GOVERNMENT OF KERALA

Abstract

Local Self Government Department - Rural Roads Maintenance Policy (PMGSY and Non-PMGSY)-2016 - approved -Orders issued

LOCAL SELF GOVERNMENT (DD) DEPARTMENT

G.O.(Ms)No. 197 /2016/LSGD Dated. Thiruvananthapuram, 27.12.2016.

Read:-1. D.O No. P-17029/01/2006/WB/ILO/pt dated 25.6.2015 from Secretary, Ministry of Rural Development, Government of India.

2. Letter No UT- 412 /AB1/ K S R R D A/2015 dated 01 /12 / 2016 from the Chief Engineer, Kerala State Rural Roads Development Agency.

O R D E R

As per the DO letter read above, the Secretary, Ministry of Rural Development, Government of India has requested the state Govt to formulate State Specific Rural Roads Maintenance Policy on the basis of the Model Policy Framework for Maintenance of Rural Roads along with the Guidance Note prepared by the National Rural Roads Development Agency (NRRDA) in partnership with International Labour Organization (ILO) and World Bank. As per letter read above, the Chief Engineer, Kerala State Rural Roads Development Agency has submitted the draft Rural Roads Maintenance Policy (PMGSY and Non-PMGSY) and requested to approve the same.

2. After having examined the matter in detail, Government are pleased to approve the State Rural Roads Maintenance Policy (PMGSY and Non-PMGSY) as appended to this order.

(By order of the Governor)
VIJAYAKUMAR .T. P
SPECIAL SECRETARY

To

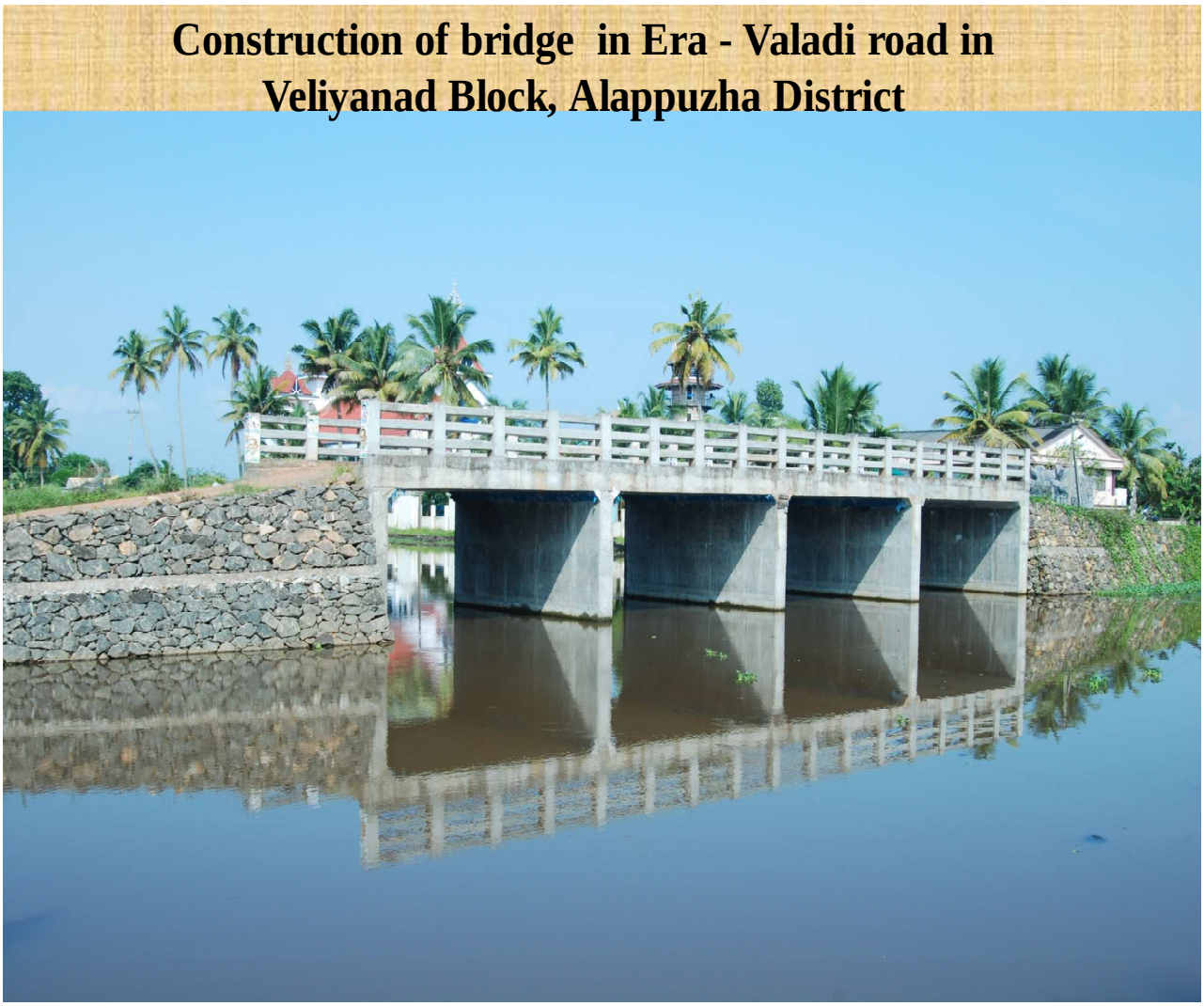
Member Secretary, Kerala State Rural Roads Development Agency, Thiruvananthapuram.
Chief Engineer,Kerala State Rural Roads Development Agency
Thiruvananthapuram.
Commissioner for Rural Development, Thiruvananthapuram.
Accountant General(Audit/A&E), Kerala, Thiruvananthapuram.
Director, Kerala State IT Mission
Director I&PRD
SF/OC

Forwarded/By Order

Section Officer

Copy to:
Private Secretary to Minister , L S G D
P A to Principal Secretary, L S G D

Rural Road Maintenance Policy
Government of Kerala
(PMGSY and Non PMGSY)



Acknowledgements

The Kerala State Rural Road Development Agency would like to express its gratitude to the Ministry of Rural Development, Government of India and National Rural Roads Development Agency, Government of India and Government of Kerala for their support and cooperation in drafting the Policy on Maintenance of Rural Roads in Kerala State.

Foreword

The Government of India is implementing a massive programme of village connectivity with the ultimate aim of connecting all habitations with all weather roads through the PMGSY.

Construction of rural roads brings multifaceted benefits to the rural areas by way of increases in agricultural production and the size of markets, better prices for agriculture produce, reduction in transport costs and the creation of off-farm employment opportunities. They also provide access to medical and educational facilities. Provision of rural roads is an effective element of a poverty reduction strategy.

Rural roads form a large share of the total road network. If these roads are not maintained, benefits disappear. The principal objectives of road maintenance are to keep roads open, reduce rate of deterioration and extend life of the road network, reduce vehicle operating costs and improve the speed and frequency of public transport services. Maintenance also safeguards previous investment in construction and reduces burden of huge rehabilitation costs later. 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 sense. These roads provide an economic rate of return which is often in the range of 25 to 30 percent.

Keeping them in a serviceable condition is crucial to the agricultural growth and affording means of access to millions of rural people to social facilities such as health and education.

The Policy on maintenance of rural roads in Kerala State is presented here with which covers the following elements like State Government commitment, adequate funding, Institutional reforms and Implementation efficiency aspects. Even though the government is setting apart considerable amount for the maintenance of rural roads through PRIs, due to the lack of efficient and scientific engineering planning major portion of the expenditure in this sector becomes futile.

This maintenance policy for the rural roads may serve as a useful model and guide for not only the State of Kerala but also for other states in their efforts to put maintenance of rural roads on a solid footing so that road assets being created at huge cost to the economy are preserved and the benefits fully accrue to the people.

KSRRDA

CONTENTS

Abbreviations

ADT -Average Daily Traffic

AE -Assistant Engineer

AEE-Assistant Executive Engineer

ARMOP: Annual Road Maintenance and Operation Plan

BT -Black-Top (surfaced roads)

CBO -Community Based Organisation

CC -Cement Concrete

CE -Chief Engineer

CUCPL- Comprehensive Upgradation cum Consolidation Priority Lists

CV -Commercial Vehicle

CVD -Commercial Vehicle per Day

DPR -Detailed Project Report

DRD -Department of Rural Development

DRDA -District Rural Development Agency

EE -Executive Engineer

FY -Financial Year (1st April to 31st March)

GOI -Government of India

GOK -Government of Kerala

Ha -Hectare

IRC -Indian Roads Congress

KSRRDA-Kerala State Rural Road Development Agency

MDR -Major District Road

MLAs -Members Legislative Assembly

MMS -Maintenance Management System

MNP -Minimum Needs Programme

MORD -Ministry of Rural Development, Government of India

MOSRTH -Ministry of Shipping, Road Transport and Highways,Government of India

MPs -Member s Parliament

NABARD -National Bank for Agriculture and Rural Development

NH -National Highway

NHAI -National Highways Authority of India

NHDP -National Highway Development Project

NRRDA -National Rural Roads Development Agency

ODR -Other District Road

PC -Premix Carpet

PCI- Pavement Condition Index

PCU -Passenger Car Unit

PIU -Project Implementation Unit

PMGSY -Pradhan Mantri Gram SadakYojana (The PrimeMinister's Rural Roads Programme)

PRDD -Panchayat and Rural Development Department

PRI -Panchayati Raj Institution

RCI – Road Condition Index

RIDF -Rural Infrastructure Development Fund

RMMS- Road Maintenance Management System

SD -Surface Dressing

SE -Superintending Engineer

SFC -State Finance Commission

SGRY –Sampoorna Grameen Rozgar Yojana

SH -State Highway

TNA -Training Needs Assessment

TOR -Terms of Reference

VR -Village Road

WB -World Bank

WBM -Water Bound Macadam

Definitions

Annual Road maintenance Operation Plan means the annual road maintenance and Operations plan for the State of Kerala maintained by LSGD/PIU

DRRP-A mapping of all rural roads having their connection to higher order road are done under GIS platform for every district

Defect means any form of failure in the road surface including cracks, deformation and disintegration. These types of failure can be structural or visual in nature.

Link Routes are the roads connecting a single habitation or a group of habitations to Through Roads or District Roads leading to Market Centres. Link Routes generally have dead ends terminating on habitations, while Through Routes arise from the confluence of two or more Link Routes and emerge on to a major road or to a Market Centre.

KSRRDA means Kerala State Rural Road Development Agency

LSGD means Local Self Government Department

Maintenance with respect to roads means repair or remedial treatment to road formation and pavement failures. The purpose being to make the road trafficable until reconstruction works can be carried out by the department.

Major District road means road within the District serving areas of production and market and connecting these with each other or within the highways.

Pavement Condition Index(PCI) is a numerical index used to indicate the condition of the pavement. It is a statistical measure and requires manual/mechanical survey of pavement.

Primary Road Network means the main road which can be either single carriageway or dual carriageway. Broadly primary system comprises National Highways and Expressways

Rural Roads means road connecting villages or group of villages with each other and to the nearest road of a higher category.

Secondary Road Network is made up of State Highways and Major District Roads

State Highways means arterial routes of the State linking District Head quarters and important cities and tourist centre and ports within the State and connecting them with National Highways of the neighbouring States.

Through routes are the ones which collect traffic from several link roads or a long chain of habitations and lead it to a market centre or a higher category road, i.e. the District Roads or the State or National Highways.

Executive Summary

Roads are considered to be essential for economic growth, social development and poverty alleviation. The road network in the country today stands over 4.6 million km including 1.0 million km of earth tracks built under various employment creation and poverty alleviation programmes. The statistics of roads in Kerala shows the 371332kms of roads are rural roads. About 207809kms of rural roads are falling into disrepair every year due to lack of maintenance in the state. The poor condition of these roads also results in an increase in the unproductive time spent on the transport of people and goods. Moreover the benefits created through the investments in access improvements for the rural population are being lost.

Through the Prime Minister's Rural Road Programme (PMGSY), at its onset, aimed to connect all villages with a population of more than 1000 inhabitants with all-weather roads. Since 2007, this goal has been increased to include all communities with more than 500 inhabitants. Rural road connectivity remains a highly important priority and as a result similar programmes are on-going in many states to connect smaller communities. Considering the impressive results of these programmes, it is clear that this targeted focus on improving rural access has been extremely successful. The reasons for its success can to a large extent be credited to the effective management put in place to implement this programme, including key components such as establishing capable client organisations, streamlined procurement procedures, standardised technical designs, sound monitoring and quality assurance procedures and a regular and adequate flow of funds from central authorities down to project implementation levels. As such, there are a string of lessons learnt and good practices serving as good examples on how to

organised large-scale infrastructure programmes.The Ministry of Rural Development administers the programme.

Maintenance of the road assets being created has emerged as a key issuefor sustaining investments in the road sector. The PMGSY itself has set out clear guidelines on maintenance. However the major concern is that whilst the PMGSY roads may indeed be maintained, at least for the five-year retention period, this will divert funds away from the maintenance of the rest of the rural road network. An additional concern is the current capacity of the local authorities to maintain the existing network. These concerns are reflected in the increased interest in rural road maintenance issues. The NRRDA itself has identified maintenance as a key determinant of the success of the PMGSY. The policy brings out an assessment of the current situation and possible options for developing a sustainable maintenance strategy for rural roads in Kerala.

Importance of Maintenance: Roads occupy an important position in the transportation system. Road infrastructure is critical 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. Rural Roads being the constitutional responsibility of the State, the PMGSY is a one time intervention and maintenance of core network will continue to be with the State. If adequate resources, institutional arrangements and capacity of maintenance are not available by the States, the assests created under PMGSY and with other funding agencies will start deteriorating and their useful lives will be curtailed. GOI insists that State must maintain all rural roads including roads constructed under PMGSY to qualify for continuing

support programme funding may be counterproductive if it leads to cutback of maintenance on more important roads.. It would not be out of place to recall that a World Bank study in 1988demonstrated that spending one rupee on maintenance would have saved three rupees in rehabilitation.

In the case of rural roads, the condition is still more serious as it affects the rural poor badly. Mobility to schools and primary health centers is affected. 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.

The poor condition of roads has a profound effect on vehicle operating costs and acts as a disincentive for agriculturists and plantations to increase their production, as more time is lost in evacuation of their products to markets. These assets are deteriorating every year. 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.

These huge national assets justify the application of sound asset management principles to achieve the public expectations. 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 selection, prioritation and maintenance of the roads at operational level for securing adequate and timely maintenance of the rural road network.Since rural roads are basically a state subject, it is now critical that the State Governments undertake the required policy reforms for achieving sustainable maintenance of rural roads.

The purpose of this policy is to provide a guiding frame work for establishing the objectives, making arrangements for and establishing sets of procedures for the maintenance and repair of rural roads, which contributes the major percentage of total road network of the state, by Government of Kerala.

Chapter 1
Introduction

Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The programme envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas. As a result of the PMGSY the rural road network has experienced a considerable growth in terms of its total length. Also, this programme have contributed to the general improvement of the quality of the rural road network.It is the Flagship programme of GOI for creation of Rural Infrastructure. Tracks and trails and other local roads in a very poor shape have been upgraded to all-weather standards with proper drainage and river crossings. This massive improvement of the rural road network has several benefits, both in economic and social terms. Communities are no longer isolated and can partake in mainstream economic and social activities and access to basic services such as health and education is improved as a result of the improved roads.

Kerala has been identified as one of the States to connect the rural population for a sanctioned length of 3349kms on PMGSY-I and 570km on PMGSY-II scheme. Road network plays a very important role in the state of Kerala. To achieve connectivity to the remotest villages in the State, the Government has been relentless in its effort and after the inception of PMGSY; During PMGSY-I implementation in Kerala State, 1430 proposals (855 packages) of roads were approved (cost Rs998 crore) at an average estimated

cost of just over Rs29.82 lakh per km. In addition to the above the Government of Kerala has contributed 314 crores towards tender excess and smooth implementation of the scheme.

Abstract of PMGSY-I Projects approved by GOI				
During 2001-2015	Sanctioned		Completed	
	No	Length in KM	No	Length in KM
All States	139824	539523	113941	416786
Kerala	1430	3348	1152	2663

Roads are the critical infrastructure component for economic growth and social development of the State and the surrounding region. One of the key issues that had emerged during the implementation of PMGSY is the preservation of the infrastructure assets being created by the programme through effective maintenance. For roads constructed under PMGSY, separate maintenance contract is made mandatory with the contractor of the work for maintenance during the defect liability period of 5 years immediately after construction. This arrangement addresses the immediate maintenance needs for PMGSY roads, however, this should not be considered in isolation of the condition and maintenance options for the rest of the road network serving rural people.

The principal objectives of road maintenance policy is to provide a guiding frame work, making establishment& establishing procedures 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. Comfort, convenience and safety are assured for road users. Maintenance for rural roads also

generates local employment opportunities and additional market prospects for the local construction industry. Maintenance of rural roads provides an economic rate of return which is often in the range of 25 to 30 per cent. Maintenance fund of constructed roads in PMGSY is budgeted by the State Government and placed at the disposal of KSRRDA in a separate maintenance fund account.

Assets preservation is more important than asset creation. If care is not taken for a scientific Asset Management Strategy, asset erosion takes place resulting in huge replacement of expended cost .To preserve the assets, on expiry of 5 year post construction maintenance, PMGSY roads are to be placed under zonal maintenance contract consisting of 5 year maintenance including renewal to be continued as a cyclic process.

A wide range of government institutions is building rural roads in India. In Kerala, the Panchayat Raj Institutions (PRIs)are envisaged to be responsible for the maintenance of rural roads under the control of Local Self Government Department (LSGD).The setting up of a sustainable maintenance regime will require:

- Adequate resource mobilisation for maintenance
- Institutional arrangements for allocating resources and managing
  the road network;
- Strengthening the institutions to undertake planning, design and
  implementation of maintenance interventions, and providing technical support to them;
- Developing appropriate and workable maintenance planning and implementation systems.

The road that fails, crack, get deformed or disintegrate present a danger to road users. In addition they impose wear and tear on vehicles, increased consumption of fuel, delay in travel and various

other economic costs. There is a need for the concerned agencies and organization to effect repairs and restoration of road in a timely and systematic manner. The objectives of the policy are to enable:

- ❖ To comply with GOI vide letter D.O. No. P-17029/01/2006/WB/110/Pt dated 07/07/2015, GOI insisted a Rural Road Maintenance policy approved by the State Government.
- ➢ Adequate, timely and sound maintenance of roads to provide safe convenient and efficient access and usage to road users
- ➢ Judicious and optimal utilization of available funds and resources for the maintenance and repair of roads
- ➢ Efficient maintenance by using appropriate technology, State of Art and effective repair treatments by inducting new technology and equipment in road repair and maintenance work.
- ➢ Capacity building and organizational development of the manpower and agencies engaged in road construction, primarily maintenance and repair in the State for efficient discharge of road development and maintenance function.

Any inadequacy in funding and implementation on the ground will result in the erosion of the asset base. 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 Kerala 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 **"Kerala Rural Roads Maintenance Policy".**

Interpretation: If any question arises relating to the implementation of these rules, the same shall be referred to the Government for its decision which shall be final. The decision of the Government shall be implemented.

The Government of Kerala reserves the right to modify and amend the said rules in this Policy from time to time as the case may be.

Local Self Government Department (LSGD), Government of Kerala shall be responsible for the implementation of this policy through Kerala State Rural Road Development Agency (KSRRDA).The policy takes into consideration the Government's commitment, adequate funding, Institutional reforms, ensuring transparency in its working, bidding, e-tendering, contract management and implementing rural road maintenance.

Chapter 2

Government Commitment

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 Section/PIU office is directed to provide the assessment of RCI every year immediately after the rainy season.
2. Each Section/PIU office is directed to provide the assessment of PCI value once in 2 years immediately after the rainy season
3. Standard format for inventory and condition survey shall be specified by KSRRDA for collection of data(NRRDA can standardise these formats)
4. Each Section/PIU office works out the replacement value of roads within its jurisdiction as per illustration given in Table 1.
5. The replacement value of the total rural road network is put in public domain by the state government.

Table 1:The replacement value of rural roads assets in the state ofKerala *(Broad Assessment based on as of 1st January 2015)*

Sl No	Category of roads	Length in Km	Unit Cost Rs Lakh/km	Amount (Rs crore)
1	PMGSY Road	3348	80	2678
2	Other District Road	9939	50	4970
3	Village Road	33593	50	16797
	Total	**46880**		**24445**

Note: 1. only Rural roads having land width more than 5.0 m is considered)

2. SOR Variation in each year shall be applied to update the replacement value

Section/PIU office shall carry out evaluation of the existing road condition in terms of physical condition of both the on-carriageway as well as the off-carriageway through Road Condition Survey. Such surveys shall assess type, magnitude, location of distressed road and other physical parameters It shall evaluate Pavement Condition Index (PCI) and take up prioritization of road on the basis of PCI and Utility value for including in Comprehensive Upgradation cum Consolidation Priority Lists (CUCPL) .

Road condition survey should be conducted on each stretch of road on a yearly basis immediately after the rainy season. The data collected should be recorded kilometre wise.

Traffic data on each road is to be collected as per the procedure laid down in Indian Road Congress. The traffic data should show classification of motorized, non motorized, commercial vehicles etc. The traffic volume data should be used as an input in prioritization of maintenance works.

Table-I : Rating of pavement for Rural roads

Sl No	Parameter	Range of Distress (percent)		
		Good	Fair	Poor
1.	Potholes	Up to 0.5	From 0.5 to 1.0	Above1.0
2.	Patching	Up to 5	From 5 to 20	Above 20
3.	Cracking	Up to 10	From 10 to 20	Above 20
4.	Ravelling	Up to 10	From 10 to 20	Above 20
5.	Pavement Condition Index	4 to 5	2 to 3	1

Apart from pavement, PIU should look at off- carriageway requirements such as drainage and shoulders, performance of cross drainage structures (causeways, culverts, bridges), road signs, pavement markings, traffic control devices, stretches subject to flooding, side slope erosion, safety hazard spots, sight distance/ visibility at road intersections, particularly at the meeting points with main roads. Table 2 provides a checklist of items relating to structures that should be inspected.

Table 2 : Inspection of structures

Item	Defect /Damage
Foundation	Cracks
	Erosion along and underneath
Head and wing walls	cracks
	blocked seepage holes
	Erosion behind walls
Abutments and piers	cracks
	blocked seepage holes
	Erosion behind walls
Culverts	blocked drainage
	Blocked or silted
	cracks
Decking	Settlement cracks
	Loose
	drainage

Item	Defect /Damage
Approaches	Drainage
	Visibility
	settlement
Beams	cracks
	bends
	corrosion
	rotting
Waterway	Vegetation growth
	Deposits of sand, silts or debris
Road furniture	damaged
	Missing
	Faded point
Banks	Eroded
Guard rails	damaged
	missing

The Section/PIU office shall identify different type of road maintenance activities and prepare a manual of technical practices to carry out the same.

2. Constitute a **State level committee** to work out realistic norms

for maintenance of rural roads covering Routine, Periodic, Emergency Maintenance and Special Repairs. This Committee will be authorised to review & revise norms on an annual basis.

Box 2: Fixing up Norms for maintenance of rural roads

The following committee would be responsible for fixing the norms. The committee may comprise of:

1.Principal Secretary,LSGD

2.Chief Engineer, LSGD

3.Chief Engineer , KSRRDA

4.Secretary Finance

5.Other departmental representatives

From the Comprehensive Upgradation cum Consolidation Priority Lists (CUCPL) to be prepared by each section office/PIU every year, a schedule of activities to be done under Routine Maintenance, Periodic Maintenance, Emergency Maintenance, Special Repairs, Upgradation shall be produced before the Standing Empowered Committee well in advance before the start of the relavant financial year along with the allocation of resources to the different operations/components.

Box3:Major activities for incorporation in Maintenance Norms

A. Routine Maintenance

- Pothole repairs
- Erosion control on shoulders, slopes
- Cleaning of drains, culverts, other waterways
- Bush clearing
- 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

E .Upgradation

- Relaying of crust due to increase in traffic
- Pavement strengthening necessitated due to the increased annual maintenance cost

The Operations/ components would be in the following manner

Table 1

ANNUAL CALENDER OF ROAD MAINTENANCE ACTIVITIES (Routine Maintenance)

Sr. No.	Item of Work	Intervention Standard	Response Time	Frequency	Cost
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 and depressions	All potholes ≤75mm depth Cracks >5mm in width Edge Breaks >150mm in width Ruts >50mm in depth	21 days	Immediate on their occurrence	
		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	Blocked by more than one-fourth of the size of the culvert	14 days	Twice (May and October) and as and when required i.e. blockade more than one-fourth	

	functioning properly	opening		of the opening	
	Deformation of culvert, its invert and alignment		45 days and prior to monsoon		
7.	**While 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			

ANNUAL CALENDER OF ROAD MAINTENANCE ACTIVITIES (Periodical Maintenance)

Sr. No.	Item of Work	Intervention Standard	Response Time	Frequency	Cost
1	2	3	4	5	6
1.	Surface dressing	Resurfacing the pavement surface with a single bituminous surface dressing	After the expiry of design life and according to evaluation of pavement structure	As and when required	
2.	Spot rehabilitation	New single surface treatment by scarifying the old surface	After the expiry of design life and according to evaluation of pavement structure	As and when required	
3.	Overlay	Resurfacing and reshaping the surface with BM and BC	After the expiry of design life and according to evaluation of pavement structure	As and when required	

ANNUAL CALENDER OF ROAD MAINTENANCE ACTIVITIES (Emergency/special Maintenance)

Sr. No.	Item of Work	Intervention Standard	Response Time	Frequency	Cost
1	2	3	4	5	6
1.	Constructing temporary bridge structures	As and when causes hazardous to traffic	Immediate	As and when required	
2.	Flood debris removal	As and when causes hazardous to traffic	Immediate	As and when required	
3.	Repair of settlement and land slides	As and when causes hazardous to traffic	Immediate	As and when required	
4.	Removal of materials like soil, rock, boulders, etc.	As and when causes hazardous to traffice	Immediate	As and when required	

ANNUAL CALENDER OF ROAD MAINTENANCE ACTIVITIES (Upgradation)

Sr. No.	Item of Work	Intervention Standard	Response Time	Frequency	Cost
1	2	3	4	5	6
1.	Major restoration or upgrading of the pavement through reconstruction to rectify structural deficiencies	As and when maintenance cost exceeds the permissible unit cost	Immediate	As and when required	

3. Overall responsibility for efficient planning management and delivery of rural road maintenance shall be vested with PIUs &KSRRDA including coordination with LSGD. A dedicated Planning, Budgeting and Monitoring (PBM) Unit, in the KSRRDA Head Quarters to be headed by a Superintending Engineer,which shall be responsible for Planning, Budgeting and Monitoring of all maintenance works of the road network under the overall guidance of the Chief Engineer, LSGD

4. To ensure allocation of adequate and timely availability of funds needed for maintenance of rural roads as per Annual Maintenance Plans, prepared by the Section offices/PIU, the committee would allocate the fund every financial year as obtained below.

Sl No	Financial year	Maintenance fund required to be released(Crores) Total of column no:6 of Table1
1	Routine Maintenance	
2	Periodic Maintenance	
3	Emergency /Special Maintenance	
4	Upgradation	

Chapter 3

Adequate Funding

An analysis of the current financial scenario on road maintenance in the state of Kerala reveals that there is a serious gap between the funds required and those allocated for rural roads. It is estimated that the funds available represent only 25% of that required. As a result, roads have been deteriorating fast and the backlog of periodic maintenance has been mounting, if sufficient funds are not allotted in time.

Funds also have to be identified for bringing the existing roads –in the DRRP- to the maintainable condition, their rehabilitation costs will be very high and beyond the resources in sight.

A time bound implementation plan for this is urgently required for ensuring the availability of funds for the maintenance of PMGSY roads after the responsibility of the contractors ceases five years after construction.

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 a Standing Empowered Committee (SEC) would be constituted comprise of Additional Chief Secretary Finance, Principal Secretary (LSGD), CE LSGD, CE KERRDA, SE KSRRDA. 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.

A dedicated road maintenance fund shall be established with money received/ collected from various source such as Central, State

Government and local bodies as approved by the State Government to provide funds on a sustainable and dependable basis for maintenance of rural roads. An approximate amount required for maintenance per district per year is attached as - A (page-83).

LSGD with the approval of finance department shall formulate the necessary rules for setting up the funds crediting of various moneys thereto, drawal expenditure from the fund, maintenance of accounts and audit thereof for the proper operation of the fund.

In order to formulate an Action Plan for time bound removal of maintenance backlog of the rural road network to an acceptable level of service. On the basis of road condition and reports generated through Road Maintenance &Management System (RMMS), the State shall identify backlog &remove it in the period of 5 years in a phased manner and the funds made available. See Box 4

Box 4:

Tarred Rural Roads in the state:

PMGSY

1. **Very good and good roads: inkms**
2. **Fair roads: in kms**
3. **Poor & very poor: inkms**

Total: inkms

ODR

1. **Very good and good roads: inkms**
2. **Fair roads: inkms**
3. **Poor & very poor: inkms**

Total: inkms

VR

1. **Very good and good roads: inkms**
2. **Fair roads: inkms**
3. **Poor & very poor: inkms**

Total: inkms

UnTarred Rural Roads in the state:

VR

1. **Very good and good roads: inkms**
2. **Fair roads: inkms**
3. **Poor & very poor: inkms**

Total: inkms

Based on PCI,which is a road condition survey, the above classification is made and the kilometres are tabulated.

1. Periodic Renewal Requirement:
2. Backlog of Periodic Maintenance
3. Requirement for Routine Maintenance
4. Emergency and special repair

Total fund requirement = Total requirement of Periodic Renewal+ backlog of Periodic Renewal + Routine Maintenance+ Special repair.

Chapter 4

Institutional Reforms

Currently, the organizations involved in execution of rural roads in Kerala State are the Kerala Rural Roads Development agency (KSRRDA) under Local Self Government Department (LSGD) at the state level. In respect of non-PMGSY rural roads, programmes are administered by Local Self Government Department (LSGD) through PRI's.

The KSRRDA has been created for the purpose of implementing the PMGSY. Its role in maintenance is currently limited to the supervision of the roads constructed under the programme during the initial five years after construction.

Kerala has fully fledged 3-tier Panchayat Raj Institutions. The first tier is the village Panchayat, the second tier is the Block Panchayat and the third tier is the District or Jila Panchayat. Local development works in rural areas are carried out by these LSGIs through the Local Self government engineering Department (LSGD) . Services of Executive Engineer are available at District Panchayat, services of Assistant Executive Engineer are available in Block panchayat and services of Assistant Engineer are available in village panchayat.

The responsibility of developing a maintenance strategy for the rural roadnetwork within the district is vested with District Panchayath with support of district Piu's including all the management &planning activities of the entire rural road net work.

The Kerala State Rural Roads Development Agency at the state level could embrace the following functions:

(i) Support in the Jilla panchayats and technical agencies at the District level in capacity building, management, planning and operations;

(ii) communicate with the funding agency;

(iii) monitor the performance of districts and support them in improving performance;

(iv) recommend or set planning guidelines and standards, and

(v) research and development on management and operations.

(vi) Co-ordinate with agencies responsible for other categories of roads

LSGD shall institute an 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.

LSGD shall simplify the existing Road Maintenance &Management System (RMMS)for rural roads to prepare Annual Maintenance Plans for each Section/PIU office based on scientific condition assessment of the road network.

Set up Special Zonal Task Forces in each section to deal with emergency situations arising due to natural disasters headed by Chief Engineer, SE of the Zone and concerned SE of the Circle as members

The Section/PIU office shall collect/outsource the collection of road condition data and inventory data and capture the condition of roads through photographs/ videography (having longitude &latitude) of location and such details shall be uploaded suitably on the RMMS on department website.

Some pilot works of maintenance shall be undertaken jointly by District PIU 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.

Simple formats for inventory and road condition data have been evolved for adoption in the case of low volume roads that can help in planning and identification of maintenance interventions. It needs to be borne in mind that this system must be simple and should not involve much time and effort in data collection and analysis.

Stretches of road showing signs of distress such as hungry surface, hairline cracking, ravelling and other damage should have the highest priority for inclusion in the renewal programme.

Chapter 5

Implementation Efficiency

It bears repetition that in the matter of maintenance, funds alone will not do. Implementation is a much more critical issue. Clear lines of responsibility need to be established. Operational capacity of the road agencies has to be considerably improved and strengthened. Critical requirements are:

(i) Strengthening the planning capacity to assess the condition of the road network and identify, design and prioritise maintenance activities;

(ii) Improving the ability of the road agencies to manage the contracting process and supervise the work of contractors;

(iii) Improving the capacity of small contractors and gang labour to undertake maintenance operations;

(iv) Developing technical expertise to evaluate the effectiveness of current standards and practices;

(v) Undertaking technical and financial reporting and auditing.

Training shall form an integral part of Institutional strengthening of the LSGD. For this LSGD 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 aimed at exposing

officials to national/ international best practices.

LSGD shall extend 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 contractor's associations shall be associated to work out the details of training modules, training providers 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.

The LSGD 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). 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. Possibility of adopting new techniques for pothole repairs such as first time permanent repairs shall also be explored. Effort shall be on environment friendly technologies.

The LSGD shall undertake road user satisfaction surveys every three years on its rural road network and put the result on the website.

Detailed guidelines for execution of maintenance policy will be finalised by KSRRDA. The essential methods &

procedures to assist in implementation of Annual Maintenance Plans have been incorporated in these guidelines 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.

Necessary amendments may be made in the provisions of the guidelines by the Government on the basis of experiences.

Chapter 6

STAFFING

Organisational Setup

Local Self Government Department (LSGD) shall be responsible for the operation and maintenance of the entire road network under its jurisdiction. The administrative control of the department shall wrest with the Secretary, LSGD Government of Kerala. The Chief Engineer, LSGD would be overall in-charge of the department. The construction and maintenance of the network comprising Rural Roads shall be supervised by each circle office headed by Superintending Engineer. The circles are further divided in to field Divisions headed by an Executive Engineer. The field Division offices have a number of sub division offices headed by Assistant Executive Engineers. The subdivision offices are having various Section/PIU offices headed by Assistant Engineer.

A dedicated Planning, Budgeting and Monitoring (PBM) Unit in the LSGD 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. This unit shall comprise of one Executive Engineer, two Assistant Executive Engineers, four Assistant Engineer, Draftsman and Computer Operators. The Deputy Controller (F&A) shall assist the Superintending Engineer of the PBM Unit in all financial matters.

Technical audit of sample stretches as well as the quality

inspections shall be conducted by the Quality Control wing of the LSGD.

Local Self Government Department (LSGD), Government of Kerala shall be responsible for the implementation of this Policy through the Kerala State Rural Road Development Agency (KSRRDA). The organisation set up for maintenance is as follows:

1. Planning Unit
   - (i) Survey and data base inventories
   - (ii) Prioritization
2. Delivery Unit
   - (i) Contract Procedures
   - (ii) Contract documentation
   - (iii) Contracting arrangement
   - (iv) Execution of works and supervision
3. Monitoring and supervision
   - (i) Monitoring
   - (ii) Review and Evaluation
   - (iii) Technical and Financial auditing

LSGD shall enable capacity building of its engineers, staff and other human resources in modern technologies, Project implementation, monitoring, supervision and quality testing and operation practices.

INTEGRATION OF LSGI'S AND PIU'S

For the maintenance activities the integration of LSGI's and PIU's can be can be entrusted the following roles and functions

Level	Role and function
District Panchayat (DP)	1.Ownership of ODR's 2. Construction/Upgradation of ODR's 3. Planning of maintenance of ODR's for routine maintenance such as pothole repairs with the data retrived from GIS lab. 4. Prioritisation 5. Conducting traffic survey and road condition survey
Gram Panchayat(GP)	1. Selection of alignment 2. Maintenance of roads within the network and non network roads except PMGSY roads
Program implementation unit (PIU)	1. Selection of alignment from the PMGSY roads in consultation with GP 2. Maintenance of PMGSY roads in the network 3. Periodical maintenance of PMGSY roads transferred to District Panchayat 4. Road selected from District Panchayat and Gram Panchayat to be upgraded/maintained under PMGSY standards.

Chapter 7

PLANNING AND DESIGN

Maintenance Works will include all works of routine maintenance, periodic maintenance, road rehabilitation including pavement strengthening, special repairs and emergency maintenances. The planning of various maintenance operations will be correlated and looked upon as a total system rather than each activity considered as isolation. Based on the condition evaluation, the causes for the various defects should be examined in detail and a decision to be taken whether to initiate a particular maintenance activity. Section/PIU office shall establish guiding rules for prioritization of road maintenance works, taking in to account the evaluation carried out under this policy. Section/PIU office shall utilize computerised road maintenance management and monitoring systems for continuous monitoring of road condition and maintenance requirements , implementation of road maintenance works and other related activities

The **PBM Unit** shall initiate action on maintenance activities as under:

(i) Exercise for review **of Yardstick Norms for routine maintenance** shall commence every year immediately after rainy season and the process shall be completed by 31st December. The norms as finalized shall be notified in the second week of January. 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 December of that year

and the review shall be completed by 31st December. The rates so finalized shall be notified in the first week of January.

A **Periodic Renewal cycle** after design life shall be adopted for all rural roads.

The **Specifications** to be adopted shall be CPWD Specifications/MORD 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.

The **Field Units**, namely, the Section/PIU offices shall be responsible for carrying out the Road Inventory and Road Condition Surveys as per prescribed procedures.

The road condition data survey at every 100 m interval shall be carried out by the Overseers/Assistant Engineers in charge. They may take the assistance of their Assistant Executive Engineer. Their work shall be supervised by their Assistant Executive 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 PIU 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 Ist week of December shall be completed by December 31st.

(ii) Data from the survey shall be uploaded on the Road Maintenance Management System (RMMS)/Road Management System (RMS)/Website of KSRRDA by the

Divisional Offices by 2nd week of January.

(iii) Results of the entire road network shall be generated by KSRRDA the PMGSY HQ staff by the end of January.

LSGD shall prepare and finalize the priority list for Annual Road Maintenance Operation Plan (AMOP)approved by the District Panchayath based on the availability of fund for road maintenance, accounting the condition of roads, bridges, culverts, road signs , road appurtenances and disseminate the same to all field offices by the 15th February. The field Executive Engineers on receipt of the approved AMOP shall have another verification carried out to confirm that the roads appearing in the AMOP with respect to their jurisdiction actually qualify for Periodic Renewal. Annual Maintenance calendar shall be hoisted on departmental website by 15thMarch.

Field offices shall initiate action for preparing estimates and invite bids for works proposed to be contracted out for the approved chain ages of various roads immediately and works shall be awarded accordingly.

Environmental Sustainability:

In development , construction and maintenance of road schemes in rural areas its supporting infrastructure, appurtances, safety features etc the department shall make best possible efforts to implement technologies that are environmental friendly, have a low carbon footprint and provide smooth access to all section of society, including the disabled, in a safe manner. The department shall amend/develop necessary codes and manuals to implement construction and maintenance roads in an environmentally and disabled friendly manner.

KSRRDA may prescribe procedures for testing and evaluation of

various materials and technologies involved in road maintenance, quality testing of in progress and finished works and as appropriate and may specify practices or set up necessary testing facilities for the same.

The Superintending Engineer KSRRDA shall closely monitor the progress of the above activities in respect of their jurisdictions.

The Assistant Engineer/Overseer shall prepare monthly Maintenance Plan of the roads and submit to the Assistant Executive Engineer which should be forward to the Executive Engineer one week before the commencement of the respective month for approval

Inventory and condition of roads and Traffic Surveys

1. LSGD/PIU shall maintain road inventory registers and road maps, division wise of all the state rural roads in a suitable format duly approved by the Chief Engineer, LSGD/KSRRDA. Such inventory registers and maps may be prepared through outsourcing with counter signature of field engineers.
2. The road registers referred in the sub rule 1 shall updated regularly every year after conducting the road condition survey by each executive Engineer of the District for the area under his jurisdiction.
3. The LSGD/PIU shall be prepared to undertake traffic surveys of road net work once in 2 years and road condition survey every year immediately after the rainy season. Special attention shall be given to the riding quality of the road and condition bridges and culverts, road signs and other traffic control devices, status of protection work and other assets within the right of way in accordance with the guile lies laid down the IRC. The LSGD/PIU shall prepare an annual maintenance operation plan

Procedure for formulation of annual maintenance operation plan (ARMOP)

1. The KSRRDA shall formulate by end March every year, consistence with road maintenance policy, and an annual road maintenance operation plan (ARMOP), depending upon the computerized RMMS which shall be supported by the road condition data. It will identify the maintenance work on the State road network taking in to account the inventory and conditions of road bridges, culverts, road signs and other road appurtenances as per the asset management system development by the Government.
2. The KSRRDA shall consider the annual road maintenance operation plan taking in to account the available fund for road maintenance

Implementation and keeping of records, audit , progress reports and review

1. The Chief Engineer, LSGD shall be responsible for the implementation of the ARMOP and he shall exercise all powers delegated to him by the Government in planning, requirement, execution and monitoring of the works included in the ARMOP.

2. The chief Engineer shall keep systematic accounts and records and get them auditor in accordance with the State accounting principals in such forms and to be furnished to the Government in time but more later than September of the subsequent year.

3. Chief Engineer shall prepare the quarterly progress report, division wise of all the maintenance work sanctioned form the funds, for the quarter ending June, September, December and March every year and such reports shall reach the Government with in One month from the date of ending of each quarter.

Further Chief Engineer shall keep records of completion reports of the maintenance work included in the ARMOP.

4. The Government in ties meeting convey from time to time will review the progress as well as expenditure incurred on works.

Accounts and Audit:

1. The KSRRDA shall keep proper books and other records of accounts in respect of the funds in accordance with the accounting principal and standard norms and as may be prescribed by the Government.
2. The account of the funds shall be audited annually by the statutory auditor who shall also confirm, inter alia, whether :
   a. Revenues allocated to the funds have been correctly collected and paid in to the funds
   b. The money from the funds has been utilized correctly in the manner as provided in the rule 6
3. The Auditor shall complete the audit within 6 months of the expiry of the financial year in which the audit is done and shall send to LSGD , audited financial accounts and balance sheets with a copy their of to the Government.
4. The LSGD may engage internal auditor / concurrent auditors for the interim and concurrent Audit as it deems fit.
5. The accounts of LSGD shall also be audited by comptroller and Auditor General (C&AG) of India , the CAG shall as soon as possible after completion of audit send LSGD separate audit report (SAR) with a copy thereof to the Government who shall place the same before the State Legislature.

Road user survey

1. LSGD shall organize road user survey once in three year as per directions to assess level of satisfaction of road users and

document the same in a format evolved as per the asset management system .

2. The feedback received from the road users either based on the biannual surveys or otherwise shall be taken in to account in improving the performance of the maintenance of the road network

Chapter 8

INSPECTION

Duties

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 Assistant Engineer/Overseer shall keep a strict watch on the condition of the entire stretch of road under his beat and cover the same daily.

(ii) The Overseer 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 in his dairy and initial the same

(iii) The Assistant Engineer 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 Overseer incharge to whom he can give the necessary directions for repairs.

(iv) The Assistant Executive Engineer and Executive Engineer shall also arrange to travel only moderate distance each day and shall be accompanied by the Accredited Engineer in

charge. 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 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.

(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 Overseer and the Accredited Engineers.

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

Duties of overseer

(i) To report to Assistant Engineer.

(ii) 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.

(iii) To assist the Assistant Engineer in taking out the measurement for daily work done.

(iv) To display necessary caution boards for safety point of view as per standard layout.

(v) 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.

(vi) To maintain sign boards under his charge.

(vii) To report about damages to structures, kilometre stone etc. and keeping them in position.

(viii) To comply with any instruction given by his immediate superior.

(ix) To ensure providing and proper upkeep of diversions.

(x) To maintain daily diary of the work done and to put up to the Section/PIU in charge every alternate day.

(xi) To maintain daily receipt/daily consumption of material consumed.

(xii) To help in preparing estimates for minor works and repairs.

(xiii) To ensure execution of work according to specifications and drawings.

(xiv) To take round of various bridges and roads under his charge on regular basis and report to Section/PIU

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

(xv) To estimate and indicate rough quantities of materials required

(xvi) To take measurement of daily work done.

(xvii) To report about unauthorized constructions and encroachments on government premises.

(xviii) To comply with the instructions given to him by his immediate officer.

(xix) To ensure submission of daily report.

(xx) To see that log books are filled daily for machinery and that machinery are parked properly.

(xxi) To maintain details of land width and check encroachments.

(xxii) To ensure proper maintenance of speed humps and caution boards including their painting.

(xxii) Inspection and supervision of works as per prescribed norms.

(xxiii) Reporting observations to higher authorities.

(xxiv) Preparing estimates for repairs after conducting condition survey of roads.

(xxv) Reporting about closure of road/obstructions due to any of the following reasons;

Over toping/breach;
Landslides;
Earth quakes;
Accident;
Any other reason (specify);

(xxvi) Enumerating safety measures and restoration works in case of flood damages and breaches and reports on opening of traffic/completion of restoration.

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.

Duties of Assistant Executive Engineers

1. Controlling and overseeing the work of subordinate staff.

2. Inspection and recording of observations as per prescribed norms.

3.Scrutiny of estimates and Revised Estimates: Any modification in the provisions in an estimate received from the subordinate office shall be made only after the specific orders of the head of the office.

4. Any other work entrusted by the head of office.

Duties of Executive Engineers

1. Planning and finalization of nature of maintenance activities e.g. surface repair, prepare to CD works etc.
2. Finalizing action on reports of Assistant Executive Engineers and also on safety measures, diversion in case of breaches and flood damages.
3. Coordination with various agencies like Traffic Police, Local Administration, Publicity Media etc., in case of emergent repair, interruption to traffic by road blockage, etc.

4. Initiate steps for finalizing permanent restoration works.

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

Action to be taken by the Overseer

- Immediate report of the road breach/blocked will be made to 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

- "Road closed" boards and "Diversions" boards shall be fixed on both sides at 60 m distance in advance of the hazard
- Arrangements for red lights to be done in case of darkness
- Labour shall be deputed to guide the traffic to prevent any accident
- Construction of diversion, if possible

Action to be taken by the Assistant Engineer

- He will at once visit the site of the hazard and shall ensure that:

  ✓ Road has been closed by means of barricading with empty drums or any other means available at site.

  ✓ That caution and diversion boards have been fixed on both sides

  ✓ Arrangements made to guide the traffic by posting gang men having red flags

  ✓ Arrangements made for red lights and chowkidar etc.

  ✓ Steps to stop further damage to the road are taken as per site requirement

  ✓ Possibilities of construction of diversion to be explored. If possible the diversion should be constructed with available resources

  ✓ He shall immediately report to the Assistant

Executive 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

(vii) All arrangements and efforts shall be made for restoration of traffic

(viii) He will intimate the details of any losses and injuries to the public, if any, including the extent of compensation if payable

Action to be taken by the Assistant Executive Engineer

(a) He shall at once inspect the site of the hazard

(b) He shall inspect all safety measures taken by the Assistant 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 .

(e) 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

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
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

MOBILE BASED APPLICATION

Mobile based application technology shall be adopted for the maintenance purpose with the assistance of the centralized GIS lab facility. LSGI's/PIU's should capture the photographs of the condition of the road in the network of roads while performing the pavement condition survey for fixing up the priorities. Using the mobile application as and when required the photographs is captured at site and uploaded simultaneously to the server. The parameters attributing to routine maintenance activities can be managed from the State office.

For the prompt attention to such repairs use of mobile maintenance unit in each district is to be established. One mobile unit may cost around 30 lakhs. It can look after the maintenance of 200 km of road.

Chapter 9

EXECUTION OF MAINTENANCE OPERATIONS

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.

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 carryout and the expected output.

(III) There should be regular checking whether the task assigned and output achieved are as per norms.

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 thanthe norms then proportionate recovery shall be made orthe wages shall be reduced accordingly by the Assistant Engineer responsible for making payment.

(IV) 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
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.

(V) For the purpose of monitoring the progress of these works the overseer/Assistant Engineer will exercise 100% test check in each work and Assistant Executive Engineer/Executive Engineer respectively upto 30 and 10%.

(VII) Instead of deploying labour in a scattered manner, deployment shall be made in gang who will take up work from one and move 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.

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

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

Tools and Plants

✓ 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:

Sr. No.	Item	Essential Quantity (With Gangs) (Nos.)	Option with A.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 10

MONITORING

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.

Superintending Engineer KSRRDA 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/PIU:						
Name of Sub- Division/PIU:						
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/PIU: -											
Name of Sub-Division/PIU: -											
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/PIU: -											
Name of Sub-Division/PIU: -											
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)

Superintending Engineer, KSRRDA will submit to Standing Empowered Committee the following details.

Sl No	Financial year	Maintenance fund Proposed during the FY	Actual release of fund during the FY	Expenditure during the financial year	Remarks
1	Routine Maintenance				
2	Periodic Maintenance				
3	Emergency /Special Maintenance				
4	Upgradation				

PAVEMENT CONDITION INDEX (PCI)

PCI is a road condition survey, on a rating scale of 1 to 5 is used for fixing prioritisation/selection of road for up gradation as well as maintenance.

Methods suggested for determining PCI as per Operations Manual for rural roads are:

1. **Measurement based on Visual Inspection**
2. **Based on Riding Comfort**
3. **Based on Comfortable Driving speed possible**

1. Measurement based on visual inspection

An experienced engineer can rate the PCI by visual inspection of the pavement for each kilometre; a PCI of 1 to 5 is adopted as under:

Description of the surface condition	PCI
Very Good	5
Good	4
Fair	3
Poor	2
Very Poor	1

2. Based on Riding Comfort

A jeep or car is driven at 50km/hr and the riding comfort noted for each kilometre. Based on the 'riding comfort' while driving at the design speed of 50km/hr, the PCI is assessed as under.

Riding comfort at 50km/hr	PCI
Smooth and pleasant ride	5
Comfortable	4
Slightly uncomfortable	3
Rough and Bumpy	2
Dangerous	1

3. Based on comfortable Driving Speed possible

The driver is instructed to drive at the most comfortable and safe speed possible on the road. The PCI then assessed for each kilometre based on the Normal Driving Speed as under:

Normal driving Speed	PCI
Over 40 km/hr	5
30 to 40 km/hr	4
20 to 30 Km/hr	3
10 to 20 Km/hr	2
Less than 10 km/hr	1

Determination of PCI for a road

Inorder to get the PCI of the road, the arithmetic mean of the condition of the road assessed for each kilometer is taken if the kilometer – wise PCI is varying within a small range. However if the variation of the PCI is large from section to section of the road under consideration, the road is to be divided in to homogeneous sections and arithmetic mean of PCI is taken for each section. The road condition survey result will first be entered in to the PCI register in the following format.

Sr.No.	Target for PCI Data to Enter			Pavement Condition Index [PCI] Data Entered								
				PCI Data Entered for		Length with PCI Value					Yearwise Length		
	District	Number of Rural Route Roads	Total Length	Number of Roads	Total Length	1	2	3	4	5	2014 - 2015	2015 - 2016	2016 - 2017

Note:

1. Sealed surface all weather roads with PCI more than 2 and sealed surface all weather roads which are less than 10 years old (even if the PCI is less than 2) will not be taken for upgradation.

Comprehensive Upgradation cum Consolidation Priority Lists (CUCPL)

- The Comprehensive Upgradation cum Consolidation Priority Lists (CUCPL) will be prepared District-wise or Block-wise as the case may be on the following proforma:-

Block	Road code in DRRP	Name of through route / Major Link route	Year of construction	Year of last periodic renewal	Present surface type	Utility Value	Average PCI and year of PCI	Average per km maintenance exp. In last 3 years	Total population of the Habitations served by road directly and indirectly

- Roads catering to large populations by connecting populations over a large area and which act as collectors of traffic from smaller roads, would be treated as **Through routes** .Such roads would provide access to growth centers and pass through or terminate in a Rural Hub

$$\text{Utilityvalue} = \frac{\text{Cumulative score of the rural Growth Centres in the road}}{\text{Proposed road length for upgradation.}}$$

When two candidate roads are found to have the same Utility Value, the population served by the road directly and indirectly by other connected link roads is to be computed and treating population as a proxy to the traffic, whichever road is found to be serving more people would get the preference.

- The roads will be ranked by utility value Block-wise.

- Annual proposals will be made from this list in order of ranking, subject to qualifying the PCI and maintenance criteria.
- After the initial CUCPL is prepared and verified, it shall be placed before the District Panchayat.
- The Members of Parliament / MLAs shall be given a copy of the CUCPL and their suggestions and suggestions of lower level Panchayati Institutions shall be given the fullest consideration by the District Panchayat while according its approval.
- It is suggested that at least 15 clear days may be given for the purpose.
- The approved CUCPL shall be the basis of all upgradation proposals.
- Such proposals that cannot be included would be communicated in writing to Members of Parliament /Members of Legislative Assembly with reasons for non-inclusion in each case.
- The list of road works to be taken up will be finalised each year by the District Panchayat from the updated CUCPL in accordance with the allocation of funds communicated to the District.
- The District Panchayat shall finalise the list through a consultative process involving lower level Panchayati institutions and elected representatives. It must be ensured that the proposed road works are part of the updated DRRP.
- No roadwork shall be included in the CUCPL unless it forms part of the approved DRRP.

IDENTIFICATION OF GROWTH CENTRES AND RURAL HUBS

Growth centres are habitations which have a high population, high level of educational facilities, good health service facilities, good agricultural produce markets (mandis), are well served by buses, railways, are already electrified, have retail shops selling agricultural inputs and items of daily consumption and postal facilities etc.

A '**Rural Hub'** is a large Growth Centre, characterized by the fact that it is connected to more than one Through Route (e.g. a T-junction or a crossing) thus giving it a higher potential. These Growth Centres and Rural Hubs help to ensure easy access to raw materials, labour inputs etc. for off-farm activities and bring the benefits of economic growth to the rural hinterland, including white goods, and passenger transport vehicles, as well as electivity, telecom, internet and other communication infrastructure etc.

A system of making shall be developed giving weightage as under:

WEIGHTAGE

	Parameter	Category Weight	Sub-category weight/s
A.	POPULATION (as per 2011 Census)	50	
	A score of 1 for each 150 population subject to a maximum of 50		50
B.	EDUCATIONAL FACILITIES (Score of the highest category)	10	
	Primary School Middle School High School Pre-University Course(PUC),/10+2 institute ITI Degree College		2 3 5 7 8 10
C.	MEDICAL FACILITIES (Score of the highest category)	7	
	Sub Centre / ANM Centre Primary Health Centre (PHC) Community Health Centre(CHC) / Bedded Hospital (and referral for PHC patients)		2 4 7
D.	VETERINARY FACILITIES	3	
	Veterinary Hospital		3

E.	TRANSPORT AND COMMUNICATION INFRASTRUCTURE	15	
	Railway Station		4
	Bus Stand		3
	Notified Tourist Centres		2
	Post- Telegraph Office, PCO/		2
	Bank/ Regional Rural Banks		
	One diesel / petrol authorized		
	Outlet 1		
	Additional Authorized Diesel		1
	Outlet 1		1
	Electric Sub Station 11 KVA 2 Electric Sub		1
	Station above 11 KVA 1		1
F.	MARKET FACILITIES (Cumulative Score)	12	
	Mandi (based on Turn Over)		7
	Ware house/ cold storage		3
	Retail shops selling		2
	agricultural inputs and items of daily consumption		
G.	ADMINISTRATIVE CENTRES (Score of the Highest Category)	3	
	Panchayat HQ		1
	Sub Tehsil		2
	Tehsil/ Block headquarter		3
		100	**100**

The following criteria for prioritisation can be adopted.

Priority	Marks Scored
I	>80
II	70-80
III	60-70
IV	Below 60

Note:- 1. A Growth Centre is one which has one Through Route passing through it (or terminating there). A Rural Hub is a Growth Centre which is simultaneously on two Through Routes.

2. A road can be proposed to pass through an urban point or a point on NH/SH/MDR, but scores of point/s so located should not be added, through the entire length of such candidate road would be used while determining Unit Value per unit length.

3. For more than one line passing through an eligible point, Growth scores of the point can be added to compute score of each line.

4. For such mining centres/ Industrial hubs that sign anMoU with SRRDA for maintenance, upto a score not exceeding 5 can be given within the matrix.

5. A State which has Special Areas (being a Special Category state, or areas like as identified under DDP, or falling in Schedule V Tribal areas, or IAP districts; can have two matrices one as above and one for the special areas. The second matrix can have different uniform weights for sub-categories, without changing total weight of any category, and in it the population unit score can be uniformly linked to any number ranging between 100 to 150.

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 Chief Engineer Head Quarters by the 30th day of the same month.

The 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

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.

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 Executive Engineer by the 12thday of each succeeding month.

Chapter 11

FINANCIAL MANAGEMENT

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.

The Executive Engineer shall maintain cash books in respect of all financial transactions.

All financial transactions made during the month shall be posted monthly in the Register of Works from Works Abstract.

Before submission of the monthly account to the Accountant General's office the Register of Works shall be completed, reviewed by the Executive Engineer and date initialled by him in token of his having examined the entries and found to be correct.

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.

Works executed under the PMGSY programme would in addition to above, 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.

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.

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.

Ledgers shall also be maintained in the SRRDA to keep a watch on the expenditure.

The funds shall be released to these accounting centres by the SRRDA through the system of Bank Authorization.

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.

The funds shall be demanded by the Divisions on the basis of actual bills. Monthly accounts shall be rendered by accounting centres to SRRDA by the 5th of the following month for their scrutiny and compilation on monthly basis.

Funds received for renewal and routine maintenance shall be shown separately in the monthly accounts.

The Year wise, Phase wise and Package wise schedule of expenditure shall be prepared separately for periodic renewal and routine maintenance.

In case of maintenance work carried out through departmental labour, the Executive Engineer shall demand Bank Authorization for material payment and separate cheque 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.

The funds may consist of all or any of the following:

a) The allocation for maintenance of road from the consolidated fund of the State under the Non- plan Head as prescribed by

the Government.

b) All money received for maintenance of roads for State roads as per the Central Grants recommended/ awarded by the Finance Commission from time to time.

c) Any other sum or grant may be decided from time to time for the purpose of road maintenance by the Government

d) Any grant, aid, bequest, donation, gift, subscription, loan or other sum lawfully received.

e) Any other income accruing for the fund remain un-committed or unspent at the end of any financial year for any reasons what so ever then such amounts shall continue to vest with the fund and shall be available for utilization in the next financial year.

Objectives of Road maintenance fund:

The fund shall be dedicated on a sustainable and dependable basis for maintenance of roads in the State.

Achieve regular outline maintenance and timely repair works thereby reduction of expenditure due to maintenance in the initial state of damage.

Ensure priority for maintenance of the Core Road Network

Management of Fund:

The fund shall be administered and managed by KSRRDA in accordance with the objectives of the Fund and these rules.

KSRRDA shall have the power to adopt detailed Operational policies procedures to ensure proper maintenance of State roads within the jurisdiction.

Utilization of Fund:

- Making payment to consultants and/or experts appointed

for providing advice and assistance in discharge of their functions.

- Incurring expenditure on such emergency maintenance work on State rural roads
- To provide road safety infrastructure signage and equipments
- Providing support to Government in provision of way bridges and other facilities for overload control of vehicles on State rural roads.
- Expenditure on research, education and training to related to maintenance of State rural roads.
- Meeting all expenses, cost and charges including fees payable to the auditors.
- Making any other payment related to road maintenance authorized by the Government.

Engagement consultant/ Experts for providing assistance to Government:- The Government may engage suitable experts for providing assistance or advice on any matter as when required following the procedure of competing bidding, specifying there remuneration, fees and out of pocket expenses and other condition for research person, keeping in view the nature assignment, it duration and experience and qualifications of the person concerned.

Chapter 12

QUALITY ASSURANCE

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.

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.

Responsibilities of the field staff

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 gotdone 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.

Quality Assurance set up at Circle Level

The Quality Assurance team with the Superintending Engineer of the Circle as its head will comprise the Assistant Engineer (along with 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 manner 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.

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:

(iv) 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 seek approval of the Superintending Engineer. The program shall be sent to site in advance of inspection.

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.

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.

Quality Assurance set up at Zonal Level

Quality Assurance in Zones shall be looked after by the Zonal Quality Assurance (QA) unit headed by the Superintending Engineer.

The Zonal QA unit shall follow the guidelines and norms relating to quality systems and procedures as laid down by the Engineer-in-Chief/Chief Engineer from time to time. These Zonal QA units shall function under the control of Chief Engineer who shall be fully responsible for effective quality assurance in his Zone.

Chief Engineer set up

The Chief Engineer 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.

His unit shall carry out the functions of Zones (QA) teams for works where no Superintending Engineer (QA) is posted.

Carry out investigations and enquiries with regard to quality related aspects for specific works.

Chapter 13

MAINTENANCE OPERATIONS THROUGH CONTRACTS

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 are outsourced through normal BOQ contracts.

Performance Based Maintenance Contracts

The contractor shall follow the Annual Calendar of Routine Maintenance activities using a different calendar to be adopted has been specified in the Contract document.

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.

Assistant Engineer shall immediately report the closure of road/obstruction due to any of the following reasons

(a) Over topping/breach

(b) Land slides

(c) Earth quakes

(d) Accident

(e) Any other reason such as dead animals, trees etc.

In case road is breached or blocked the contractor shall take following action should be taken:

(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 60m distance in advance of the hazard

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

Safety of Workers and Road Users during Maintenance

In the implementation of maintenance operations the contractor shall ensure safety of workers and road users as per this policy.

ANNEXURE-A

Amount required for maintenance of roads in each year per District

Work sanctioned from Phase III to Phase VIII under PMGSY-I for kerala = 2961.039 kms

Maintenance cost for the first 5 years after construction of road (Routine maintenance) = 2961.039 kms x 60 lakhs/km x 9%

=160 crore

Maintenance of roads to be carried out for 5 years with in the 10 year design life

=160 crore

Maintenance cost for resurfacing = 2961.039kms x 20 lakhs/km

=592.21 crore

Total cost for 11 year = 160 crore + 160 crore + 592.21 crore

= 912.21 crore

Total cost for 1 year= 912.21crore/11**= 83 crore**

Total cost for 1 year per District = 83 crore/14 districts

= 6 Crore/District