



The Mizoram Gazette

EXTRA ORDINARY

Published by Authority

RNI No. 27009/1973

Postal Regn. No. NE-313(MZ) 2006-2008

VOL - XLVI Aizawl, Friday 7.7.2017 Asadha 16, S.E. 1939, Issue No. 295

NOTIFICATION

No.H.11018/8/2015-PWD(E), the 16th June, 2017. In the interest of public service and as approved by the Meeting of Council of Ministers held on 8th June, 2017, the Governor of Mizoram is pleased to notify 'The Mizoram Rural Roads Maintenance Policy, 2017' on **Sixteenth of June, Two Thousand Seventeen (i.e. 16th June, 2017).**

Lalram Thanga,
Principal Secretary to the Govt. of Mizoram,
Public Works Department.

MIZORAM RURAL ROADS MAINTENANCE POLICY - 2017

1. Preamble

Road networks are fundamental requirement for providing access to habitations in rural areas. With the launch of Pradhan Mantri Gram Sadak Yojana (PMGSY) on December 25, 2000, a coherent and standard policy for rural roads in the country was established and its now being under implementation by the States. Road connectivity has contributed medical facilities thereby making rural economy vibrant.

This huge asset thus created needs a tremendous effort to maintain in good shape. Poor and inadequate maintenance of roads is resulting in disruption of traffic, hampering economic growth and increased maintenance cost of vehicles. For optimum utilization of road assets, timely maintenance is a must. The principal objectives of road maintenance are to keep roads open all the time, reduce rate of deterioration, extend life of the road network and improve the speed and frequency of public transport services. Maintenance for rural roads also generates local employment opportunities and additional market prospects for the local construction industry. Maintenance of rural roads provides and economic rate of return which is often in the range of 25 to 30 percent. Maintenance and upkeep of roads requires huge amount of investment for the Government.

Any inadequacy in funding and implementation on the ground will result in the deterioration of the assets created. The state is committed towards ensuring adequate funds for maintenance of the entire rural road network within its jurisdiction. Under no circumstance shall maintenance be regarded as a secondary issue.

The Govt. of Mizoram intends to adopt a rural roads maintenance policy for the planning & execution of maintenance of rural roads under its jurisdiction and shall be called as "Mizoram Rural Roads Maintenance Policy 2017".

2. Purpose :

The purpose of the policy is to ensure that the planning, programming, directing and reporting of routine maintenance, periodic renewal and emergency maintenance operations are carried out consistently state-wide to keep the road network at an appropriate level of comfort and safety to the road users.

3. Objectives :

The roads that fails, crack, get deformed or disintegrate present a danger to road users. In addition, they impose the wear and tear on vehicles, increased consumption of POL, delays in travel and effect other various economic costs. There is a need for the concerned agencies and organisations to repair and restore the roads in a timely and systematic manner.

The objectives of the policy are to enable-

- (a) Adequate, timely and sound maintenance of roads to provide safe, convenient and efficient access and also to reduce vehicle operating cost and travel time and improve the speed and frequency of public transport service;
- (b) Judicious and optimal utilization of available funds and resources for the maintenance and repair of roads so as to keep the road open, reduce rate of deterioration, and extend life of the road network;
- (c) Efficient maintenance by using appropriate technology. State of the Art and effective repair treatments including by inducting new technology and equipment in road repair and maintenance works;
- (d) Capacity building and organizational development of the manpower and agencies engaged in road construction for efficient discharge of road development & maintenance function.

4. Implementation : Public Works Department, Gov't or Mizoram shall be responsible for implementation of the Policy through the Mizoram Road Fund Board and as per the Rules and Acts. Apart from existing procedures in carrying out Road Maintenance Works. PWD may adopt various modalities including Performance Based Maintenance Contract, Public-Private Partnership and Concession Agreement for various kinds of arrangements including incorporation of tolls and distance based rates etc. to be paid by road users etc.

5. Evaluation & Prioritization of roads :

- (i) The PWD shall carry out evaluation of the existing road pavement and other structures in terms of its physical condition, structural capacity, roughness Road Condition Survey. Such survey shall assess type, magnitude, location of the distressed roads and other physical parameters like roughness, skid resistance etc. It shall evaluate Road Condition Index (RCI) and take up prioritization of roads on the basis of the RCI.
- (ii) At least two condition surveys, one before and the other after the monsoon, should be conducted on each stretch of the road every year. The data collected should be recorded methodically road kilometre-wise.
- (iii) Traffic data on each road should be collected as per the procedure to be laid down by PWD. The traffic data should show classification of motorised, non-motorised, commercial vehicles etc. The traffic volume data should be used as an input in prioritization of maintenance works.
- (iv) The PWD shall identify different types of road maintenance activities and prepare a manual of technical practices to carry out the same.
- (v) The planning of various maintenance operations will be co-related and looked upon as a total system rather than each activity being considered in isolation. Based on the condition evaluation, the causes for various defects observed should be examined in detail and a decision taken whether to initiate a particular maintenance activity.
- (iv) The PWD shall establish a guiding rules for prioritization of road maintenance works, taking into account the evaluation carried out under this Policy.

6. Classification of Maintenance Operations :

The intervention and rectification standards for various maintenance activities shall be finalised for different categories of roads. Maintenance operations may be classified in four groups as under:

- (i) ***Routine repair/maintenance :*** includes work items such as filling of potholes and repair of cracks, cleaning of side drains and culverts, clearing of roadside bushes/vegetation, cleaning & repair of road signs and removal of petty landslips by the maintenance gang/ staff almost round the year.
- (ii) ***Periodic maintenance :*** is a more extensive maintenance operations such as renewal of road surface/re-surfacing and or applying a seal coat and major repair to cross-drainage (C.D) works to be done periodically every four to five years.
- (iii) ***Special Repairs :*** involves major restoration & upgradation of the pavement through reconstruction or application of overlays, clearing of major landslides, repair/re-construction of retaining/breast walls, damaged drains and that of road damaged due to laying of public services utilities.
- (iv) ***Emergency repair/maintenance :*** refers to emergency conditions like collapse or severe damage of road or any other matter emergent in nature. It includes reconstruction/ repair of CD works damaged due to floods, storm water and earthquakes and reconstruction/ repair of road sections damaged due to washouts, floods, landslides and earthquakes.

7. Norms for Maintenance of Road :

The State Government shall constitute a Committee comprising of senior level officers of technical, administrative and finance section of the state PWD to work out and frame road maintenance norms annually

which should cover routine, periodic, emergency and special repairs/maintenance. The Committee may comprise of :

- | | | | |
|-----|--|---|------------------|
| (1) | Secretary, PWD | - | Chairman |
| (2) | Engineer-in-Chief, PWD | - | Vice-Chairman |
| (3) | Chief Engineer, Planning, PWD | - | Member-Secretary |
| (4) | Chief Engineer, Roads, PWD | - | Member |
| (5) | Chief Engineer, Highways, PWD | - | Member |
| (6) | Chief Engineer, Buildings, PWD | - | Member |
| (7) | Joint Director of Accounts, PWD | - | Member |
| (8) | Consultants/other Dept. or organisation representatives as Member (if found necessary) | | |

8. Annual Road Maintenance Operation Plan :

The Mizoram Road Fund Board or the Committee formed to work our maintenance norms shall prepare Annual Road Maintenance Operation Plan (ARMOP) covering all State Roads with due attention to management of the whole programme based on availability of fund for road maintenance. The guidance note on Mizoram Fund Board is attached as ANNEXURE-I. The plan shall be formulated and finalised by the end of April every year for implementation within the financial year. It will identify the maintenance works on the State road network for different classes of roads including roads within urban areas within the jurisdiction of PWD taking into account the conditions of roads, bridges, culverts, road signs and other road appurtenances.

9. Environmental Sustainability :

In the process of road maintenance works, PWD shall make the best possible efforts to implement technologies that are environmentally friendly, have a low carbon footprint and provide access to all sections of society including the disabled in a safe manner.

10. Monitoring, Testing and Capacity Building :

- 10.1. The State PWD shall institute a simplified Asset Management System to prepare Annual Maintenance Plan based on scientific condition assessment of the road network.
- 10.2. The PWD shall regularly carry out technical and financial audit of sample stretches subjected to maintenance.
- 10.3. The condition of road shall be captured through photographs and videography and such detail shall be upladed suitable on the government website so that they are in public domain.
- 10.4. Calendar of training programmes for its technical officers at various levels shall be formulated to enhance their skill in planning, procurement and supervision of maintenance works of roads. Outreach programmes in enhancing the training for contractors in implementation of maintenance works shall also be provided.
- 10.5. The PWD shall identify the cost effective technologies in maintenance operations. It shall undertake road user satisfaction surveys on its rural road network and put the results on website.
- 10.6. The PWD shall adopt Maintenance Management System(MMS) developed in house for management of maintenance of rural roads and shall conduct road condition survey using Pavement Surface Inspection Rating Procedure (PSIRP) and identify the needs for renewal priority of the pavement surface.

11. Budgeting and Financial Resources :

- 11.1. The Mizoram Government shall ensure allocation of adequate and timely availability of funds needed for maintenance of State Roads as per Annual Road Maintenance Operation Plan (ARMOP) prepared by the Mizoram Road Fund Board or PWD. The Executive Committee of the said Board shall chalk out and recommend the annual allocation of fund for different categories or roads with reasonable share for rural roads.

- 11.2. The State Government shall explore avenues for mobilizing additional fund for maintenance of roads by way of road transport related tax-cess.
- 11.3. Based on the data supporting the road condition, the annual renewal programme to be included in the ARMOP will be drawn up by the Board well in advance of the implementation period. A schedule of the maintenance operation to be taken up under the ARMOP should also be prepared. The ARMOP and the implementation schedule should be approved by the Board and sanction of available financial resources will be made in a timely manner.
- 11.4. The budgeting for maintenance expenditure under the ARMOP will also be done well in advance by the Board before the start of the relevant financial year along with allocation of resources to the different operations/components under the Plan.

12. Removal of Maintenance Backlog :

- 12.1. The Mizoram Road Fund Board/the State PWD shall formulate an Action Plan for time bound removal of maintenance backlog of the road network so that the network is brought to an acceptable level of service. On the basis of Mizoram Road Statistics and Road Condition, the State PWD shall identify the backlog and remove it within a period of 5 years in a phased manner and the funds for the purpose will be made available by the Government.
- 12.2. Against the total area of 21087 Sq.Km, the total length of road network in Mizoram is 7669.235 Kms and the road density is 36.369 Kms/100 sqkm. The Road Statistics of Mizoram as on 17th August 2016 is as under :

Roads under State PWD		(in Kms)		
Sl.No.	Black Top	Un surface	Total	
1	National Highway	1205	260	1465
2	State Highway	170	0	170
3	Major District Road	601	0	601
4	Other District Road	770	209	979
5	Village Road	440	1470	1910
6	Road within Towns & Villages	509	196	705
7	City Road	254	44	210
Total of State roads		2234	1919	4663
Total Under State PWD		3949	2179	6128
Road under BRO		610	287	897
Road under CPWD		176	0	176
Road under other Departments		0	433	433
Grand Total		4735	2899	7634
Total of Road maintained from State Maintenance Fund :-				
(a)	Black-topped	:	274 kms	
(b)	Unsurfaced	:	1919 kms	
	TOTAL	:	4663 kms	

- 12.3. The Road Condition of the State Roads (maintained from State Maintenance Fund) as on June 2015 are as follows :-

Black - topped Roads			
1.	Very Good and Good Roads	-	388 Kms
2.	Fair Roads	-	1134 Kms
3.	Poor & Very Poor	-	1222 Kms
	Total	:	2744 Kms

Non-Black-topped (un-surfaced) Roads

1.	Very Good or Good Roads	-	15 Kms
2.	Fair Roads	-	187 Kms
3.	Poor or Very Poor Roads	-	1,717 Kms
	Total	-	1919 Kms

- 12.4 **Periodic Renewal Requirement :**
 Considering a periodic renewal cycle of 4 years, length required to be re-surfaced every year = $2744/4 = 686$ Kms
 Requirement of funds@ 19 lakhs per Km=Rs.13034 lakhs per year=130.34 crores per year.
- 12.5. **Backlog of Periodic Maintenance :**
 As per road condition data, length of roads in fair, poor & very poor subject to Periodic Renewal = $1134+1222 = 2356$ Kms
 Length of backlog $2356 - 686 = 1670$ Kms
 Considering backlog to be cleared in 5 years, Kms required for renewal every year = $1670/5=334$ Kms Funds required to clear backlog of 334 Kms @ Rs. 19 lakhs/year=Rs. 6346 lakhs per year=Rs. 63.46 crores per year.
- 12.6. **Requirement for Routine Maintenance :**
 With the yard stick rates for routine maintenance@ Rs.57,777/- per km per year for black-topped road and Rs. 46,077/- for non=blacktopped roads, funds required for routine maintenance
 = Rs. $2,744 \times 57,777 + 1,919 \times 46,077$
 = Rs. 15.85 Cr.+8.84 Cr.
 = Rs. 24.69 Crores per year.
- 12.7. **Total requirement** for Periodic Renewal + Backlog of Periodic Renewal + Routine Maintenance:
 $130.34+63.46+24.69=Rs. 218.49$ crores per year=**Rs. 218.00 Crores per year.**
13. **Dedicated Road Maintenance Fund and Other Actions required :**
- 13.1. Mizoram Government has already established Mizoram Road Fund Board under the Mizoram Road Fund Act 2007 to maintain and manage dedicated road maintenance fund with money received/collected from various sources such as Central and State Governments grants, user charges and fees, cess, levies, tax revenue etc as may be considered appropriate by the State Government to provide fund on a sustainable and dependable basis for maintenance of state roads. This Mizoram Road Furniture Act 2007 was also gazetted by Govt. of Mizoram on 19.4.2007 (ANNEXURE-II). The Mizoram Road Fund Rules 2010 has been approved by Govt. of Mizoram (ANNEXURE-III).
- 13.2. Mizoram PWD shall simplify the existing Road Maintenance & Management System (RMMS) for State roads to prepare Annual Maintenance Plans for each Division based on scientific condition of the road network.
- 13.3. Mizoram PWD shall set up Special Task Force in each PWD Zone to deal with emergency situations arising due to natural disasters headed by concerned Chief Engineer and consisting of S.E(Plg & Works), Concerned S.E and E.E as members.

- 13.4. Some pilot works of maintenance shall be undertaken jointly by field Divisions and relevant NGO/Village Council and steadily move towards devolving maintenance responsibility in respect of rural roads to local authorities/community.
- 13.5. Mizoram PWD shall extend support in providing outreach programmes in enhancing the training facilities for Class III and Class IV Contractors in implementation of maintenance works. For this, the Contractors Associations may be associated to work out the details of training modules, training providers including on-the-job exposures in close association with road agencies. Such modules could be in the form of booklets/hand-outs in various maintenance operations as also in audio visual mode.
- 13.6. Mizoram PWD shall identify and pilot innovative maintenance models and technologies. These innovations may be in the form of piloting and adopting models of outsourcing maintenance works which could be in the form of Performance Based Maintenance Contracting (PBMC), Community Contracting or Hybrid System involving combination of PBMC and conventional Engineering, Procurement and Construction (EPC). The thrust on innovative technologies shall be on materials that can be used in all weather conditions, reduce time and manpower required for repairs, thereby improving productivity. The technology shall be cost effective, easy to manage, off the shelf material for patch/pothole repair and application with simple tools with all maintenance items being accommodated in a small vehicle for speedy execution. Efforts shall be on environment friendly technologies.
- 13.7. Detailed guidelines for execution of maintenance policy is finalised. The essential methods & procedures to assist in implementation of Annual Maintenance Plans have been incorporated in these guidelines and attached as "Standard Operating Procedures for Maintenance of Rural Road Network in Mizoram" The objectives & expectations from the maintenance work, utilization of resources, responsibilities & functions of staff at different levels, procedure for contract management, quality assurance, technical specifications, maximum response time have been explained in these guidelines.
- 13.8. Necessary amendments may be made in the provisions of the guidelines by the Mizoram Public Works Department on the basis of experiences.

CHAPTER ONE INTRODUCTION

- 1.1. Being the only means of transport within the State, Roads occupy an important position in the transportation system of Mizoram. Road infrastructure is directly related to economic growth and social development, Maintaining these roads in serviceable condition is crucial to agricultural and industrial growth on the one hand and affording means of access to the public.
- 1.2. The continued extension and improvement of the road network does however, create new and growing challenges in terms of an increasing maintenance burden. In order to sustain the benefits of the investments made in building and improving roads, there is a need to boost capacity in terms of providing adequate maintenance.
- 1.3. More emphasis needs to be placed on the maintenance of already existing infrastructure assets. This implies that an increasing proportion of funds and managerial capacity needs to be allocated for protecting the investments made earlier in building the road network.

- 1.4. From a technical point of view, there is no shortage of technical guidance on how the works should be carried out. The challenge seems to be more related to how maintenance should be organised and when it should be carried out. There is, however, a need to define requirements at operational level which ensure that technical means are secured in order to actually carry out the required maintenance. Therefore, it has been felt necessary to put in place a Standard Operating Procedure for maintenance of the roads at operational level for securing adequate and timely maintenance of the rural road network.

CHAPTER TWO STAFFING

2.1. Organisational Setup

- 2.1.1. Mizoram Public Works Department shall be responsible for the operation and maintenance of the entire road network under its jurisdiction. The administrative control of the department shall rest with the Secretary to the Government of Mizoram. The Engineer-in-Chief would be overall in-charge of the Department. The construction and maintenance of the network comprising State Highways, Major District Roads and Rural Roads shall be supervised by the concerned Chief Engineers who have control over the field Circles with each circle headed by a Superintending Engineer. These circles are further divided into field Divisions each headed by a Executive Engineer, Similarly, these field Divisions have a number of Sub-Divisions headed by a Sub-Divisional Officer. The SDO's are assisted by a number of Junior Engineers each of whom is in-charge of section. The Junior Engineers are in turn assisted by Section Assistants.
- 2.1.2. A dedicated Planning, Budgeting and Monitoring (PBM) Unit in the PWD and headed by a Chief Engineer (Planning) shall be responsible for Planning, Budgeting and Monitoring of all maintenance works of the road network under the overall guidance of the Engineer-in-Chief. This unit shall comprise of one Superintending Engineer (Planning), one Executive Engineer (Planning), two Assistant Engineers and other Support Staff. The Joint Director of Accounts shall assist the Chief Engineer (Planning) of the PBM unit in all financial matters.
- 2.1.3. Technical audit of sample stretches as well as the quality inspections shall be conducted by the Quality Control Division of the PWD.

CHAPTER THREE PLANNING AND DESIGN

- 3.1. Maintenance Works will include all works of routine maintenance, periodic maintenance, road rehabilitation including pavement strengthening, special repairs and emergency maintenance.
- 3.2. The PBM Unit shall initiate action on maintenance activities as under :
 - (i) Exercise for **review of Yardstick Norms for routine maintenance** shall commence in October every year and the process completed by 30th November. The norms as finalized shall be notified by 31st December and shall be applicable for the next financial year beginning 1st April. Even in case the norms do not require any change the existing norms shall again be notified by this date.

- (ii) A **yearly review of the rates of individual items** involved in maintenance activities shall be carried out by considering the prevailing market rates as on 1st October of that year and the review shall be completed by 30th November. The rates so finalized shall be notified by 31st December.
- 3.3. Being a hilly and heavy rainfall area, a **Periodic Renewal Cycle** of 4 years shall be adopted for all types of roads in Mizoram.
- 3.4. The **Specifications** to be adopted shall be MoRT&H Specifications as adopted for State works and Ministry of Rural Development (MoRD) Specifications for PMGSY works. In case specification for a particular item in State Works are not available MoRD specifications for Rural Roads shall be followed and vice-versa.
- 3.5. The **Field Units**, namely, the Divisional Offices shall be responsible for carrying out the Road Inventory and Road Condition Surveys as per prescribed procedures.
- 3.6. The **Road Condition Data Survey** at every 100 m interval shall be carried out by the Junior Engineers in charge of the respective sections. They may take the assistance of their Section Assistants/Mates. Their work shall be supervised by their SDOs and physically checked to the extent of 15% and accordingly certified. The road condition data shall be collected through visual inspection. The Assistant Engineers (Maintenance Monitors) posted in the circle offices shall simultaneously carry out 10% test check of the road condition data collected by the field units.
- 3.7. The Schedule for the above activities shall be as under :
- (i) The surveys shall commence immediately after the cessation of nonsoons in October and completed by 1st week of November.
 - (ii) Data from the survey shall be uploaded on the Road Maintenance Management System (RMMS)/ Road Management System (RMS) by the Divisional Offices by 2nd week of November.
 - (iii) Results of the entire road network shall be generated by the Headquarters staff by 1st week of December.
- 3.8. PWD HQ shall finalize the priority list for Annual Maintenance Plan (AMP) and disseminate the same to all field offices by the 3rd week of December. The field Executive Engineers on receipt of the approved AMP shall have another verification carried out to confirm that the roads appearing in the AMP with respect to their jurisdiction actually qualify for Periodic Renewal and revert back to the HQ by 1st week of January with full justification in case any substitution is required. Annual Maintenance Calendar shall be hoisted on departmental website by March.
- 3.9. Field offices shall initiate action for preparing estimates and inviting bids for works proposed to be contracted out for the approved chainages of various roads immediately and works shall be awarded latest by last week of January.
- 3.10. Implementation shall commence latest by 10th February.
- 3.11. The Annual Calendar of Road Maintenance Activities shall be as given in Table 1

Table 1

Annual Calendar of Road Maintenance Activities

<i>Sr.No.</i>	<i>Item of Work</i>	<i>Intervention</i>	<i>Response Time</i>	<i>Frequency</i>	<i>Remarks</i>
1	2	3	4	5	6
1.	Cleaning/desilting of road side				
	Water diverted out of drain onto roadway	Causing a hazard to traffic	Immediate	Thrice i) February ii) May and June iii) August and September and as and when required i.e. blockade more than one-fourth	
	Obstruction or Siltation impeding flow	Blocked by more than one-fourth of the size of the drain	14 days and prior to monsoon		
2	Pothole Filling				
	Collection of patch repair material for Bituminous roads			i) January and February ii) July and September	
	Collection of patch repair material for WBM repair			i) January and February ii) July & August	
	Pothole filling in Bituminous and rigid pavement with maximum dimension more than 200mm, cracks edge breaks, ruts and depressions	All potholes =75mm depth Cracks>5mm in width Edge Breaks >150mm in width Ruts>50mm in depth Depressions	21 days	Immediate on their occurrence	
	Pothole filling in WBM with maximum dimension	Depth>75mm	21 days		
	Pothole filling in Gravel/ Kutcha surface	Depth>50mm Width >300mm	45 days		
3.	Filling edges of bituminous surfaces and replenishing/ lowering earthen/ hard shoulders	Difference more than (-) 50mm/ (+) 0mm			Before and after monsoons and as and when required i.e. when the requirements as specified are exceeded as per Col.3
4.	Dressing of berms				Before and after monsoon and once in between i.e. February/March, June, August and September
5.	Restoration of rain cuts and side slopes				September and as and when required

6.	Cleaning of Cross-Drainages			
	Debris and silt reducing effectiveness of structure, broken or cracked structure causing instability, under mining or not functioning properly	Blocked by more than one-fourth of the size of the culvert opening	14 days	Twice (May and October) and as and when required i.e. blockade more than one-fourth of the opening
	Deformation of culvert, its invert and alignment		45 days and prior to monsoon	
7.	White washing of Parapets, Guide Stones, Tree Trunks etc.			Twice (April and October)
8.	Re-fixing disturbed caution boards, other signage etc.			Once and as and when required
9.	Re-fixing displaced Km.stones, 200m stones, guard stones, guard rails.			Once and as and when required
10.	Cutting of branches of trees, pruning shrubs			Once (October)
11.	Removing wild seasonal growth on berms and from road side structures			Twice (March and September)
12.	Painting of Km. stones, Numbering of culverts, road markings etc. Including history of road on Km. Stones			Once (April/November)
13.	Maintenance of T&P		All round the year	
14.	Removal of encroachment		All round the year	

- 3.12. The Superintending Engineers in-charge of field circles shall closely monitor the progress of the above activities in respect of their jurisdictions.
- 3.13. The Junior Engineer shall prepare monthly Maintenance Plan of the roads and forward it to the Sub-Divisional Officer one week before the commencement of the respective month for approval.
- 3.14. In case of Divisions having labour in excess of the norms the Executive Engineer shall, in consultation with the Superintending Engineer, prepare a list of works such as construction of side drains, culverts, parapets, retaining/breast walls etc. that could be entrusted to such surplus labour. The quantum of works thus identified should be commensurate with the prescribed norms for tasks for labour. This list shall be prepared and finalized within the first three months of the calendar year so that these works are taken up from the start of the next financial year.

CHAPTER FOUR INSPECTION

4.1. Duties

4.1.1.

Attention of all officers/officials of the Department is drawn to the imperative necessity for the maintenance of the roads under their jurisdiction. In order to maintain the roads efficiently and economically, officers/officials in-charge of the roads must exercise the greatest care to see that money and materials are used with caution and financial prudence. To achieve this, frequent inspections are necessary and in this connection the following broad principles are laid down:

- (i) The Section Assistant shall keep a strict watch on the condition of the entire stretch of road under his beat and cover the same daily.
- (ii) The Junior Engineer in-charge shall inspect the entire road length under his jurisdiction at least once every week. He shall simultaneously verify at site the contents of the Daily Progress Report as maintained by the Section Assistant in his diary and initial the same.
- (iii) The Sub-Divisional Officer in-charge of the road shall ordinarily travel at the rate of 30 Km. per day and inspect the entire length under his jurisdiction at least once every month. He shall invariably be accompanied by the Junior Engineer in-charge to whom he can give the necessary directions for repairs.
- (iv) The Executive Engineer shall also arrange to travel only moderate distance each day and shall be accompanied by the SDO in-charge. He shall inspect all the roads under his jurisdiction once every three months.
- (v) The Superintending Engineer shall, whenever possible, accompanied by the Executive Engineer, shall plan his visit through alternate routes rather than following only the regular and direct route while proceeding/coming back from tour. This is necessary to ensure that alternate routes/interior roads get inspected even when the purpose/destination for the tour may be different. It may, therefore, be ensured that the officer does not undertake to and fro journey through the same route. He shall travel on alternate route on one or another journey.
- (vi) Every effort should be made to issue instructions verbally and with personnel consultation supplemented by notes in the notebook of the person to whom orders are given. This procedure will save time in writing long inspection notes. Site-Order Books should be maintained properly for every road projects.
- (vii) Superintending Engineer should be able to supplement the notes given in the notebooks with more precise orders.
- (viii) From the point of view of safety of traffic, as well as from the point of view of safety of road structures, it is essential to pay special attention to the maintenance of road berms. The Inspecting officers should make special note of the condition of the berms and their improvement since the last inspection and record the same in the notebook of the Junior Engineer and the Sub-Divisional Officers.
- (ix) The Superintendent Engineer shall also inspect the roads from overall road safety considerations and give appropriate directions.

4.1.2. Duties of Mate

- (i) To report to Work Inspector/Junior Engineer.
- (ii) To mark daily attendance of labour working under him.
- (iii) To help in the layout, marking, checking the quality and quantity of work done by the labour and get the work executed as per instructions.
- (iv) To assist the Work Inspector/Junior Engineer in taking out the measurement for daily work done by labour.
- (v) To display necessary caution boards for safety point of view as per standard layout.

- (vi) To report to his senior about any casualty, accident, encroachment of Government property or any type of serious damage to the Government property within his beat.
- (vii) To maintain T&P and sign boards under his charge.
- (viii) To carry out jobs of semi-skilled nature connected with his trade along with his gang.
- (ix) General supervision over un-skilled labour.
- (x) To get cement/composite mortar prepared in his presence as per instructions of Junior Engineer/Work Inspector.
- (xi) To report about damages to structures, kilometer stone etc. and keeping them in position.
- (xii) To comply with any instruction given by his immediate superior.
- (xiii) To maintain Daily Labour Report (DLR).
- (xiv) To ensure adequate quantum of work being done by gang and that it conforms to norms.
- (xv) To keep account of permanent articles, for example direction boards, trees, drums etc. in his beat.
- (xvi) To ensure providing and proper upkeep of diversions.

4.1.3 Duties of Work Inspectors :-

- (i) To report to Junior Engineer.
- (ii) To maintain daily diary of the work done and to put up to the Section Incharge every alternate day.
- (iii) To maintain daily receipt/daily consumption of material consumed.
- (iv) To help in preparing estimates for minor works and repairs.
- (v) To ensure execution of work according to specifications and drawings.
- (vi) To take round of various bridges and roads under his charge on regular basis and report to section incharge about repairs to be done. He shall also assist to plan out a programme for such repairs in advance and ensure their execution through the department labour within the specified period.
- (vii) To assist Junior Engineer in taking out measurement and distributing work to labour daily and checking their attendance.
- (viii) To estimate and indicate rough quantities of materials required.
- (ix) To take measurement of daily work done.
- (x) To ensure adequate quantum of work being done by gang and that it conform to norms.
- (xi) To maintain material at site account and account of traffic signs.
- (xii) To report about unauthorized constructions and encroachments on government premises.
- (xiii) To comply with the instructions given to him by his immediate officer.
- (xiv) To ensure submission of daily report.
- (xv) To see that log books are filled daily for machinery and that machinery are parked properly.
- (xvi) To maintain details of land width and check encroachments.
- (xvii) To ensure proper maintenance of speed humps and caution boards Including their painting.

4.1.4 Duties of Junior Engineers :-

- (i) Inspection and supervision of works as per prescribed norms.
- (ii) Recording the progress of both casual and regular labour in the Measurement Book (MB) and ensuring that the output of labour matches with the norms for taks for labour.
- (iii) No work should be entered in the MB as 'unsusceptible to measurement' and progress of all activities be recorded.

- (iv) Reporting observations to higher authorities.
- (v) Preparing estimates for repairs after conducting condition survey of roads.
- (vi) Reporting about closure of road/obstructions due to any of the following reasons;
 - (a) Overtopping/breach;
 - (b) Landslides;
 - (c) Earth quakes;
 - (d) Accident;
 - (e) Any other reason (specify);
- (vii) Arranging for removal of obstructions such as dead animals, trees and other debris lying on road.
- (viii) Enumerating safety measures and restoration works in case of flood damages and breaches and reports on opening of traffic/completion of restoration.

4.1.5 Duties of Sub-Divisional Officers :-

- (i) Inspection and supervision of works as per norms.
- (ii) Reporting observations which suggestion for remedial action to higher authorities.
- (iii) Getting estimate prepared and checked after conducting surveys and site investigations.
- (iv) Reporting about heavy rain fall in the area and consequent rain damage.
- (v) Enumerating action on the report of Engineering subordinates regarding obstructions, accidents etc.
- (vi) Enumerating safety measures and restoration of (both temporary and permanent) works in case of flood damages and breaches.

4.1.6 Duties of Executive Engineers :-

- (i) Inspection and recording of observations as per prescribed norms.
- (ii) Planning and finalization of nature of maintenance activities e.g. surface repair, prepare to CD works etc.
- (iii) Arranging men, materials and machinery in advance as per requirements.
- (iv) Finalizing action on reports of SDO and also on safety measures, diversion in case of breaches and flood damages.
- (v) Coordination with various agencies like Traffic Police, Local Administration, Publicity Media etc., in case of emergent repair, interruption to traffic by road blockage, etc.
- (vi) Initiate steps for finalizing permanent restoration works.

4.2 Action to be taken in case the road is Breached or Blocked

4.2.1 Action to be taken by the Mate/Work Inspector

- (a) Immediate report of the road breached/blocked will be made to Junior Engineer and Sub-Divisional Officer. The following points will be included in the reports:
 - (i) Name of the road
 - (ii) Location of the breach/blockade
 - (iii) Length and nature of the breach/blockade
 - (iv) Date and time of occurrence
 - (v) Assessment of the assistance in the form of men and material required.
- (b) "Road closed" boards and "Diversion" boards shall be fixed on both sides at 60 m distance in advance of the hazard.
- (c) Arrangements for red lights to be done in case of darkness.
- (d) Labour shall be deputed to guide the traffic to prevent any accident.
- (c) Construction of diversion, if possible.

4.2.2 Action to be taken by the Junior Engineers

- (a) He will at once visit the site of the hazard and shall ensure that :
 - (i) Road has been closed by means of barricading with empty drums or any other means available at site.
 - (ii) That caution and diversion boards have been fixed on both sides.
 - (iii) Arrangements made to guide the traffic by posting gang men having red flags.
 - (iv) Arrangements made for red lights and chowkidar etc.
 - (v) Steps to stop further damage to the road are taken as per site requirement.
 - (vi) Possibilities of construction of diversion to be explored. If possible the diversion should be constructed with available resources.
- (b) He shall immediately report to the Sub-Divisional Officer, Executive Engineer and Superintending Engineer through fax and or WhatsApp regarding the road breach, duration of blockade of the traffic followed by a detailed report containing:
 - (i) Name of the road.
 - (ii) Location of the breach/blockade.
 - (iii) Length and average depth of the breach.
 - (iv) Date and time of occurrence.
 - (v) Duration of suspension of traffic.
 - (vi) Requirement of men and material for restoration of traffic and road and the approximate cost.
- (c) All arrangements and efforts shall be made for restoration of traffic.
- (d) He will intimate the details of any losses and injuries to the public, if any, including the extent of compensation if payable.

4.2.3 Action to be taken by the Sub-Divisional Officer

- (a) He shall at once inspect the site of the hazard.
- (b) He shall inspect all safety measures taken by the Junior Engineer.
- (c) He shall ensure that the restoration of traffic is done at the earliest.
- (d) He shall send a detailed report regarding the breach/blockade enumerating all the points given under 2 (b) above. In addition to these he will also include the following points:
 - (i) The causes of the breach/blockade.
 - (ii) Forecast estimate for restoration of traffic and road.
 - (iii) Remedial measures to avoid any future occurrence with forecast estimates.
 - (iv) Any other information which he wants to include.

4.2.4 Action to be taken by the Executive Engineer

- (a) He shall at once visit the site of breach. In case of multiple occurrences, he will inspect them in order of priority and importance.
- (b) He shall ensure speedy restoration of traffic.
- (c) He shall sent a detailed report to the Superintendent Engineer and Chief Engineer about the road damage indicating:
 - (i) Nature and cause of damage with location.
 - (ii) Proposals for remedial measures with financial implications.
 - (iii) Nature and cause of consequential damages to public properties etc.
 - (iv) Action taken for restoration of traffic and restoration of damages with financial implications.
- (d) He shall be fully responsible for all the action taken for the protection and safety of traffic and the road.

**CHAPTER FIVE
EXECUTION OF MAINTENANCE OPERATIONS**

5.1 Safety of Workers :-

- (i) In the implementation of maintenance operations, the road user and personnel involved in the work shall not be exposed to hazards, Besides, delay and inconvenience to the traffic should be reduced to the minimum.
- (ii) Traffic hazard and inconvenience be minimized by use of temporary road signs and controlling/guiding of the traffic.
- (iii) Maintenance operations should at a time be confined to small lengths say 30m in half the pavement width, leaving the other half for use by traffic.

5.2. Output of Labour :-

- (i) There should be no ambiguity regarding duties assigned to the supervisory staff so that there is full coordination while identifying jobs and giving direction to the labour. In this connection, the duties of Mates/Work Inspector have been spelt out elsewhere in this document.
- (ii) The gang men must fully know the tasks they are to carry out and the expected output.
- (iii) There should be regular checking whether the task assigned and output achieved are as per norms.
- (iv) All works (no work to be recorded as unsusceptible to measurements) executed by the labour both casual and regular shall be measured and entered in the Measurement Book (MB) and if the progress is less than the norms then proportionate recovery shall be made or the wages shall be reduced accordingly by the Assistant Engineer responsible for making payment.
- (v) The recommended tasks for labour are given as under

TABLE - 2

Sr.No.	Task	Norms
1.	Earth work such as in berms, de-silting of drains	
	(a) Ordinary soil	2.5 Cum/person/day
	(b) Hard soil	1.75 Cum/person/day
2.	Dressing of berms	75 Sqm/person/day
3.	Jungle clearance	100 Sqm/person/day
4.	Patching with premix carpet	0.75 Cum/Person/Day
5.	WBM patching	0.30 Cum/Person/Day
6.	Blinding of WBM surface	150 Sqm/Person/Day
7.	Edge covering	60 m/Person/Day
8.	Side slope/shoulder repair	2.0 Cum/Person/Day
9.	Maintenance of drains	125 RM/Person/Day
10.	White washing of parapets, tree trunks, breast walls etc.	30 Sqm/Person/Day
11.	Other items as per norms worked out from Schedule of Rates (SOR)	

Notes : The quantity mentioned is that of grit and blast used for patch repairs.

- (i) For the purpose of monitoring the progress of these works the Mate/Work Inspector incharge in that section shall be accountable. The Junior Engineer will exercise 100% test check in each work and Sub-Divisional Officer/Executive Engineer respectively upto 30% and 10%.

- (ii) Instead of deploying labour in a scattered manner, deployment shall be made in gang who will take up work from one station and move progressively towards the other ends.
- (iii) In order to ensure continuous maintenance of roads and availability of some labour even on Sundays to attend to any emergent job, it shall be expedient to stagger week-end holidays to them, whereas casual daily wage workers shall be allowed weekly rest on Sundays and Work Charged/regular labour shall be given weekly holiday on Mondays.

5.3. Material Procurement :-

- (i) Material used for maintenance of paved roads is bitumen/emulsion and aggregate.
- (ii) Bitumen/emulsion shall be procured and stored centrally along with cement required for other repairs.
- (iii) Aggregate and sand shall be collected at site of work as per requirement.
- (iv) The procurement of above materials shall be made as per the Annual Calendar of Road Maintenance Activities shown elsewhere in this document.

5.4. Mechanical Equipment :-

Arrangement for mechanical equipment such as road roller, Mini Hot Mix Plant, if proposed, to be deployed shall be made well in time keeping in view the Annual Calendar of Road Maintenance Activities.

5.5. Tools and Plants

- (i) The requirements of tools and plants in good condition for one gang for 20 Km. beat having 5 Gang men and one Mate shall normally be as shown in Table - 3:

Table - 3

Sr.No.	Item	Essential Quantity (With Gangs)	Option with J.E. incharge (Nos.)
1.	Spades	3	
2.	Pan (para!)	3	
3.	Pick Axes	2	
4.	Axe	1	
5.	Wheel barrow	3	
6.	Tar Sprinklers (Jhamas)		1
7.	Tar Buckets		1
8.	Tar boiler (mini)		1
9.	Brushes		
	(a) Wire	5	
	(b) Coir	5	
	(c) Hair	5	
10.	Hammer	1	
11.	Rope		
	12 mm	1	
	6 mm	1	
12.	Cross Slope Template for berms	1	
13.	Tar thermometer		4
14.	Spring Balance		1
15.	Tape 15 mtr	1	
16.	Measuring wooden boxes (35cm x		2
17.	G.I. Bucket	1	
18.	Straight edge		1
19.	Caution board		2

**CHAPTER SIX
MONITORING**

- 6.1. In order to ensure the desired progress in terms of physical and financial targets, it is essential to keep a close watch through monitoring of returns as well as through online monitoring.
- 6.2 Superintending Engineer in charge of field circle shall ensure that there is proper monitoring of all maintenance activities. He shall monitor the physical and financial performance through quarterly returns to be submitted to him by the Executive Engineers in the format as per Table-4 (Routine Maintenance), Table-5 (Periodic Renewal) and Table-6 (Special Repairs/Flood Damage Repairs) by the 15th day of the calendar month immediately succeeding the quarter under report:

**Table - 4
Financial Progress of Routine Maintenance**

Name of Division :						
Name of Sub-Division :						
Name of Road	Length of Road (Km)	Budget Allotment (Rs. Lacs)	Routine Maintenance (All in lacs)		Cumulative expenditure during the year	Remarks
			Expenditure upto last quarter	Expenditure during the quarter under review		
1	2	3	4	5	6	7

Note : The Executive Engineer shall certify that financial figures given are as per the Register of Works (CPWA-41) corresponding to Works Abstract (CPWA-34)

Table - 5
Physical and Financial Progress of Periodic Maintenance

Name of Division :-											
Name of Sub-Division :-											
Name of Road	Job No	Sanction Length (in Km)	Sanction Amount (Rs.Lacs)	Achievement upto last financial Year		Target for current Financial Year		Achievement during the year upto last quarter		Achievement during the quarter	
				Physical (in Km)	Financial (Rs. Lacs)	Physical (in Km)	Financial (Rs. Lacs)	Physical (in Km)	Financial (Rs. Lacs)	Physical (in Km)	Financial (Rs. Lacs)
1	2	3	4	5	6	7	8	9	10	11	12
Cumulative Achievement during the year											
Physical (in Km)				Overall upto date Achievement		Likely date of Completion		Remarks			
13				Physical (in Km)		Financial (Rs. Lacs)		15		16	
14				15		16		17		18	

Note : The Executive Engineer shall certify that financial figures given are as per the Register of Works (CPWA-41) Corresponding to Works Abstract (CPWA-34)

Table - 6
Physical and Financial Progress of Special Repairs/Flood Damage Repairs

Name of Division :-													
Name of Sub-Division :-													
Name of Road	Job No	Type of Repair	Sanction Amount (Rs.Lacs)	Achievement upto last financial Year		Target for current Financial Year		Achievement during the year upto last quarter		Achievement during the quarter			
				Physical (Km./%age/No)	Financial (Rs. Lacs)	Physical (Km./%age/No.)	Financial (Rs. Lacs)	Physical (Km./%age/No.)	Financial (Rs. Lacs)	Physical (Km./%age/No.)	Financial (Rs. Lacs)		
1	2	3	4	5	6	7	8	9	10	11	12		
Cumulative Achievement during the year													
				Overall upto date Achievement		Likely date of Completion		Remarks					
13				14		15		16		17		18	

Note : The Executive Engineer shall certify that financial figures given are as per the Register of QWorks (CPWA-41) Corresponding to Works Abstract (CPWA-34)