

Nagaland Govt.

PWD (R&B) Department

Policy on Maintenance of Rural Roads in Nagaland

Part - I

October, 2017

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GOVERNMENT OF NAGALAND
WORKS AND HOUSING DEPARTMENT
WORKS BRANCH

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NOTIFICATION

Dated: Kohima, the 20th Oct. 2017

F/NO.WH/R&B-90/2013-14/PMGSY:: The Governor of Nagaland is please to notify the Nagaland Rural Roads Maintenance Policy, 2017 with Standard Operating Procedures for implementation in the State.

The Nagaland Rural Roads Maintenance Policy, 2017 with Standard Operating Procedures will come into force with immediate effect, which will remain in operation till such time the State Government may consider deem fit and proper.

This issue with the approval of the Cabinet vide O.M.No. CAB-2/2013 dated 08/09/2017.

Sd/-BENDANGKOKBA

Commissioner & Secretary to the Govt. of Nagaland.

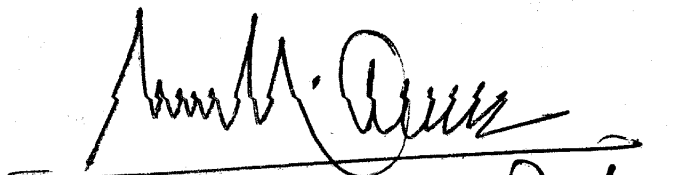
Dated: Kohima, the 20th Oct. 2017

F/NO.WH/R&B-90/2013-14/PMGSY / 208

Copy to:

1. The Principal Advisor to the Chief Minister, Nagaland, Kohima.
2. The PPS to the Minister (Roads & Bridges), Nagaland, Kohima.
3. The PPS to the Minister (National Highways), Nagaland, Kohima.
4. The OSD to Chief Secretary, Nagaland, Kohima.
5. The Secretary, Ministry of Rural Development, Department o Rural Development, Krishi Bhawan, New Delhi – 110001.
6. The Additional Chief Secretary & Development Commissioner, Nagaland, Kohima
7. The Additional Chief Secretary, Finance, Nagaland, Kohima:
8. The Commissioner & Secretary, NLA, Nagaland, Kohima.
9. The Secretary, P&AR Department, Nagaland, Kohima.
10. The Secretary, Rural Development Department, Nagaland, Kohima.
11. The Engineer-in-Chief, NPWD, Nagaland, Kohima.
12. The Chief Engineer, PWD (R&B/NH/Mech), Nagaland, Kohima.
13. All Deputy Commissioner in Nagaland.
14. The Deputy Secretary, Cabinet Secretariat, Cabinet Cell with reference to his letter No. CAB-2/2013 dated 12/09/2017 for information.
15. The Publisher, Nagaland Gazette, Kohima with a request to publish the notification in Extra Ordinary Gazette.
16. Office copy/guard file.

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20/10/17


(IMTI LONGCHAR) 20/10/17
Joint Secretary to the Government of Nagaland
o/c

FOREWORD

The Department of PWD (R&B) Nagaland is pleased to announce the approval of Rural Roads Maintenance Policy for the State of Nagaland vide Govt. letter No.F/NO.WH/R&B-90/2013-14/PMGSY dated Kohima, the 20th October 2017.

It is aptly said that a civilization can be assessed from its standards of maintenance of public assets. In the case of our State, it can be seen that maintenance of infrastructure assets especially the roads, receives much lesser attention than creation of new assets. Problems associated with maintenance of rural roads are even more challenging than those associated with higher order roads (State & National Highways). Recognizing this, the **Rural Roads Maintenance Policy** for the State of Nagaland has been framed and is published keeping in mind the various challenges and problems faced by the State in the maintenance of rural roads. It is hoped that the implementation of this Policy will serve the State in the maintenance of the entire rural road network system in the State and achieve the poverty alleviation target along with the rest of the country.

Suggestions are solicited for bringing about further improvements in the Policy.

Sd/-

(Er. Krosu Rhetso)

Chief Engineer, PWD (R&B)
Nagaland : Kohima.

October, 2017

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1. Introduction :

The road network plays a very important role in the state of Nagaland in the absence of any rail & water transport system. To achieve connectivity to the remotest village in the State, the Govt. has been continuing its effort by constructing roads. After the inception of PMGSY, the state has been able to construct approximately **242.00** kms of rural roads every year, thereby contributing to a total road network of about **3469.00**kms connecting 93 habitations since 2000 and targeting to connect remaining 20 habitations under Phase IX. These roads are critically important in terms of providing access to social and economic services. They act as facilitators to promote and sustain agricultural growth, improve basic health, provide access to schools and economic opportunities. They, thus, hold the key to accelerated poverty alleviation, socio-economic transformation and breaking the isolation of village communities.

Keeping this rural road network of the state in serviceable condition is crucial to the agricultural growth on the one hand and affording means of access on a sustainable basis to our rural people to services and social facilities such as schools, health centres as also to markets on the other hand. The benefits in terms of social and economic development, as a result of the huge investments made in the rural road network, can only be sustained if these assets are properly maintained on a regular basis over time.

This huge asset thus created needs an equally massive effort to maintain the same. Inadequate maintenance of roads is resulting in disruption of traffic, hampering economic growth and increase maintenance cost of vehicles. For optimum utilization of road assets timely maintenance is the need of the hour. The principle objectives of road maintenance are to keep roads open, reduce rate of deterioration and 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. Although rural roads are being provided for socio-economic benefits, their maintenance makes a sound economic rate of return which is often in the range of 25 to 30 per cent.

2. Replacement Value :

The replacement value of rural roads assets in the state of Nagaland (Broad assessment based on as 1st April 2016)

Table 1

SI No.	Category of Roads	Unit Cost Rs. Lakh / KM	Amount (Rs. Crore)
1	PMGSY 1) New Connectivity 2536.66 2) Up gradation <u>932.34</u> 3469.00	48 L/km	2156.16
2	Non PMGSY 1) Non-Core Network Village roads 1023.00 (Rural road)		
	Total kms 4492.00 kms		

Any inadequacy in funding and implementation on the ground will result the erosion of the asset base. The state shall ensure 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 Nagaland 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” Nagaland Rural Roads Maintenance Policy 2017”

The policy takes into consideration the Govt. commitment, funding, institutional reforms and implementation regarding maintenance of rural roads as under:

1. Introduce a system of working out present asset value of the road network at the end of financial year. Box 1 provides indicative steps for assessing the replacement value of the network.

Box 1: Assessing Replacement Value of Rural Road Assets

1. Each PIU is directed to provide the assessment in the month of July/August (lean period of execution) every year.
2. Standard format for inventory and condition survey shall be specified by **PWD (R&B)** for collection of data.
3. Each PIU works out the replacement value of roads within its jurisdiction as per illustration given in Table 1.
4. The replacement value of the total rural road network is put in public domain by the state government.

3. State Level Committee :

Constitute a state level committee to work out realistic norms for maintenance of rural roads covering Routine, Periodic, emergency maintenance and Special Repairs.

Box 2: Norms for Maintenance of Rural Roads

State government shall constitute a committee comprising technical, administrative and finance officers.

Having technical officers not below the rank of Chief Engineer, and grant about three months' time to work out the norms. The committee may comprise of:

1. Principal Secretary (PW)
2. Chief Engineer (R&B)
3. Secretary Finance
4. Superintending Engineer Planning / EE (PMGSY/R&B) (Member Secretary)
5. Senior Account Officer.

The norms should cover requirement of routine, periodic, emergency maintenance & special repair under different terrain and climatic conditions relevant to the state.

This Committee will be authorised to review & revise norms on an annual basis.

4. Major activities for incorporation :

Box 3: Major activities for incorporation in Maintenance Norms

A. Routine Maintenance

- Pothole repairs
- Erosion control on shoulders, slopes
- Cleaning of drains, culverts, other waterways
- Bush cleaning and repair of road signs

B. Periodic Maintenance

- Renewal of road surface
- Major repairs to CD works

C. Emergency Maintenance

- Reconstruction / repair of CD works damaged due to floods, earthquakes
- Reconstruction / repair of road sections damaged due to washouts, floods, landslides, earthquakes

D. Special Repairs

- Clearing of landslides
- Repair/Reconstruction of retaining/breast walls
- Repair/reconstruction of damaged drains
- Repair/reconstruction of Road damaged due to laying of Public service utilities.

5. Management, Planning & Funding :

1. Overall responsibility for efficient planning management and delivery of rural road maintenance shall be of PWD including coordination with other departments handling the work of rural roads. A dedicated Planning, Budgeting and Monitoring (PBM) Unit, in the PWD Head Quarters to be headed by a Superintending Engineer shall be responsible for Planning, Budgeting and Monitoring of all maintenance works of the road network under the overall guidance of the Chief Engineer PWD (R&B).
2. To ensure allocation of adequate and timely availability of funds needed for maintenance of rural roads as per Annual Maintenance Plans, prepared by the PWD (R&B), a dedicated maintenance fund shall be created on the basis of fund already created for maintenance of PMGSY roads.
3. Govt. shall Constitute a standing Empowered Committee to decide on annual allocation of funds for maintenance of different categories of roads with reasonable share for rural roads based on the percentage of rural roads with respect to the total road network. While deciding the distribution of funds due consideration shall be given to the average traffic plying on different categories of roads, their importance and the initial investments made in the construction of these roads. The EC may comprise of Principal Secretary (Finance), Principal Secretary (PW), Chief Engineer PWD (R&B)
4. Explore avenues for mobilising of additional funds for reducing the gap between the funds required and those made available for maintenance of rural roads. Sources for additional Revenue generation shall be as under:
 - a. Additional tax on hotel industry (cess on luxury tax etc.
 - b. Additional levy on forest produce
 - c. Additional cess on transport fuels
 - d. Additional cess on transport of agriculture produce
 - e. Increase in toll rates
 - f. Additional taxes on transport of minerals/industrial produce in the state
 - g. Additional levy on Vehicle Registration
 - h. Additional levies on companies putting hoardings/advertisements by the side of roads
 - i. Contribution by Cement producing industry and Hydel power producing big corporations/companies
 - j. Contribution by major industries towards Corporate social Responsibility (CSR) to be used partly for maintenance of road assets

- k. Cess or charges imposed on road users for laying utility services like cables for phone connectivity etc.
- l. Regulated Marketing Cess (RMC) – A part of this Cess can be dedicated for maintenance of the rural road infrastructure.
 - 2. Formulate an Action Plan for time bound removal of maintenance backing of the rural road network so that the network is brought to acceptable level of service. The road condition data and the report generated through the proposed road maintenance management system shall be used to identify the backing and remove the same in a period of five years in a phased manner and funds for the same shall be made available. The backing would primarily comprise network in 'Fair' condition requiring renewal and the network in 'Poor' condition requiring rehabilitation.
- 5. **Nagaland PWD** shall institute annual performance evaluation system to inform the government about the delivery of maintenance and condition of the rural road network as a result of funds allocated for the purpose.
- 6. **Nagaland PWD** shall introduce a simple Road Maintenance & Management System (RMMS) for rural roads to prepare Annual Maintenance Plans for each PIU based on scientific condition assessment of the road network. To achieve this comprehensive road database to carry out the maintenance work in a planned and efficient manner shall be adopted. The database shall consist of road inventory details, road section inventory and Road Condition Index report for every rural roads. The Road condition index of each rural roads will be updated every year. An Annual Maintenance Plan shall be prepared based on Road Condition Index and the prioritization of the roads as per the road Priority Index to be finalized and these shall form part of the standard Operating Procedures. The department shall prepare an Annual Rural Road Maintenance plan (ARRMP) covering Rural Roads under its jurisdiction with due attention to management of the whole programme, based on availability of fund for rural roads maintenance. The Plan shall be formulated by the end of February every year, for the State. It will identify the maintenance works taking into account the condition of both the carriageway of roads, culverts, road signage and other road appurtenances. The field units of PIU's / Divisions under Nagaland PWD shall collect/outsourced the collection of condition data and inventory data and capture the condition of roads through Photographs/videography (having Longitude – latitude) of location. The Competent Authority of PWD shall approve the AMP by the end of March every year.

7. Set up Special Zone task Forces in each PWD zone to deal with emergency situations arising due to natural disasters headed by Zonal Additional Chief Engineer or SE (Design) of the Zone and concerned SE of the Circle as members.
8. Some pilot works of maintenance shall be undertaken jointly by **PIU of State PWD** and relevant block/gram panchayat and steadily move towards devolving maintenance responsibility in respect of rural roads to Panchayati Raj Institutions. Similar pilot project shall be undertaken with the involvement of Local community participation.
9. Training shall form an integral part of Institutional strengthening of the State PWD. For this State PWD shall formulate a calendar of training programmes for its technical officers at various levels. These training Programmes shall include development and dissemination of training modules covering all aspects of road maintenance from planning to execution to monitoring of entire maintenance activities. An in house cadre of trainers shall be developed for imparting training to the staff. Training modules shall be developed for imparting both on site as well as off-site training to field staff. Training programmes shall also include study tours to national/international best practice examples.
10. State PWD shall support in providing outreach programmes in enhancing the training facilities for Class C and class D contractors in implementation of maintenance works. For this, the Contractors Association shall be associated to work out the details of training modules, training provides including on-the-job exposures in close association with the road agencies. Such modules could be in the form of booklets / hand-outs in various maintenance operations as also in audio-visual mode.
11. The State PWD shall identify and pilot innovative maintenance models and technologies. These innovations shall be in the form of piloting and adopting different models of outsourcing maintenance works which could be in the form of Performance Based Maintenance Contracting (PBMC), Community Contracting or a Hybrid system involving combination of PBMC and conventional Bill Of Quantities (BOQ) model. 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. Effort shall be on environment friendly technologies.
12. The State PWD shall undertake road user satisfaction surveys every 3 years on its rural road network and put the result on the website.

13. Detailed guidelines for execution of maintenance policy will be finalized by Public Works Department. The essential methods & procedures to assist in implementation of Annual Maintenance Plans have been incorporated in these guidelines and attached as Part-II (Standard Operating Procedures for Maintenance of Rural Network in Nagaland). The objectives & expectations from the maintenance work, utilization of resources, responsibilities & functions of staff at different level, procedures for contract management, quality assurance, technical specifications, maximum response time have been explained in these guidelines.
14. Necessary amendments may be made in the provisions of the guidelines by the State Public Works Department on the basis of experiences.



STANDARD OPERATING PROCEDURES
FOR
MAINTENANCE OF RURAL ROAD NETWORK IN NAGALAND
PART - II
October 2017

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CHAPTER – 1 INTRODUCTION

- 1.1.1 Nagaland is a hilly State situated in the North East region of India with no waterways and rail connectivity. Roads occupy a dominant position in the transportation system of the State. It is considered an infrastructure critical to economic growth and social development. Maintaining these roads in serviceable condition is crucial to the agricultural and industrial growth on the one hand and affording means of access on a sustainable basis to our population to social facilities such as schools, health centres as well as markets on the other hand.
- 1.1.2 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.
- 1.1.3 The fact that the road network is maturing as a result of reaching the desired coverage of the population, more emphasis need to be placed on the maintenance of already existing infrastructure assets. This implies that an increasing proportion of funding and technical and managerial capacity need to be allocated to protecting the investments made earlier in building the road network.
- 1.1.4 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 with adequate fund for its execution. 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 Standard Operating Procedures for maintenance of the roads at operational level for securing adequate and timely maintenance of the rural road network.

CHAPTER – 2 STAFFING

2.1 Organisational Setup

- 2.1.1 Nagaland 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 Principal Secretary/Secretary to the Government of Nagaland. The Chief Engineer (R&B) would be overall in charge of the implementation programme. The construction and maintenance of the network comprising State Highways, Major District Roads and Rural Roads shall be supervised by the Chief Engineer (R&B) who has control over the field Circles with each Circle being headed by a Superintending Engineer. These circles are further divided into field Divisions each headed by an Executive Engineer. Similarly, these field divisions have a number of sub divisions under them each headed by an Assistant Engineer/ Sub – Divisional Officers (SDO). The Assistant Engineers are assisted by a number of Junior Engineers and Sectional Officers each of whom is in charge of a section. The Junior Engineers/ Sectional Officers are in turn assisted by Sectional Assistants (Mohurier).
- 2.1.2 A dedicated Planning, Budgeting and Monitoring (PBM) Unit in the PWD Head Quarters to be headed by a Superintending Engineer shall be responsible for Planning, Budgeting and Monitoring of all maintenance works of the road network under the overall guidance of the Chief Engineer (R&B). This unit shall comprise of one Executive Engineer, two Assistant Engineers, two Junior Engineers, one Draftsman and two Computer Operators. The Sectional Accounts Officer shall assist the Superintending Engineer 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 wing of the PWD headed by the SQC (State Quality Coordinator).

CHAPTER – 3 PLANNING AND DESIGN

- 3.1.1 Maintenance Works will include all works of routine maintenance, periodic maintenance, road rehabilitation including pavement strengthening, special repairs and emergency maintenances.
- 3.1.2 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 extant 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.
- 3.1.3 A **Periodic Renewal cycle** of 5 years shall be adopted for entire road network in the State.
- 3.1.4 The **Specifications** to be adopted shall be NPWD Specifications 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.
- 3.1.5 The **Field Units**, namely, the Divisional Offices shall be responsible for carrying out the Road Inventory and Road Condition Surveys as per prescribed procedures.
- 3.1.6 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 Sectional Officers and Sectional Assistants. Their work shall be supervised by their Assistant Engineers and physically checked to the extent of 15% and accordingly certified. The road condition data shall be collected through visual inspection. The Executive Engineers posted in the Divisional offices shall simultaneously carry out 10% test check of the road condition data collected by the field units.

The **schedule for the above activities** shall be as under:

- (i) The surveys shall commence immediately after the cessation of monsoons in October and completed by 15th 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 1st week of December
- (iii) Results of the entire road network shall be generated by the PMGSY HQ staff by 31st December.

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- 3.1.8 PWD HQ shall finalize the priority list for Annual Maintenance Plan (AMP) and disseminate the same to all field offices by 15th January. 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 31st January with full justification in case any substitution is required.
- 3.1.9 Field offices shall initiate action for preparing estimates and inviting bids for works proposed to be contracted out for the approved chain ages of various roads immediately and works shall be awarded by 25th March.
- 3.1.10 Implementation shall commence by 1st week of April in the peak working season and completed before the rainy season starts i.e. May.
- 3.1.11 The Annual Calendar of Road Maintenance Activities shall be as given in Table 1
- 3.1.12 The Superintending Engineers in charge of field circles shall closely monitor the progress of the above activities in respect of their jurisdictions.

Table 1

ANNUAL CALENDER OF ROAD MAINTENANCE ACTIVITIES

Sr. No.	Item of Work	Intervention Standard	Response Time	Frequency	Remarks
1	2	3	4	5	6
1.	Cleaning/desilting of road side drain/gutter			Thrice i) February ii) May and June iii) August and September and as and when required i.e. blockade more than one-fourth	
	Water diverted out of drain onto roadway	Causing a hazard to traffic	Immediate		
	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	All potholes ≤75mm depth Cracks >5mm in width Edge Breaks	21 days	Immediate on their occurrence	

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	and depressions	>150mm in width Ruts >50mm in depth Depressions >50mm in depth			
	Pothole filling in WBM with maximum dimension >200mm	Depth > 75mm	21 days		
	Pothole filling in Gravel/ Katcha 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.	While washing of Parapets, Guide Stones,			Twice (April and October)	

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	Tree Trunks etc.				
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 (August and December)	
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			

3.1.13 The Junior Engineer shall prepare monthly Maintenance Plan of the roads and forward it to the Assistant Engineer one week before the commencement of the respective month for approval

3.1.14 In case of Divisions having labour 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 these labour gang. The quantum of works thus identified should 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 – 4 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 incharge of the roads must exercise the greatest care to see that money and materials are used to the best advantage. To achieve this frequent inspections are necessary and in this connection the following broad principles are laid down:

- (i) The Sectional Assistant (Mohurier)/ Sectional Officers 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 incharge 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 Sectional Assistant in his dairy and initial the same
- (iii) The Assistant Engineer incharge 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 incharge 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 Assistant Engineer incharge. He shall inspect all the roads under his jurisdiction once every three months.
- (v) The Superintending Engineer shall, whenever possible, be accompanied by the Executive Engineer. He shall plan his visit through alternate routes rather than following only the regular and direct route while going on/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 of the 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.
- (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 last inspection and record the same in the notebook of the Junior Engineer and the Assistant Engineers.

- (ix) The Superintending Engineer shall also inspect the roads from overall road safety considerations and give appropriate directions

4.1.2 Duties of Sectional Assistant (Mohurier)

- (i) To report to Junior Engineer/ Sectional Officer.
- (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 causality, 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 alongwith 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/ Sectional Officers
- (xi) To report about damages to structures, kilometer stone etc. and keeping them in position
- (xii) To comply with any instruction giving by his immediate superior
- (xiii) Daily labour report, D.L.R.
- (xiv) To ensure adequate quantum of work being done by gang and that it conform 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 Sectional Officers/ Junior Engineers

- (i) To report to Assistant Engineer (SDO).
- (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 giving 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
- (xviii) Inspection and supervision of works as per prescribed norms
- (xix) 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 task for labour
- (xx) No progress in MB be entered as 'unsusceptible to measurement' and progress of all activities be recorded
- (xxi) Reporting observations to higher authorities
- (xxii) Preparing estimates for repairs after conducting condition survey of roads
- (xxiii) Reporting about closure of road/obstructions due to any of the following reasons
 - (a) Over topping/breach
 - (b) Land slides
 - (c) Earth quakes
 - (d) Accident
 - (e) Any other reason (specify)
- (vi) Arranging for removal of obstructions such as dead animals, trees and other debris lying on road
- (xxiv) Enumerating safety measures and restoration works in case of flood damages and breaches and reports on opening of traffic/completion of restoration.

4.1.4 Duties of Assistant Engineers

- (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

4.1.5 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 Assistant Engineers 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 Sectional Assistant (Mohurier)

- (a) Immediate report of the road breach/blocked will be made to Junior Engineer and Assistant Engineer. 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
- (e) Construction of diversion, if possible

4.2.2 Action to be taken by the Junior Engineer

- (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 Assistant Engineer, Executive Engineer and Superintending Engineer through fax 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 Assistant Engineer

- (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 send a detailed report to the Superintending Engineer and Chief Engineer about the road damage indicating:
 - (i) Nature and cause of damage with location

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- (ii) Proposals for remedial measures with financial implications
 - (iii) Nature and course 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 road

CHAPTER – 5 EXECUTION OF MAINTENANCE OPERATIONS

5.1 Safety of Workers and Road Users During Maintenance

- (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 Sectional Assistant have been spelt out elsewhere in this document.
- (II) The gang men must fully know the tasks they are to carryout 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 etc.	
	(a) Ordinary soil	2.5 Cum/person/day
	(b) Hard soil	1.75 Cum/person/day
2.	Dressing of berms	75Sqm/person/day
3.	Jungle clearance	100Sqm/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	150Sqm/Person/Day
7.	Edge covering	60 m/Person/Day
8.	Side slope/shoulder repair	2.0 Cum/Person/Day

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9.	Maintenance of drains	125 RM/Person/Day
10.	White washing of parapets, tree trunks, breast walls etc.	30Sqm/Person/Day
11.	Other items as per norms worked out from Schedule of Rates (SOR)	

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

- (VI) For the purpose of monitoring the progress of these works the Sectional Assistant incharge in that section shall be accountable. The Junior Engineer will exercise 100% test check in each work and Assistant Engineer/Executive Engineer respectively upto 30 and 10%.
- (VII) Instead of deploying labour in scattered manner, deployment shall be made in gang who will take up work from one and completed progressively towards the other ends.
- (VIII) 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 as well as 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

- (I) 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 Sectional Assistant shall normally be as shown in Table-3:

STANDARD OPERATING PROCEDURES

Table-3

Sr. No.	Item	Essential Quantity (With Gangs) (Nos.)	Option with J.E. incharge (Nos.)
1.	Spades	3	
2.	Pan (parat)	3	
3.	Pick Axes	2	
4.	Axe	1	
5.	Wheel barrow	3	
6.	Tar Sprinklers (Jharnas)		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	
	6mm	1	
12.	Cross Slope Template for berms (camber 3 percent)	1	
13.	Tar thermometer		4
14.	Spring Balance		1
15.	Tape 15 mtr.	1	
16.	Measuring wooden boxes (35cm x 25cm x 40cm)		2
17.	G.I. Bucket	1	
18.	Straight edge		1
19.	Caution board		2

CHAPTER – 6 MONITORING

- 6.1.1 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.
- 6.1.2 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 Rs. Lacs)			Remarks
			Expenditure up to last Quarter	Expenditure during the Quarter under review	Cumulative Expenditure during the year	

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.	Sanctioned Length (in Km.)	Sanctioned 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		Overall upto date Achievement		Likely date of Completion	Remarks
Physical (in Km.)	Financial (in Rs. Lacs)	Physical (in Km.)	Financial (in Rs. Lacs)		
13	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	Sanctioned 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
Physical (Km./%age/ No.)	Financial (in Rs. Lacs)	Physical (Km./%age/ No.)	Financial (in Rs. Lacs)		
13	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)

- 6.1.3 The Superintending Engineer shall hold review meeting with the Divisional and Sub-Divisional officers before the 25th day of the calendar month immediately succeeding the quarter under report and send his report to the Zonal Additional Chief Engineer and PWD Head Quarters by the 30th day of the same month.
- 6.1.4 The Zonal Chief Engineer shall review the same and the comments of the Zonal office shall be communicated to the Superintending Engineers and the Executive Engineer by the 15th day of next month
- 6.1.5 The Planning, Budgeting and Monitoring (PBM) Cell shall review the same and the comments of the head Quarter shall be communicated to the Superintending Engineers and the Executive Engineer by the 20th day of next month.
- 6.1.6 At Division level the Executive Engineers will review the physical and financial progress on the above analogy on a monthly basis and hold a review meeting with the Assistant Engineer by the 12th day of each succeeding month.

CHAPTER – 7 FINANCIAL MANAGEMENT

- 7.1.1 The rules for keeping and rendering accounts and dealing with financial transactions made in respect of works under State Head shall be as per Public Works Accounts Code
- 7.1.2 The Executive Engineer shall maintain cash books in respect of all financial transactions
- 7.1.3 All financial transactions made during the month shall be posted monthly in the Register of Works from Works Abstract
- 7.1.4 Before submission of the monthly account to the **Accountant General's** office the Register of Works (CPWA 41) shall be completed, reviewed by the Executive Engineer and date initialed by him in token of his having examined the entries and found to be correct
- 7.1.5 The Register of Works shall serve as authentic record of expenditure being made every month and finally the yearly expenditure of maintenance incurred on each road as this Register is to be maintained with a separate page devoted to each road
- 7.1.6 Works executed under the PMGSY programme would in addition to above shall be governed by the PMGSY Accounts Manual of Maintenance Fund by opening a separate Bank account for the Maintenance Fund as per the provisions of this manual
- 7.1.7 The payments of bills on account of maintenance of PMGSY roads shall be made out of funds provided to NGRDA (SRRDA) for the maintenance of these roads by the State Government.
- 7.1.8 Payment of maintenance of PMGSY roads shall be made from the dedicated State Fund/ revenue mobilized through Maintenance Policy / Head.
- 7.1.9 The demand for funds/Bank Authorization shall be made for routine maintenance and periodic maintenance on separate requisition forms devised by SRRDA for these maintenance activities
- 7.1.10 The accounting shall be maintained through ledgers maintained at Circles level which stand designated as Accounting Centers. The Superintending Engineers and Executive Engineer of these Accounting Centers are authorized signatories for drawl and disbursement of money. All authorized signatories operate on the single bank account opened for Maintenance Fund
- 7.1.11 Ledgers shall also be maintained in the SRRDA to keep a watch on the expenditure
- 7.1.12 The funds shall be released to these accounting Centres by the SRRDA through the system of Bank Authorization
- 7.1.13 Year wise, Phase wise and Package wise ledger accounts shall be maintained for accounting of periodic maintenance separately for PMGSY (Regular) and World Bank funded Projects
- 7.1.14 The funds shall be demanded by the Divisions on the basis of actual bills
- 7.1.15 Monthly accounts shall be rendered by accounting centers to SRRDA by the 5th of the following month for their scrutiny and compilation on monthly basis
- 7.1.16 Funds received for renewal and routine maintenance shall be shown separately in

the monthly accounts

- 7.1.17 The Year wise, Phase wise and Package wise schedule of expenditure shall be prepared separately for periodic renewal and routine maintenance
- 7.1.18 In case of maintenance work carried out through Departmental labour the Executive Engineer shall demand Bank Authorization separately for labour payment and material payment and separate cheques shall be issued by the Superintending Engineer/ Executive Engineer authorized for issuing cheques to the concerned Executive Engineer for accounting purpose in their accounts under appropriate heads

CHAPTER – 8 QUALITY ASSURANCE

- 8.1.1 The Quality Assurance activity, in order to be truly effective has to ensure a progressively improved and uniform quality of the finished work. Maintenance of quality has to be imbibed in the minds of the contractor as well as the officials of the department
- 8.1.2 The direct responsibility for ensuring proper quality of work as per approved specifications for achieving the intended performance rests with the field team of Executive Engineer, Assistant Engineer and Junior Engineer. The Superintending Engineer shall be overall responsible for management of Quality System and Procedures for the works under his charge

8.2 Responsibilities of the field staff

- 8.2.1 The broad responsibility of the staff and the Engineer-in-charge will be as under:-
- (i) To ensure that materials duly approved by the competent authority are used in the work
 - (ii) Wherever necessary the Executive Engineer shall approve the sources for respective materials
 - (iii) Samples of materials shall be approved by the Executive Engineer
 - (iv) To ensure that all the mandatory field and laboratory tests as laid down in the specifications are carried out at appropriate time and materials failing to conform to the required specifications are promptly rejected and removed from site
 - (v) As far as practicable all tests on materials shall be carried out at the construction site in a field/Divisional laboratory, which shall be set up under the control of the Executive Engineer. A Junior Engineer of the Division with aptitude for testing shall be selected by the Executive Engineer for manning the laboratory. He shall be given training in the Central Laboratory to familiarize with the various tests, and then placed in charge of the field laboratory
 - (vi) It will be incumbent upon the Executive Engineer to keep a watch over regular testing of materials before making payment at the stage of each running bill
 - (vii) Samples for tests shall be taken mostly by the Junior Engineer, or some by the Assistant Engineers. Samples for 10% of mandatory tests shall be collected by the Executive Engineer. 10% of the field tests shall be got done by the Executive Engineer in his presence
 - (viii) A guard file shall be maintained at all work sites, with copies of all inspection reports to-date
 - (ix) Inspection Register, Site Order Book, Record of tests, Hindrance Register, etc. shall be put up for entries and review to every inspecting officer
 - (x) The inspecting officers of the rank of Superintending Engineer and above shall not confine themselves only to review of progress, co-ordination and general matters, but shall also inspect the work from quality Assurance aspects
 - (xi) The Executive Engineer and Superintending Engineer shall invariably review and sign the guard file of earlier inspections, Inspection Register, Site Order Book, Register of tests carried out, Hindrance Register etc.

- (xii) The Executive Engineer shall ensure that the Assistant Engineers and Junior Engineers, as well as the contractors' supervisors in-charge are fully aware of the specifications and method of execution of any new/fresh item of work to be taken up in the next 2 weeks. The Assistant Engineer/Junior Engineer/ Supervisor shall ensure that this important aspect is not overlooked

8.3 Quality Assurance set up at Circle Level

8.3.1 The Quality Assurance team with the Superintending Engineer of the Circle as its head will comprise the Assistant Engineer (alongwith his Junior Engineer for laboratory work), whose main job is quality assurance. In order that the role of the Assistant Engineer (QA) is effective in the process of Quality Assurance, the following points are essential:

- (i) The periodicity of visit of works should be such that the process control at various stages is possible
- (ii) There should be minimum delay between inspection of work and communication of inspection report to the field formation
- (iii) The Assistant Engineer (QA) shall carry out his tasks in a work that relates operationally to the quality specifications and standards laid down for the work, and to the control actions that can be applied to the construction process. Thus the Assistant Engineer (QA) should assess those aspects which are important to the overall quality of the finished work

8.3.2 The functions of the Quality Assurance team at Circle level are to check the compliance of Quality Assurance system by the field units and to guide the field engineers in quality related aspects of the work. For this purpose:

- (i) The Assistant Engineer (QA) shall carry out a minimum of 4 visits to works every month
- (ii) The Assistant Engineer (QA) shall prepare his program and take approval of the Superintending Engineer. The program shall be sent to site in advance of inspection

8.3.3 Such inspections by the QA team shall, however, not absolve the responsibility of the Junior Engineer/Assistant Engineer/Executive Engineer for accepting only quality work from the contractor

8.3.4 On the basis of his observations with regard to the quality of works, general adherence to the quality assurance procedures and the standard of progress, the Assistant Engineer (QA) shall submit an overall assessment report to the Superintending Engineer of the Circle. The Superintending Engineer shall comment on the report with minimum delay. The Assistant Engineer (QA) will then send the report to the Executive Engineer concerned for compliance

8.4 Quality Assurance set up at Zonal Level

- 8.4.1 Quality Assurance in Zones shall be looked after by the Zonal Quality Assurance (QA) unit headed by the Zonal Additional Chief Engineer.
- 8.4.2 The Zonal QA unit shall follow the guidelines and norms relating to quality systems and procedures as laid down by the Chief Engineer (R&B) from time to time. These Zonal QA units shall function under the control of Zonal Addl. Chief Engineer who shall be fully responsible for effective quality assurance in his Zone.

8.5 State Quality Coordinator (SQC) set up

- 8.5.1 The State Quality Coordinator (SQC) shall have the overall responsibility of constantly reviewing the existing quality assurance procedures and updating them on the basis of feedback from the Quality Assurance teams.
- 8.5.2 His unit shall carry out the functions of Zones (QA) teams for works where no Superintending Engineer (QA) is posted.
- 8.5.3 Carry out investigations and enquiries with regard to quality related aspects for specific works for the entire projects in the State.

Chapter – 9 Maintenance Operations through Contracts

9.1 EPC (Engineering, Procurement and Construction) contracts

The Standard Operating Procedures as outlined in the previous chapters shall be applicable for maintenance of the rural road network in situations where maintenance works may be outsourced through Community Contracts involving the PRIs / Village Development Board / Village Councils, if they are found to be competent to undertake such maintenance work. They shall be executing the works under the strict guidance of PWD (R&B) Zones/ Circles and Divisions under which it falls.

9.2 Performance Based Maintenance Contracts

9.2.1 The contractor shall follow the Annual Calendar of Routine Maintenance activities as per Para 3.1.11 unless a different calendar to be adopted has been specified in the Contract document.

9.2.2 The inspections to be conducted by the contractor or by his authorized representative shall ensure that the Intervention Period for undertaking maintenance measures to control defects for adherence to the Performance Criteria for Defects shall be strictly observed as per the Contract Agreement.

9.2.3 Junior Engineer/Assistant Engineer shall be immediately reported about closure of road/obstruction due to any of the following reasons

- (a) Over toping/breach
- (b) Land slides
- (c) Earth quakes
- (d) Accident
- (e) Any other reason such as dead animals, trees etc.

9.2.4 In case road is breached or blocked the contractor shall take following action

- (a) Immediate report of the road breach/blocked will be made to Junior Engineer/ Assistant Engineer. 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 "Diversions" boards shall be fixed on both sides at 60

m distance in advance of the hazard

- (d) Labour shall be deputed to guide the traffic to prevent any accident till such time that alternate arrangements are made by the department

9.3 Safety of Workers and Road Users during Maintenance

- 9.3.1 In the implementation of maintenance operations the contractor shall ensure safety of workers and road users as outlined in Para 5.1

CHAPTER- 10 FINANCIAL LIABILITY

10.1 Fund Projection for Rural Roads in Nagaland for 5 years

Item	1 st Yr (Crore)	2 nd Yr (Crore)	3 rd Yr (Crore)	4 th Yr (Crore)	5 th Yr (Crore)	Total for 5 years (Crore)
Annual fund requirement for maintenance of Rural Roads in Nagaland including bridges, cross drains, W/C components	68.80	72.33	75.95	79.75	83.74	380.66

Note: Anticipated cost escalation of 5% is allocated and projected annually.

10.2 General abstract of requirement of maintenance fund for rural roads in Nagaland

For Traffic (Commercial vehicle per day) less than 450

Sl. No	Items	Length	Rate	Cost
1	Blacktopped Surfaced road	700.07	431652.38	302186878.17
2	WBM Surfaced Road	685.30	284137.88	194719685.74
3	Un-surfaced Road	3106.63	10000.00	31066300.00
4	Culverts			34611500.00
5	Bridges			11533333.33
Sub Total				574117697.24
6	Special Repair @ 5%			28705884.86
7	Emergency Repair @ 10%			57411769.72
8	Work Charge Component @ 2%			11482353.94
9	Contingency @ 3%			17223530.92
Total				688941236.68
Fund requirement per year				Say Rs. 68.80 Crore

(Rupees Sixty Eight Crore Eighty Lakh only)