

Project Title:-

Construction and Upgradation of Rural Road Connectivity Between Haflong and Umrangso under PMGSY in Dima Hasao District, Assam.

Prepared For:

Ministry of Development of North Eastern Region (MDoNER)
Government of India.

Implementing Agency:

Rural Works Department (RWD), Government of Arunachal Pradesh.

Project Location:

Tawang District, Arunachal Pradesh, India.

Submitted By:

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Chapter 2- Executive Summary

2.1 Project Background

Tawang district, located in the remote hilly region of Arunachal Pradesh near the Indo-China border, faces extreme geographical challenges such as steep terrain, snow blockage, and frequent landslides. Limited road accessibility restricts access to healthcare, education, markets, and emergency services, adversely affecting local communities and socio-economic growth.

2.2 Need of the Project

The existing rural road network is narrow, weather-damaged, and unsuitable for all-season transportation. The lack of proper connectivity isolates villages, increases transportation costs, and negatively impacts tourism, trade, and public service delivery. Improved infrastructure is critical to enhance mobility, economic development, and disaster readiness.

2.3 Key Objectives

- To construct and upgrade 18.6 km of all-weather rural road in Tawang district
- To improve access to markets, schools, healthcare centers, and emergency services
- To enhance trade opportunities, especially for agriculture and tourism
- To strengthen regional connectivity in strategically important border areas

2.4 Target Beneficiaries

Category	Beneficiary Group	Estimated Population
Local Residents	Village Communities	6,200
Farmers & Traders	Agricultural / livestock producers	1,800
Education/Health	School students & patients	2,350
Tourism Stakeholders	Guides, homestays, local vendors	950

2.5 Estimated Cost and Funding

- Total Cost: ₹18.54 Crores
- Funding Source: NESIDS + PMGSY + State Government Share
- Contingency: 5% of project limit
- Administrative Allocation: 1.5% of total budget

2.6 Implementation Duration

Phase	Duration
Planning & Survey	2 months
Construction & Stabilization	8 months
Inspection & Quality Check	1 month
Final Handover & Reporting	1 month

- **Total Implementation Time:** 12 months

2.7 Expected Outcomes

- ✓ Year-round connectivity to major villages
- ✓ Reduced travel time by 45%
- ✓ Lower transport cost by 32%
- ✓ Improved access to hospitals, schools, and markets
- ✓ Boost in local trade, eco-tourism, and employment

2.8 Sustainability Plan

- Maintenance under Rural Works Department (RWD)
- Use of reinforced concrete in snow-prone areas
- Community monitoring through village development committees
- Annual inspection with GIS mapping and damage tracking

2.9 Final Project Summary

The proposed DPR focuses on constructing and upgrading 18.6 km of rural road infrastructure to improve accessibility, economic development, and social well-being in Tawang district, Arunachal Pradesh. The project aligns with MDoNER, PMGSY, and SDG principles, ensuring long-term sustainability, safety, and regional empowerment. It is technically feasible, economically viable, and socially impactful.

Chapter 3- Background & Need Assessment

3.1 Geographic Overview of the Region

Tawang district is located in the north-western part of Arunachal Pradesh, bordering Bhutan and China. It lies at an altitude of 6,000 to 10,000 feet above sea level and experiences harsh climatic conditions including heavy snowfall, fog, and landslides. The region is known for its strategic military importance, tourism potential, and cultural heritage, but faces major challenges in physical connectivity due to rugged terrain and scattered settlements.

3.2 Socio-Economic Profile

The population of Tawang district is predominantly composed of tribal communities, including Monpa and Sherdukpen tribes. The economy is mainly dependent on agriculture, small trade, animal husbandry, government services, and local tourism. However, due to limited road connectivity, access to markets, health centers, and educational institutions is severely restricted. Seasonal road closures disrupt economic activities, leading to income loss and increased isolation.

3.3 Existing Transportation Challenges

- Lack of all-weather motorable roads
- Frequent road blockages due to landslides and snowfall
- Damage to existing roads (cracks, erosion, poor drainage)
- No proper roadside safety infrastructure
- Inadequate access for ambulances, school transport, and military logistics

These challenges hinder local development, affect healthcare delivery, and limit emergency response time during natural disasters.

3.4 Importance of Project in North Eastern Region (NER)

This project holds high priority due to the following reasons:

Key Area	Importance
Border connectivity	Supports military and border security operations
Local development	Boosts agriculture, handicrafts, and tourism
Social welfare	Improves healthcare, school access, and job opportunities
Infrastructure growth	Aligns with MDoNER & PMGSY schemes
Disaster response	Helps emergency evacuation and supplies

The project aligns with the **North-East Special Infrastructure Development Scheme (NESIDS)**, **PMGSY** rural connectivity program, and Vision 2047 for regional infrastructure strengthening.

3.5 Alignment with State & National Priorities

Priority Area	Alignment
PMGSY	Rural road connectivity and quality infrastructure
MDoNER	Holistic development of North-East India
Atmanirbhar Bharat	Improved logistics for local trade and crafts
SDG Goal 9	Resilient infrastructure and innovation
SDG Goal 11	Sustainable and inclusive settlements
Border Area Development Programme	Strengthening strategic connectivity

3.6 Need Assessment Summary (In Simple Words)

- People can't reach hospitals quickly due to poor roads
- Farmers can't sell their products on time
- Children cannot attend school during rainy and snowy seasons

Chapter 4- Problem Statement

4.1 Existing Connectivity Issues

Tawang district faces major connectivity challenges due to its mountainous terrain, frequent landslides, heavy snowfall, and poorly maintained rural roads. Many road stretches become unsafe, muddy, or non-motorable during rainy and winter seasons. Narrow roads, lack of drainage, slope protection, and damaged surfaces make travel difficult and risky for public transport, school buses, ambulances, and emergency vehicles. Due to these conditions, villagers face delays and restrictions in accessing hospitals, schools, markets, and government services.

4.2 Social and Economic Impact

The lack of proper road infrastructure has affected local livelihoods and development. Farmers struggle to transport their agricultural produce and livestock to nearby markets, leading to income loss. Students face difficulties in reaching schools, especially during adverse weather conditions. Patients are unable to reach healthcare facilities in emergency situations. Tourism, which can be a major source of employment in Tawang, is also negatively impacted because tourists avoid visiting areas with bad road conditions. As a result, local growth and opportunities remain limited.

4.3 Need for Immediate Infrastructure Improvement

Due to continuous road damage, poor maintenance, and lack of all-weather rural road access, the region remains isolated for several months each year. This affects education, healthcare, trade, and communication, making development slow and uneven. Therefore, there is an urgent need to construct and upgrade rural road infrastructure using proper engineering methods, drainage systems, slope protection, and all-weather materials to improve accessibility, support economic progress, and reduce social isolation.

Chapter 5- Objectives of the Project

5.1 Primary Objective

The primary objective of this project is to construct and upgrade all-weather rural road connectivity in Tawang district, Arunachal Pradesh, to ensure safe, reliable, and year-round access for local communities. The project aims to improve mobility, reduce isolation, and support the overall socio-economic development of the region.

5.2 Specific Objectives

- To improve access to essential services such as hospitals, schools, markets, and government offices.
- To reduce travel time and transportation costs for villagers, farmers, students, and local traders.
- To enhance disaster response, emergency services, and accessibility during medical and climatic emergencies.
- To support local livelihoods by enabling better movement of agricultural products, handicrafts, and tourism activities.
- To contribute to long-term regional development by strengthening rural infrastructure in alignment with state and national schemes.

5.3 Long-Term Development Goal

The long-term goal is to develop a resilient and sustainable road network that enables economic growth, encourages social inclusion, and improves the quality of life for the people of Tawang district. By improving rural connectivity, the project supports government initiatives such as PMGSY, MDoNER, NESIDS, and Vision 2047, promoting inclusive development and regional integration.

Chapter 6- Scope of the Project

6.1 Scope of Work

The scope of this project includes the construction and upgradation of approximately 18.6 km of rural road in selected villages of Tawang district. The work will include widening of existing road stretches, improvement of road surface using all-weather materials, construction of retaining walls, side drains, culverts, slope protection, and installation of safety signs. The project will also include proper hill cutting, stabilization, provision of land safety measures, and ensuring adequate drainage to prevent erosion and road damage during monsoon and winter seasons.

6.2 Areas Covered by the Project

The project will cover major villages and hamlets in Tawang district, including Lumla, Mukto, Jang, and nearby rural settlements. The road network will connect these villages to the main district center, health facilities, schools, local markets, and administrative offices. It will provide essential links for public services, emergency support, and economic activities such as agriculture, trade, and tourism.

Chapter 7- Project Description / Proposed Solution

7.1 Overview of the Project Work

The project involves the construction and upgradation of approximately 18.6 km of rural road network in Tawang district, Arunachal Pradesh. The proposed work includes widening existing damaged stretches, laying new bituminous and concrete pavement in snow-prone areas, constructing drainage systems, building retaining walls, and improving roadside safety. The design of the road is prepared as per Indian Road Congress (IRC) standards and adapted to local geographical and climatic conditions to ensure long-term durability and safety.

7.2 Key Engineering Components

The proposed solution focuses on improving road strength, drainage, and slope protection. Proper hill cutting and slope stabilization will be carried out to prevent landslides. Retaining walls and breast walls will be constructed to protect road edges, while culverts and cross-drainage structures will help manage rainwater flow and prevent erosion. Snow-affected stretches will be reinforced using concrete pavement for better resistance. Basic road safety features such as speed breakers, signage boards, kilometer stones, and crash barriers will be installed along critical curves and steep slopes.

7.3 Implementation Approach

The implementation will be carried out in phases including topographical survey, soil testing, preparation of detailed layout, material procurement, construction, and quality monitoring. The site work will be executed by the Rural Works Department (RWD) with technical guidance from state engineers and local contractors. Community participation will be encouraged for monitoring, reporting issues, and ensuring sustainability. The project will strictly follow environmental norms, safety standards, and government quality checks to ensure proper execution.

Chapter 9- Project Timeline

The project will be implemented in four major phases:

1. **Planning and Site Survey (Month 1–2)**

Topographical survey, soil testing, site inspections, preparation of detailed drawings, cost estimation, and finalization of materials and equipment. Local consultations with village representatives will also take place during this stage.

2. **Construction and Road Development (Month 3–10)**

This phase includes hill cutting, widening existing roads, foundation works, pavement laying, installation of drainage structures, retaining walls, culverts, slope protection, and safety infrastructure such as crash barriers and signage boards.

3. **Quality Inspection and Performance Testing (Month 11)**

After construction completion, the road will undergo multiple quality inspections including load testing, drainage assessment, safety checks, and post-construction environmental review.

4. **Final Review, Reporting, and Handover (Month 12)**

Submission of final project completion report, documentation, site photography, and official handover to the Rural Works Department (RWD) and local authorities. Community awareness programs will also be conducted for maintenance and monitoring.

9.3 Monitoring During Implementation

Monthly review meetings will be conducted to track progress, resolve issues, and ensure compliance with engineering and safety standards. Progress will be recorded through photographs, field reports, and site inspections.

Chapter 9- Risk Analysis

12.1 Technical and Construction Risks

The Tawang region experiences frequent landslides, heavy rainfall, and snowfall, which can cause delays during construction and affect road stability. Poor soil conditions and steep terrain increase the risk of erosion and road damage. To address this, proper soil testing, slope protection, retaining walls, and drainage systems will be implemented. The use of weather-resistant materials and periodic engineering inspections will help maintain long-term durability.

12.2 Environmental and Social Risks

Road construction in hilly areas may disturb local vegetation, water streams, and natural slopes. In some stretches, temporary land use or small-scale clearance may be required, which may affect local livelihoods. To mitigate these risks, the project will follow government environmental guidelines, minimize land disturbance, and ensure proper restoration of affected areas. Local communities will be consulted regularly to share updates, gather feedback, and avoid any social conflicts.

12.3 Operational and Maintenance Risks

After completion, the road may face damage due to weather conditions, heavy vehicle pressure, or lack of timely maintenance. Continuous monitoring is required to prevent cracks, drainage blockages, and slope sliding. To reduce these risks, a routine maintenance plan will be followed under the Rural Works Department (RWD), along with community participation for reporting damage. Sign boards, safety barriers, and proper road markings will also help reduce accident risks.

Chapter 9- Cost Estimation

10.1 Basis of Cost Estimation

The total cost of the project has been estimated based on site survey, local material availability, transportation difficulty, hill-cutting requirement, climatic conditions, and government-approved Schedule of Rates (SOR) for Arunachal Pradesh (2024 edition). The estimation includes civil work cost, structural work, slope protection, drainage, labor, machinery, safety installations, and administrative expenses. Due to the hilly terrain, additional cost has been considered for retaining walls, soil stabilization, and transportation of materials from nearby towns.

10.2 Major Cost Components

The project cost has been divided into major sections such as earthwork, pavement work, drainage structures, retaining walls, slope protection, road safety measures, and administrative expenses. Machinery deployment for hill cutting, excavation, and road laying has been included. Since Tawang is a remote region, cost of transporting materials such as cement, aggregates, and steel is higher compared to other areas. This is an important factor considered in the estimation.

10.3 Financial Risk and Budget Buffering

Road construction in hilly areas is financially sensitive due to unpredictable weather, possible landslides, and sudden damage during construction. To avoid budget shortage and interruption, a financial buffer of 5% contingency has been included to cover unexpected expenses like material escalation, rework, and emergency stabilization. This buffer will help prevent financial risks and support smooth execution of the project.

10.4 Long-Term Financial Sustainability

After the project is completed, the Rural Works Department (RWD) will be responsible for annual maintenance. The estimated maintenance cost has been kept minimal because proper slope protection, drainage, and pavement strengthening are already included in the initial design. This

reduces long-term financial burden and helps prevent damage-related risks such as erosion, cracks, and surface failure.

10.5 Importance of Cost Estimation in Risk Mitigation

Accurate cost estimation helps to identify financial risks before project execution. If cost estimation is weak, it can result in incomplete work, poor quality materials, delays, or structural failures. By planning the budget properly at this stage, risks related to construction delay, design change, environmental issues, material shortages, and slope failure can all be controlled better. Therefore, cost estimation is not just a financial requirement — it is a major risk management tool.