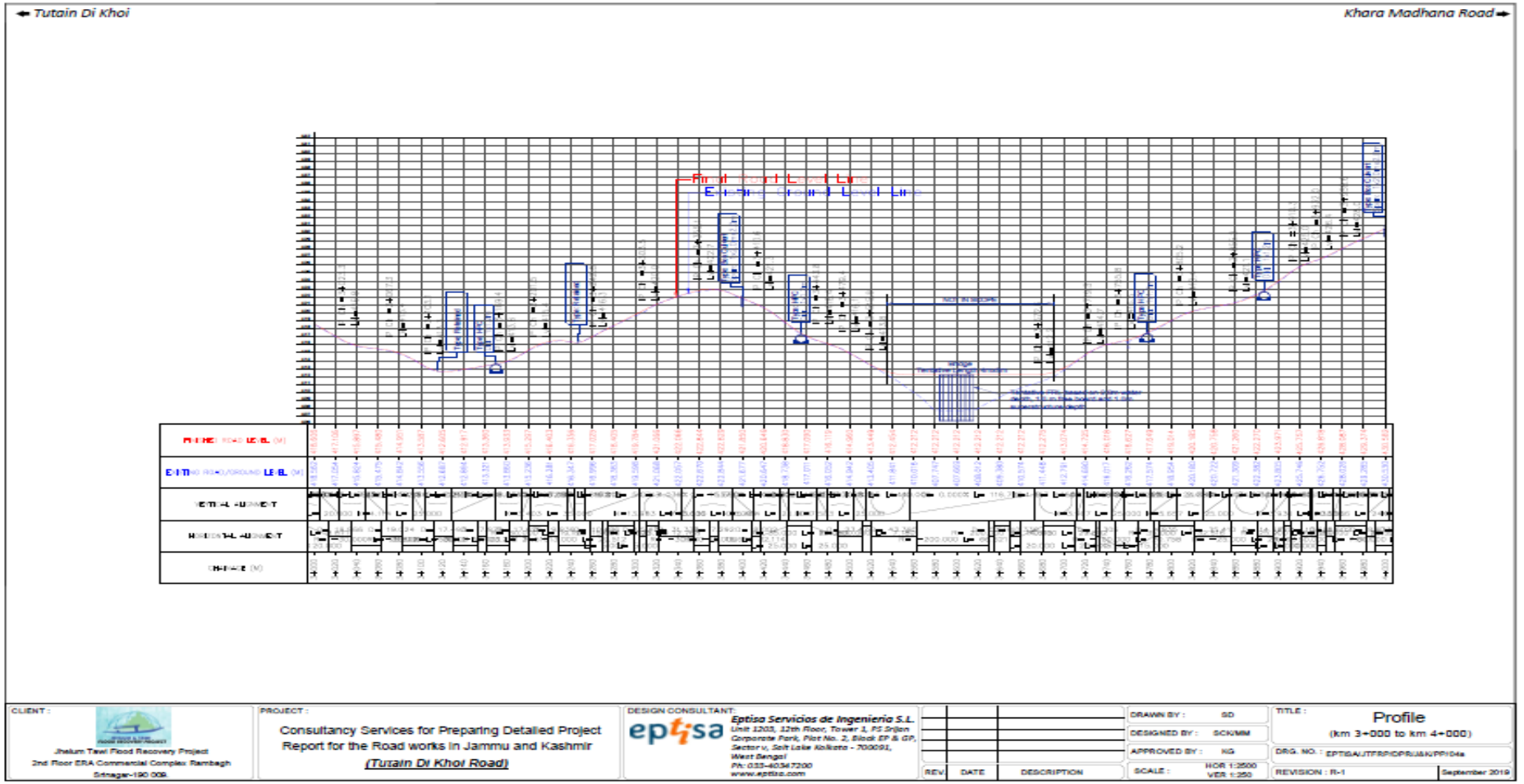

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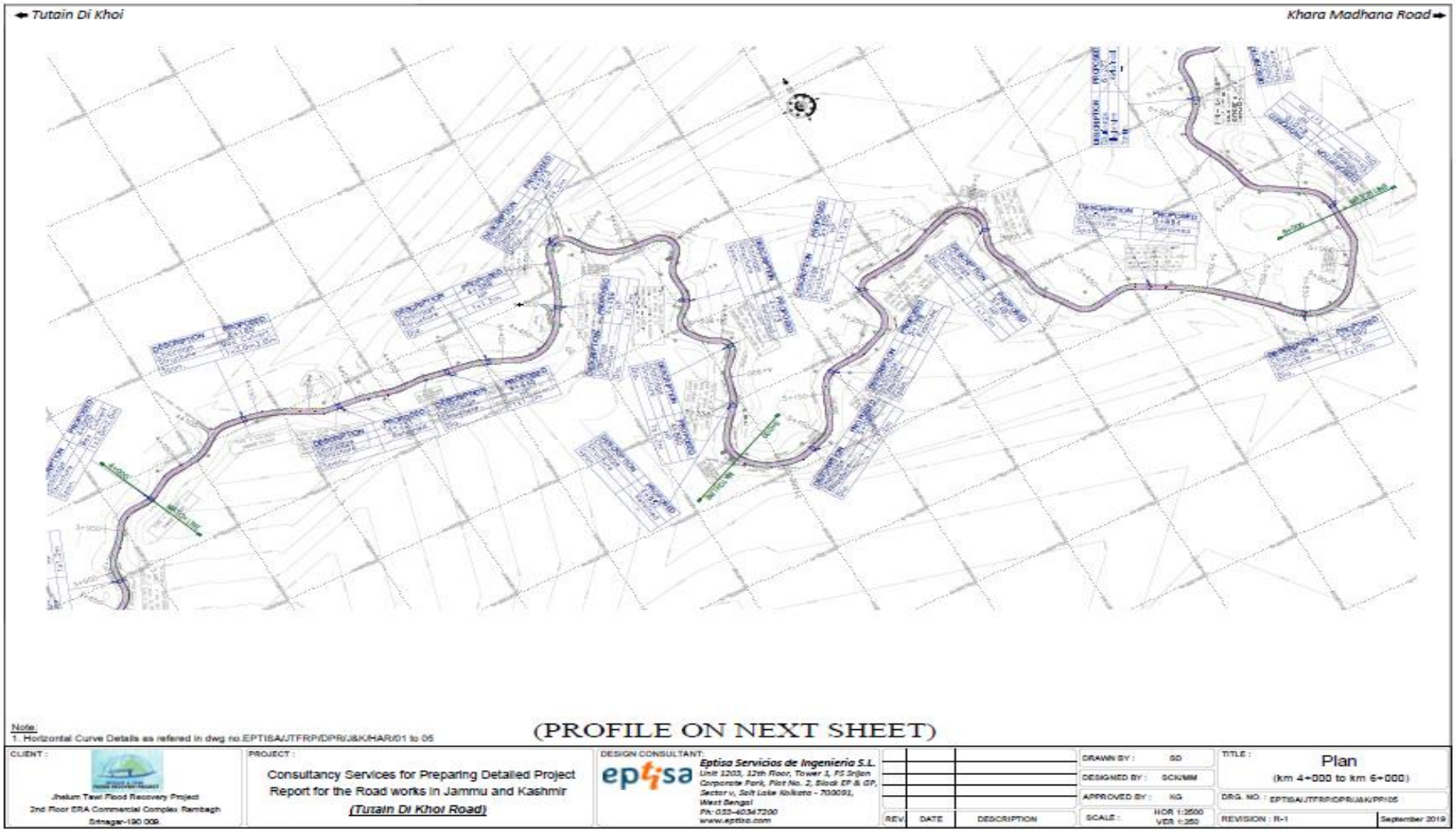
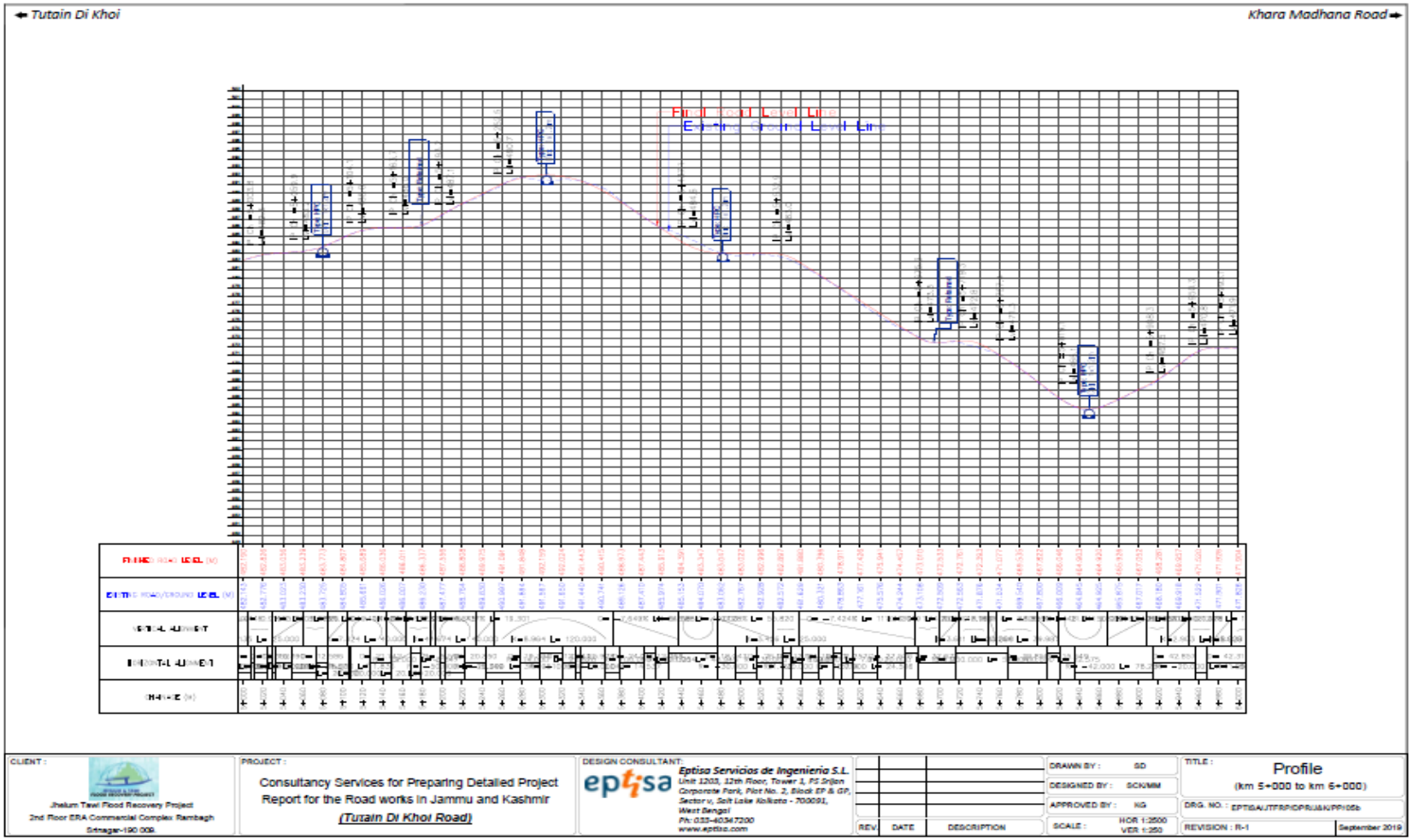

Tutain Di Khoi
Khara Madhana Road
Note
1. Horizontal Curve Details as refered in dwg no.EPTISA/JTFRP/DPR/J&K/HAR/01 to 05
(PROFILE ON NEXT SHEET)
CLIENT :
Jhelum Tawi Flood Recovery Project
2nd Floor ERA Commercial Complex Rambagh
Srinagar-190 009
PROJECT :
Consultancy Services for Preparing Detailed Project Report for the Road works in Jammu and Kashmir
(Tutain Di Khoi Road)
DESIGN CONSULTANT :
eptisa
Eptisa Servicios de Ingenieria S.L.
Unit 1203, 12th Floor, Tower 1, FS Srijan Corporate Park, Plot No. 2, Block EP & GP, Sector v, Salt Lake Kolkata - 700091, West Bengal
Ph: 033-40347200
www.eptisa.com
REV
DATE
DESCRIPTION
DRAWN BY : GD
DESIGNED BY : SCK/MM
APPROVED BY : NG
SCALE : HOR 1:2500 VER 1:250
TITLE :
Plan
(km 4+000 to km 6+000)
DRG. NO. : EPTISA/JTFRP/DPR/J&K/PH05
REVISION : R-1
September 2019

Plan & Profile Contd.



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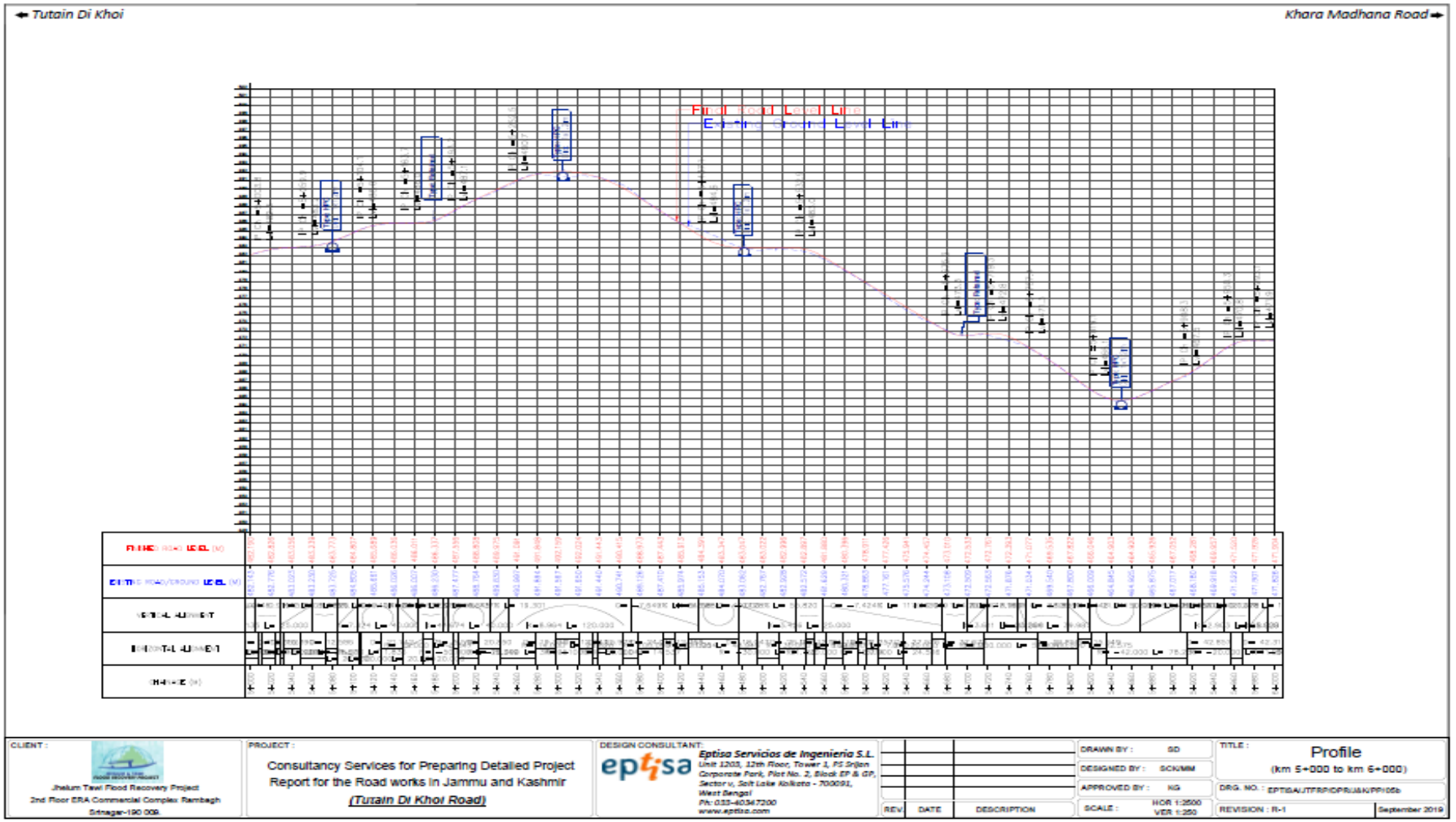

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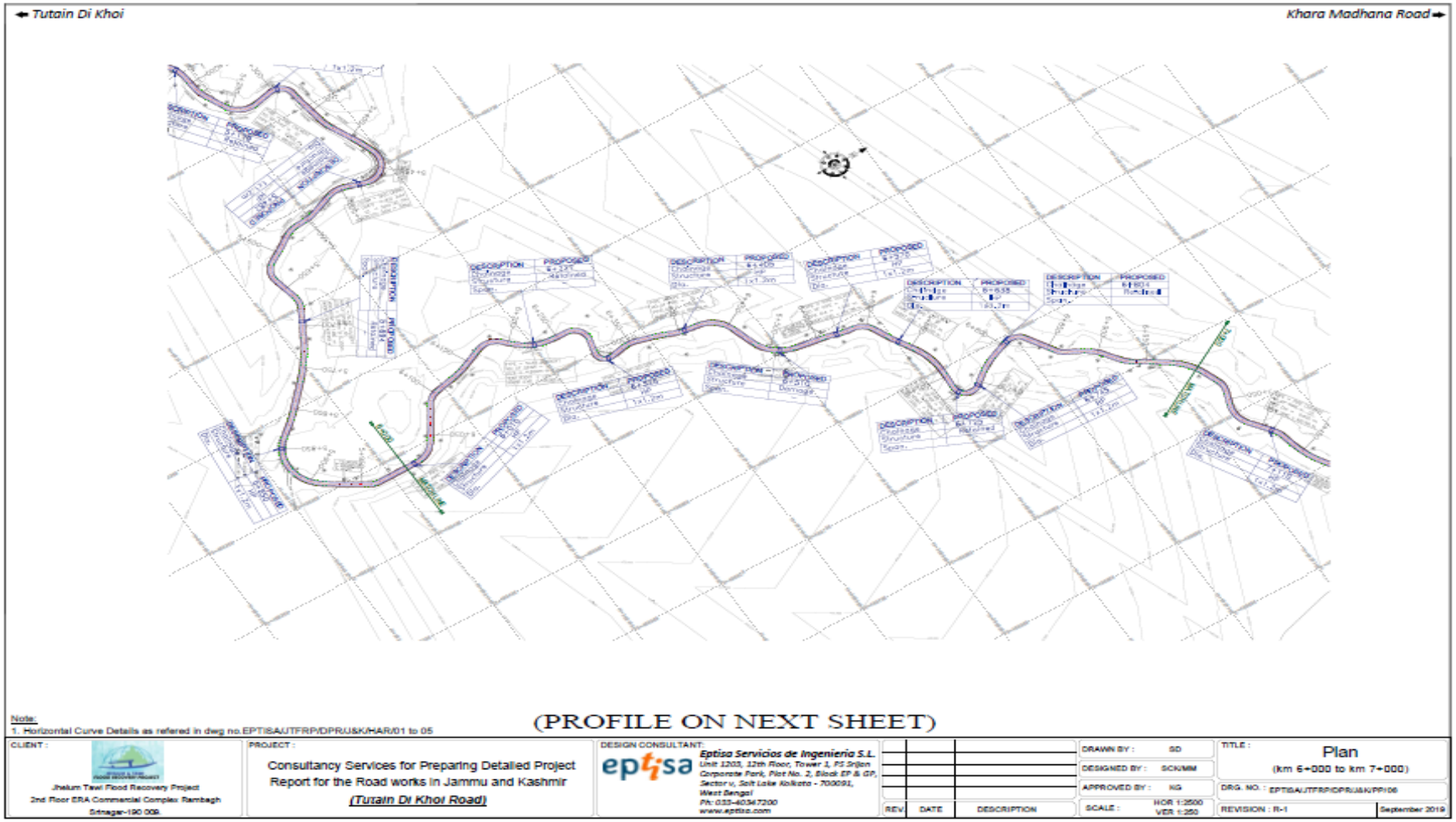
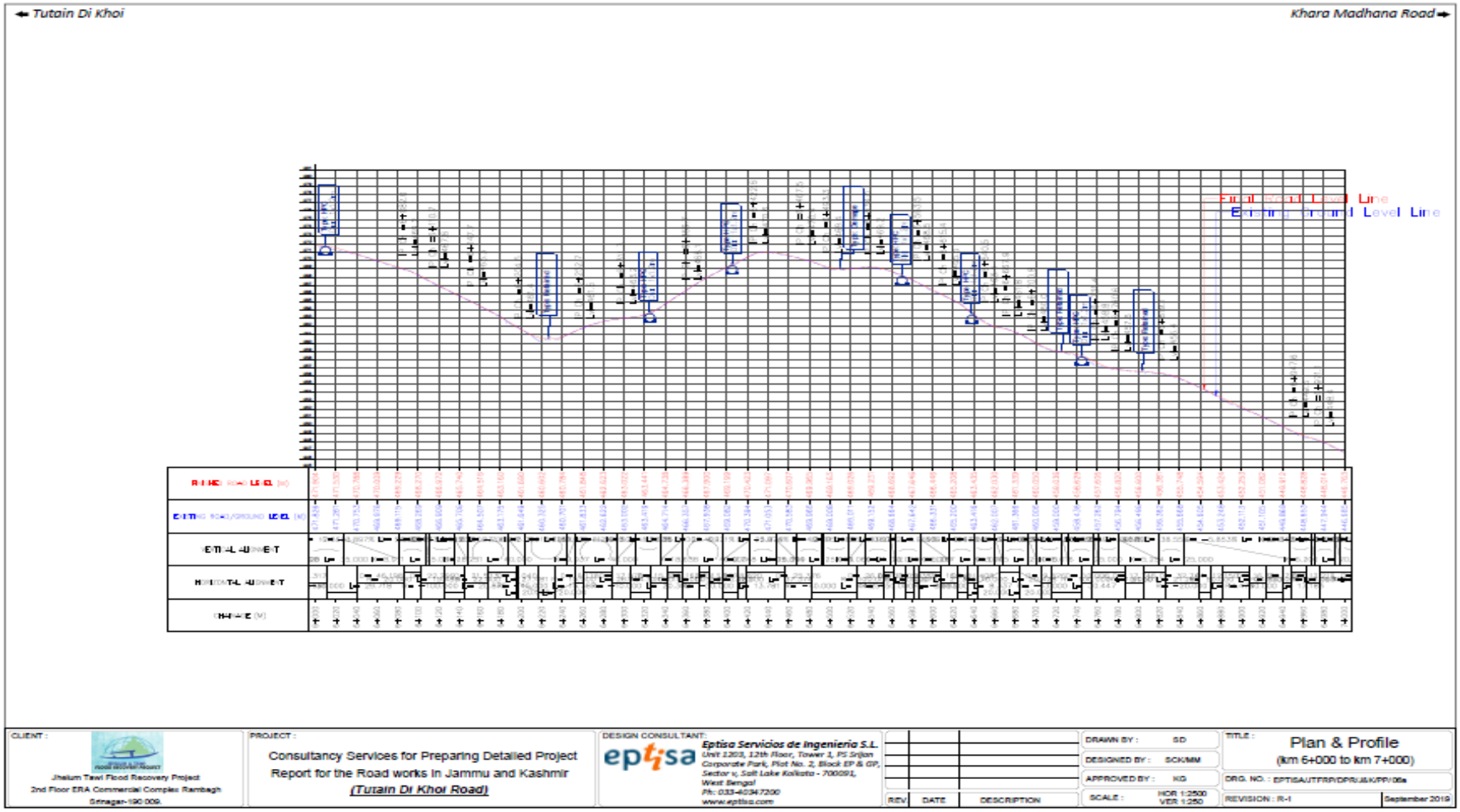
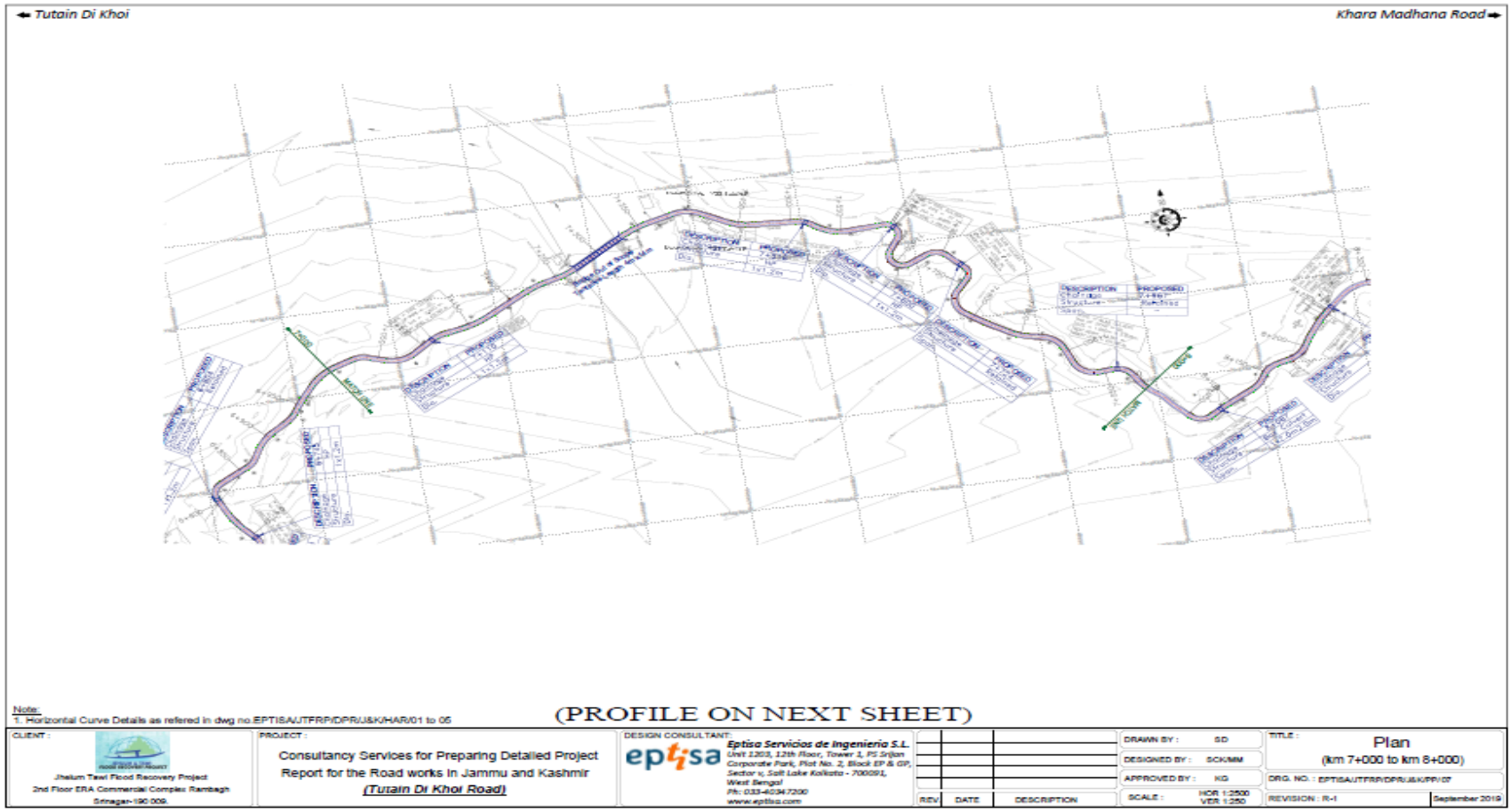


Plan & Profile Contd.


Tutain Di Khoi
Khara Madhana Road
Final Road Level Line
Existing Ground Level Line
CLIENT :
Jhelum Tawi Flood Recovery Project
2nd Floor ERA Commercial Complex Rambagh
Srinagar-190 009.
PROJECT :
Consultancy Services for Preparing Detailed Project Report for the Road works in Jammu and Kashmir
(Tutain Di Khoi Road)
DESIGN CONSULTANT:
eptisa
Eptisa Servicios de Ingenieria S.L.
Unit 1203, 12th Floor, Tower 1, PS Srijan Corporate Park, Plot No. 2, Block EP & GP, Sector v, Salt Lake Kolkata - 700091, West Bengal
Ph: 033-40347200
www.eptisa.com
REV
DATE
DESCRIPTION
DRAWN BY : SD
DESIGNED BY : SCK/MM
APPROVED BY : KG
SCALE : HOR 1:2500 VER 1:250
TITLE :
Plan & Profile
(km 6+000 to km 7+000)
DRG. NO. : EPTISA/JTFRP/DPR/JK/KP/106a
REVISION : R-1
September 2019

Plan & Profile Contd.



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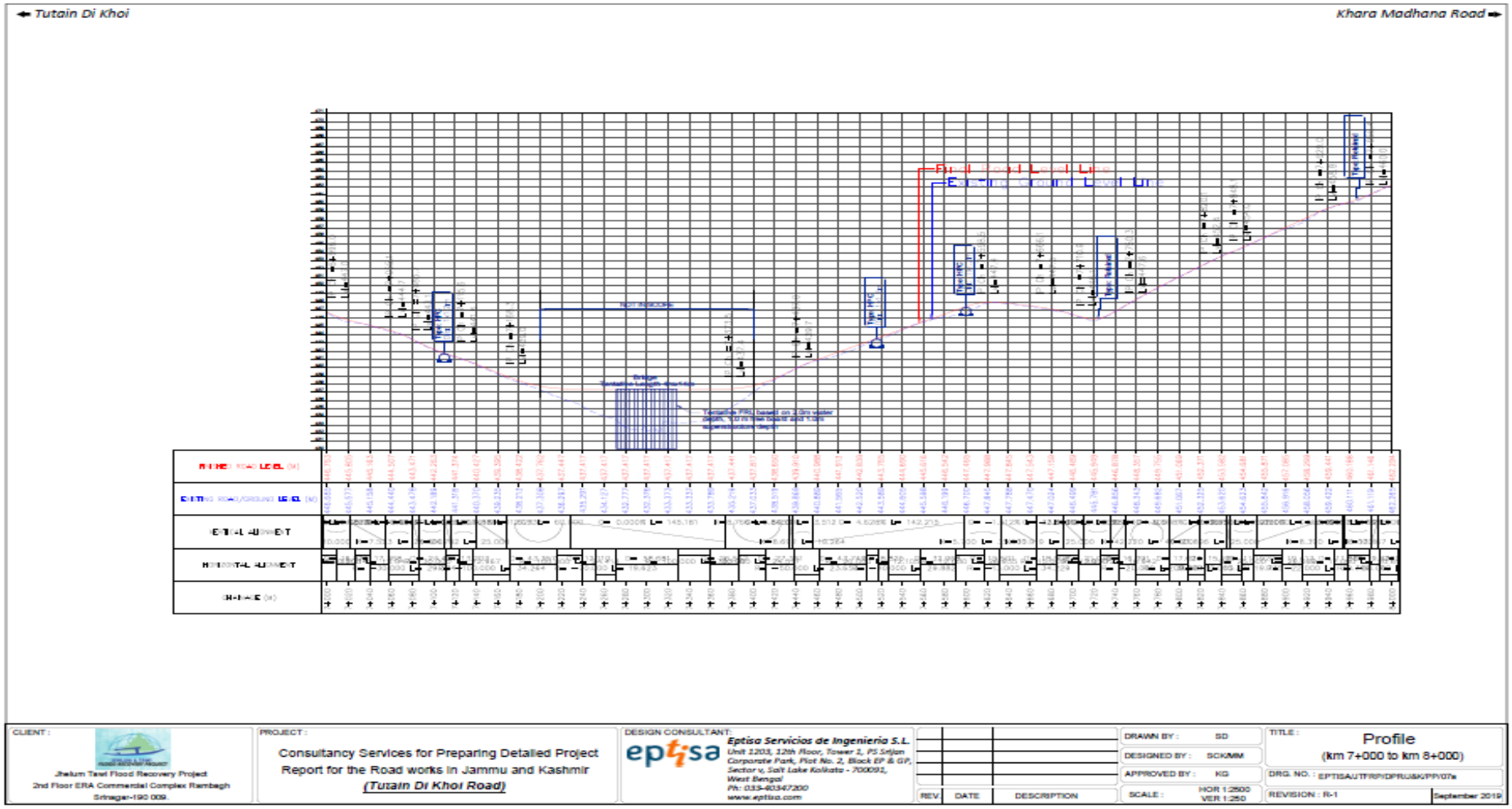

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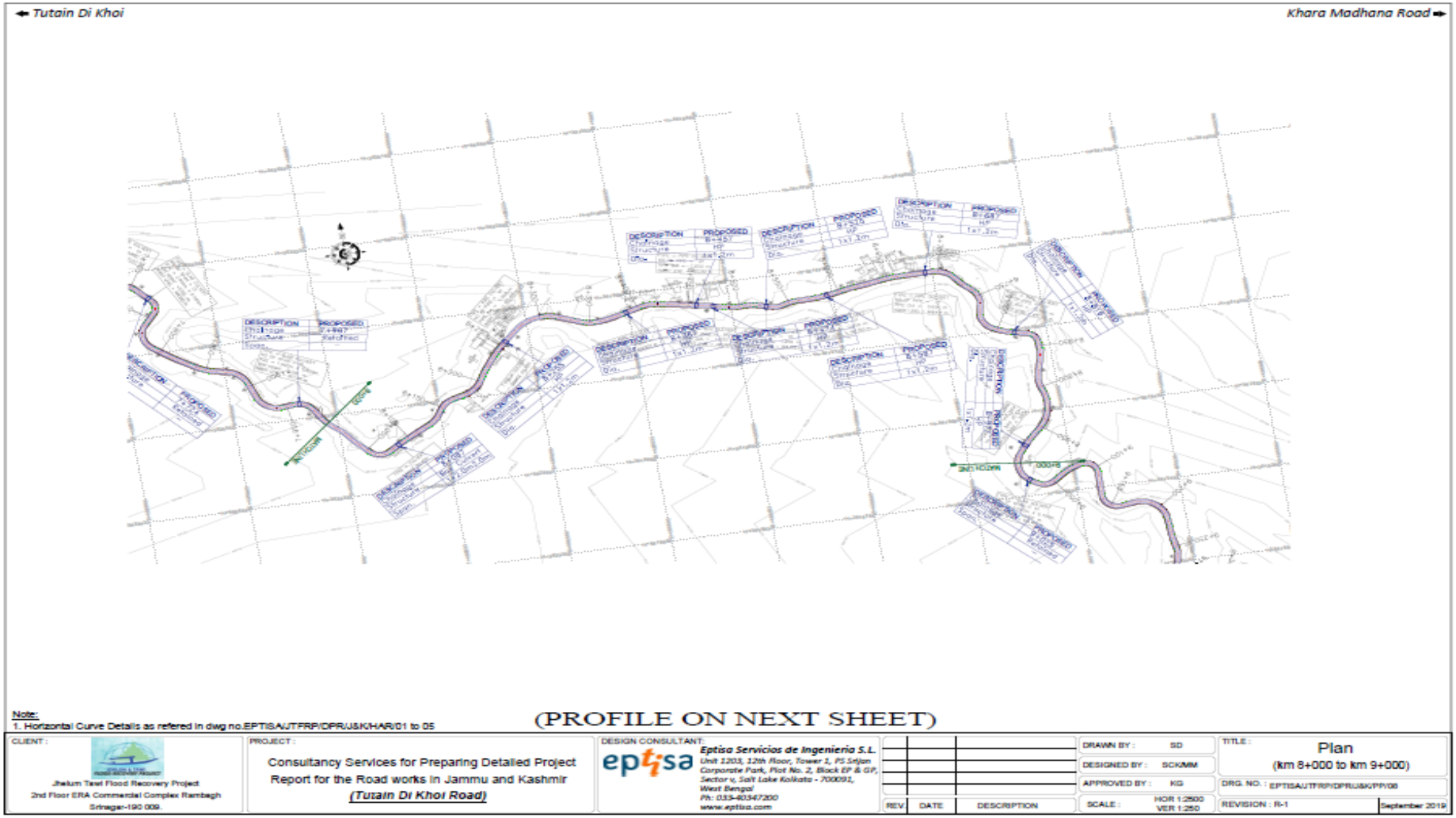

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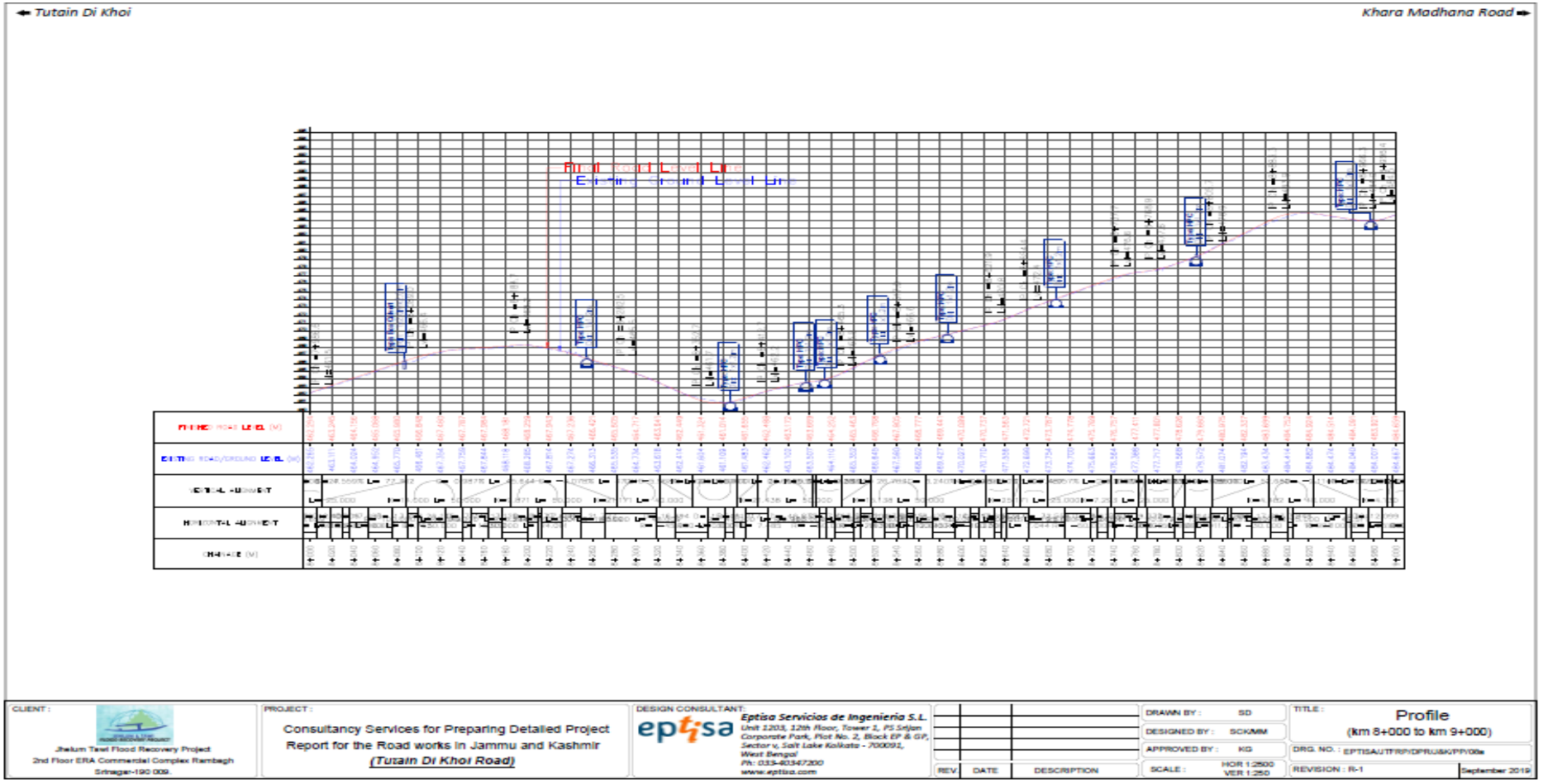
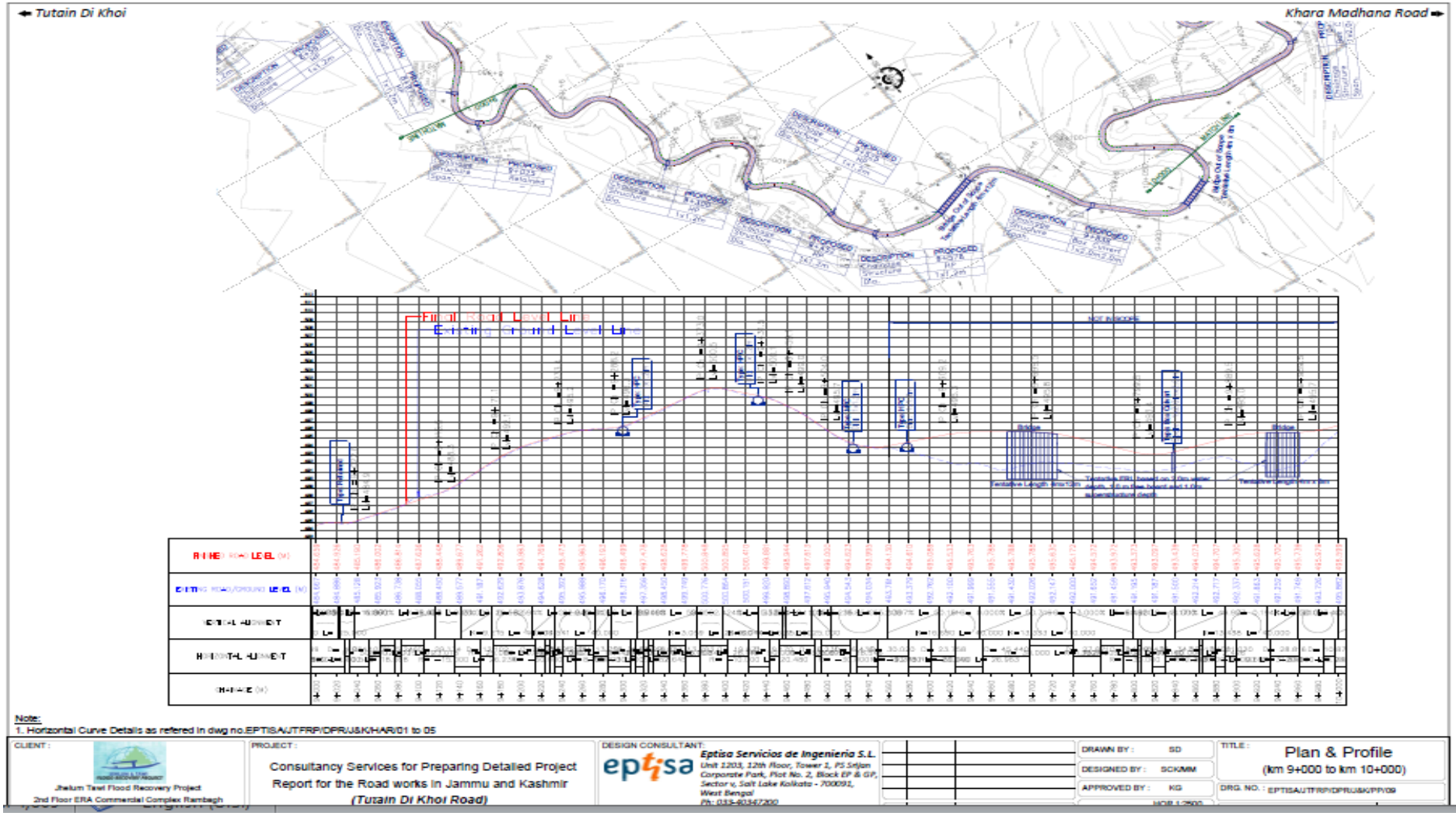


Plan & profile Contd.



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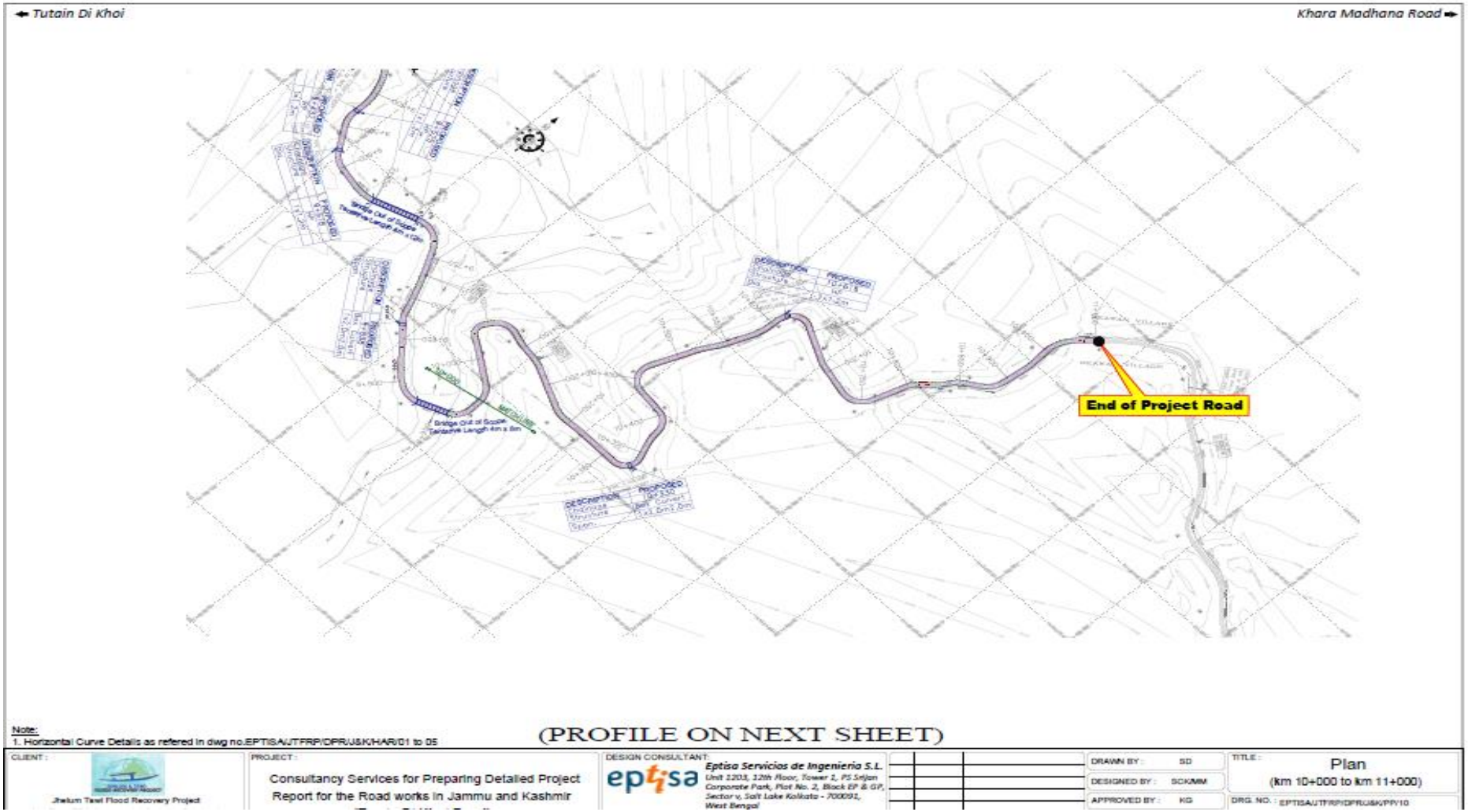
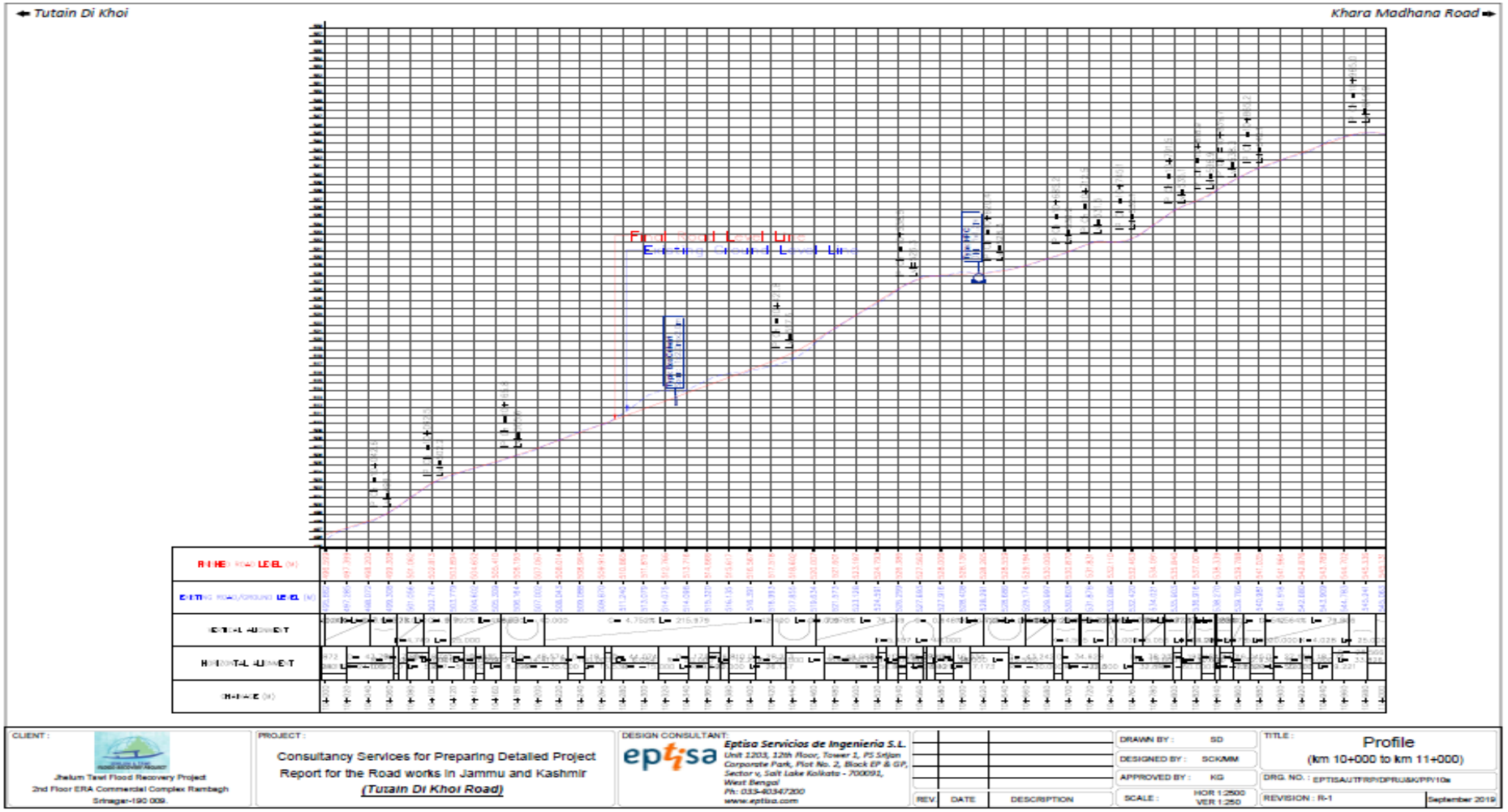


Plan & Profile Contd

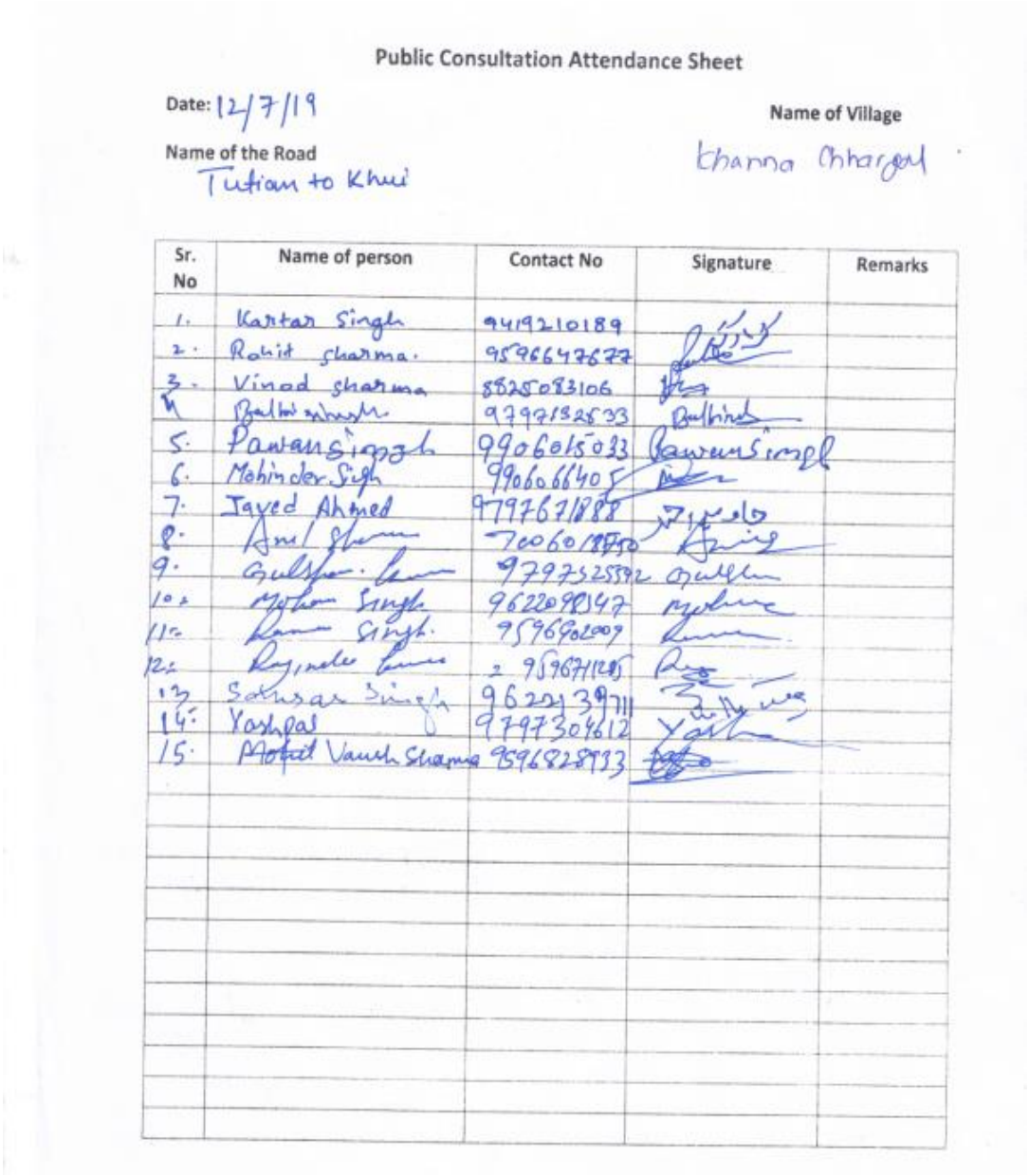


Annexure 7: Photograph of the Road

The project starts at Tutian Village At Ch 0.00 Km	The road conditions At Ch 0.200 Km
 Bushes close to the road At Ch 0.700 Km	 Passenger shelter at Ch 1.700 Km LHS
 Four legged junction at Ch 1.950 Km	 Water tap with tank at Ch 1.950 RHS
 Panchayat House at Ch 2.600 LHS	 Govt Hr. Sec. School, Khanna Chhargal at Ch.2.600 LHS

 Nallah at Ch 7.300 Km	 Poor road condition at Ch 9.700 Km

Annexure 8: Public Consultation (12.7.19/18.12.2020/19.12.2020)



Public Consultation Attendance Sheet

Date: 12/7/19

Name of Village: Khanna Khargal

Name of the Road: Tutian to Khui

Sr. No	Name of person	Contact No	Signature	Remarks
1.	Kartar Singh	9419210189		
2.	Rohit sharma.	9596647677		
3.	Vinod sharma	8825083106		
4.	Balbir singh.	9797182533		
5.	Pawan Singh	9906015033		
6.	Mohinder Sigh	9906066405		
7.	Jayed Ahmed	9797671888		
8.	Anil Sharma	7006018750		
9.	Gulshan.	9797325592		
10.	Mohan Singh	9622098147		
11.	Ram Singh.	9596902009		
12.	Rajinder Kumar	9596711285		
13.	Sohnsar Singh	9622139711		
14.	Yashpal	9797304612		
15.	Mohit Vaish Sharma	9596825933		

Signature Sheet

Name of Sub-Project: Improvement & Upgradation of Tutain Di Khui to Khada Mandana Road (11.00 km km) in District Jammu.

Date: 18/12/2020

Location: MODA (Bhoon) Kana chargal

Sl no.	Name	Gender	Mobile number	Address	Signature
1	Inab Din Mohd.	M	84930-37452	MODA (BHOON) KANA chargal	
2	Ghulam Rasool	M	705190-4300	"	
3	Kaseem Din	M	7051246250	"	
4	Khair din	M	94191-05549	"	
5	Rayid Hussain	M	9596907735		
6	Mohd Nassar	M	9149405166		
7	Lachu Ram	M			
8	Ramesh Chandar	M			
9	Mohd. Yunus	M	8492930894		
10	Sadeeq Hussain	M	7006081674		

Signature Sheet

Name of Sub-Project: Improvement & Upgradation of Tutain Di Khui to Khada Mandana Road (11.00 km km) in District Jammu

Date:

Location:

Sl no.	Name	Gender	Mobile number	Address	Signature
1	Sham Lal	M	9622758842		
2	Dev Raj				
3	Ashok Kumar	m	9906602336		
4	Karter Chand	m			

Signature Sheet

Name of Sub-Project: Improvement & Upgradation of Tutain Di Khui to Khada Mandana Road (11.00 km km) in District Jammu.

Date: 8/12/20.

Location: Sandi

Sl no.	Name	Gender	Mobile number	Address	Signature
	Inab Din Mohd	M.	84931-3742		[illegible]
	Sansar Chand	M		Sandi	
	Rashid Mohd	M.	Rashid Mohd 9622017091		
	Latif Ahmed (Panch)	M	7051109022	Sandi	[illegible]
	Saleem Ahmed	M	9596259798	"	[illegible]
	Subash	M	9797682646	"	[illegible]
	Parkash Chand	M		"	[illegible]
	Sartaj Mohd.	M.	9596824898	"	[illegible]
	Shah Mohd	M.	9622127320	"	Shah Mohd
	Pooran Chand	M	8492627022.	"	Puran chand
	Rashid Mohd	M	9622212297	"	Rashid Mohd.
	Puran Chand	M	6005299472	"	Puranchand
	Girdhari Lal Bhagat	M	9906093013		Bhagat

Signature Sheet

Name of Sub-Project: Improvement & Upgradation of Tutain Di Khui to Khada Mandana Road (11.00 km km) in District Jammu

Date:

Location: Sandhi

Sl no.	Name	Gender	Mobile number	Address	Signature
	Ishar Dass	M.	9797683213	"	
	Ratan Chand	M.		lekhaloor	
	Ali Mond	Male		Sandhi	
	Umar Farooq	M	9906018486	Sandhi	
	Ramesh Kumar	M	9596015045	Sandhi	
	Bihari Das	M	9596732053	Sandhi	
	Ravi Kumar	M	7889765326	Sandhi	
	Rashid Mond	M	9596040321	Sandhi	
	Rehman Malik	M	9596536247	Sandhi	

Panchayat Kanna Chargal (Upper)

A public meeting is held today at Kanna Chargal (Upper) on 19/12/20. The objective of the meeting is to involve people, to listen their issues and to share information pertaining to the project with people.

The meeting is attended by J.E. Mr. Rajeev Koul & Nodal officer (Social Safeguards) JK ERA, JTFRP.

Information shared by Project officers

1. Project Proposal & funding agency.
2. Requirement of land & Social safeguard policy of W.B.
3. Social Impact Assessment.
4. Grievance Redressal
5. Social Management Plan.

Issues highlighted during consultation by Sarpanch & local people.

1. Improvement of Curves.
2. Compensation in case land is required for the project.
3. Where EA take land, Retaining wall & breast wall construction is required at those locations to save remaining land from erosion.
4. Drainage construction along the road.
5. Culvert near Panchayat Ghar, the present pipe culvert is insufficient to cater the needs.

Sarpanch
Pyt. Kanna Chargal Upper
Jammu

⑤ height of the project roads or link roads coming from villages should be at same height so that there should not be any issue of access.

⑥ rain water should not enter the higher secondary school at Kana Chargal & access to Panchayat Ghar & HSS should not be adversely affected.

Signature of Sarpanch

Sarpanch
Pvt. Kanna Chargal Upper
Jammu

	Name	Address	Signature
1.	Kisho Devi	Chargal	
2.			
3.			
4.		Chargal.	
5.			
6.	BIMLA DEVI	"	
7.	Naresh Kumar	"	
8.	Mangal Dass	"	
9.	Balbir Singh (Lambardar)		
10.			

(12)

Public Consultations

Location: Kana chargal

Date: 19/12/20

Name	Gender	Address	Mob.No.	Sig.
① Kirpal Singh	M	Kana chargal	9419663662	
② Vinod Sharma	M	Kana Chargal	8825083106	
③ Mohinder Singh	M	Kana Chargal	9906066405	
④ Krishan Singh	M.	"	7051107633	
5 Somnath	M	"	9697662310	
⑥ Yashpal	M	"	9596871080	
⑦ Roopdal	M	"	9622313490	
⑧ Ganesh Kumar	M	"	9622396873	
⑨ Gautam Sharma	M	"		
⑩ Vishal Singh	M	"		
⑪ Jagdish chander	M	"	7051958289	
⑫ Kallan Singh	M	"	9906067687	

(2)

Name	Gender	Address	Mob. No.	Sig.
(13) Lavesh Kumar	M	"	9906337421	
(14) Pawan Singh	M	"	9906015033	
(15) Sanjay Sharma	M	"	9596734992	
(16) Bihari Lal	M	"	9596828934	

Photographs of Public Meeting

Public Consultation at Village Panjoa at Ch 7.300 Km (12.7.19)

Public Consultation meeting at Village Kanna Chargal Ch 2.600 Km (12.7.19)

Consultation on 18.12.2020 with Sarpanch and others
Location: Dhoon and Sandi

Public consultation (18.12.20)

Public consultation (18.12.20)

Public consultation (18.12.20)

Public consultation (18.12.20)

Consultation with Sarpanch on 19.12.20 and others
Location: Tutian Di Khui

Public consultation (19.12.20)

Public consultation (19.12.20)