West Bengal State Rural Development Agency

(An Agency under P & RD Department)
Joint Administrative Building, Block-HC -7, Sector-III
Salt Lake, Kolkata-700 106

No.795/WBSRDA/2A-9/2014 Dated 02.05.2016
04

From: Shri Satyabrata Chakrabarti,
Additional Chief Executive Officer,
WBSRDA

To: Shri Rajesh Bhusan , IAS,
Joint Secretary, (RC& IEC)
Director General, NRRDA & CVO,
(Ministry of Rural Development),
Government of India,
Krishi Bhavan-110 114

Sub: State Policy on Maintenance of Rural Roads.

Ref: D.O. No. P-17029/01/2006/WB/110/PT Dated 31.03.2016 and Secretary, Ministry of Rural Development , Govt. of India's D.O. of even number dated 25.06.2015 and 05.01.2015.

Sir,

I am to refer to the D.O.s mentioned above on the captioned subject and to say that the State Policy on maintenance of Rural Roads titled as 'West Bengal Rural Roads Maintenance Policy 2015' has been duly formulated and notified vide Notification No. 219/SS/WBSRDA/2E-9/Engg cell /2014 Dated 09.03.2016

A copy of said Notification comprising Rural Roads Maintenance Policy is furnished herewith for your kind information.

Enclo: As stated.

Yours faithfully,
3/5/16
(S. Chakrabarti)
Additional Chief Executive Officer
Dated 02.05.2016
04

No. 795/1(2) /WBSRDA/2A-9/2014

Copy along with a copy of W.B Rural Roads Maintenance Policy -2015 forwarded for information to:

1) Shri Bhim Prakash, Under Secretary to the Govt. of India, Ministry of Rural Development, Department of Rural Development, (R.C. Division) Krishi Bhawan, New Delhi- 110 001.
2) Dr. I.K. Pateriya, Director (Technical), NRRDA, 15-NBCC Tower (5th floor,) Bhikaji Cama Place, New Delhi- 110066

3/5/16
(S. Chakrabarti)
Additional Chief Executive Officer

Government of West Bengal
Panchayats & Rural Development Department
Joint Administrative Building, HC-7, Bidhannagar, Sector-III
Kolkata-700 106

No.219/SS/WBSRDA/2E-9/Engg Cell/2014 Dated : 09/03/2016

NOTIFICATION

With a view to introducing a management system for regular and proper maintenance of Rural Roads in the State of West Bengal, the Governor is pleased to formulate a **West Bengal Rural Roads Maintenance Policy, 2015** which is hereby notified for general information of all concerned.

The **West Bengal Rural Roads Maintenance Policy, 2015** will come into force with immediate effect.

By order of the Governor

(Saurabh Kumar Das)
Principal Secretary to the
Government of west Bengal

West Bengal Rural Roads Maintenance Policy - 2015

PRELUDE

1. The Govt. of India launched PMGSY Roads which involve building well-engineered and all weather Rural Road Connectivity to rural habitations. Whilst the Construction Contract for all these roads had built-in maintenance provided (the Construction Contract itself) for 5(five) years through a maintenance contract paid by the State, no specific policies were developed for maintenance thereafter. Without specific policies, there is a considerable risk that maintenance, after the initial 5 years will be inadequate to maintain the value of the road asset. This potential neglect of Rural Roads Maintenance would reduce the benefits for the economy and the rural populace using the roads. For this reason it is felt necessary to initiate a programme to try to ensure the sustainability of Rural Road Maintenance through a State Maintenance Policy for Rural Roads. This will help introduce process to facilitate effective delivery of maintenance of Rural Roads to the rural communities.

2. The Govt. of India, Asian Development Bank (ADB) and the State Govt. have agreed to establish a few Rural Road Network Management Units for the purpose.

In this connection the comments of the Joint Secretary (RC) & Director General, NRRDA, during the Regional Review Meeting held on 23rd & 24th March 2015 at Guwhati, Assam, on "Maintenance Policy and a Maintenance Management System for Rural Roads" may please be perused.

3. Most of the process and suggestions are taken from Proposed 'Operations Manual (RRNMU) prepared by ICT - Consultant of ADB March 2015.

Maintenance of Rural Road is funded by the State Govt. out of its resources for the following type of maintenance works for maintainable roads:

Maintainable (PCI- 3,4 & 5)	A road, or a section of road, is in a maintainable (good or fair) condition if it serves the needs of the road users and has only minor defects which can be rectified using routine or periodic maintenance.
Un-maintainable (PCI - 1 & 2)	A road, or a section of road, is in an un-maintainable (poor) condition if it does not serve the needs of the road users as a result of major defects which require rehabilitation. It is usually a waste of resources to carry out routine maintenance on an un-maintainable road.
Maintenance	Activities to rectify minor defects to restore a road to a good condition, or prevent future defects. Activities may be categorized as (i) carriageway works - maintenance of road pavement and mainly surface repairs; (ii) off-carriageway works - maintenance of shoulders, drainage, CDS, side slopes and road furniture.
Routine Maintenance (Section - 1900 of Book of Specifications 1st Revision)	Maintenance activities which are normally required annually or more frequently, which are often specified on a repeated cycle and which normally suit length workers and small contractors. These activities include cutting grass and clearing drains. The objective of routine maintenance is a preventive measure to minimise the rate of deterioration of the road pavement and thus provide safe and acceptable road conditions at least overall cost. Routine maintenance may also be reactive i.e. a response to a situation (e.g. pothole patching, blocked CDS or ditch) so as to prevent subsequent damage.
Periodic Maintenance (Sections - 401,405, 406,501,502,503, 507,508,509 & 510	Maintenance activities which are normally required less frequently than annually, which are often specified in response to minor defects and which normally suit small and medium contractors. The objective of periodic maintenance is to provide a safe riding surface and so reduce the need for more expensive rehabilitation by water

	proofing or otherwise protecting the road pavement. Periodic maintenance may include resealing and pavement overlay (up to 40mm) aimed at protection of the road pavement from water ingress whilst maintaining safe driving conditions.
Rehabilitation (PCI - 1 & 2)	Activities which are specified in response to major defects and which are required to return a road to a maintainable condition. The objective of rehabilitation is to retain or produce road conditions that comply with 'stitch in time' (SIT) strategies by means of cost effective life cycle costs. The roughness of all PMGSY roads should be measured at least every 2 years to identify rural roads for rehabilitation treatment and prioritise the 'SIT' strategy. Rehabilitation may including the following activities:- - Patching of potholes and surface regulation prior to overlaying or resurfacing - Shoulder repairs including making up the level of the new road surface - Repair of drainage (including CDS) with priority given to location of observable deterioration and RM cost.
Upgrading (Separate Estimates)	Activities to increase road capacity (can be a means of reducing annual routine maintenance costs and/or whole life costs).
Emergency Works (Separate Estimates)	Response at short notice to restore passibility or road safety after an unforeseen event (e.g. bridge collapse, flooding, erosion). Immediate response is usually necessary.

When the existing rural roads are in poor conditions (PCI is generally 2 or less) Upgradation / Renewal of Through Roads may be taken up as pre-requisite for maintenance (i.e. road must be restored to a maintainable condition through periodic maintenance) and the procedure will be as follows:-

Stage-1: On the basis of road inspection and visual condition assessment make a preliminary selection of rural roads required for maintenance.

Stage-2: Assess Pavement Condition of the associated rural roads.

Stage-3: Intervention required based on the PCI (this implies a decision whether the road requires Upgradation or Surface Renewal or Routine Maintenance).

Stage-4: Each individual intervention will thus comprise a proposal for maintenance work on an identified rural road. The Project proposal will include Upgradation / Renewal or Maintenance of rural roads based on PCI and visual inspection of

conditions. Each such project can form a Package for tendering purposes or one rural road should be combined on zonal basis as a contract Package.

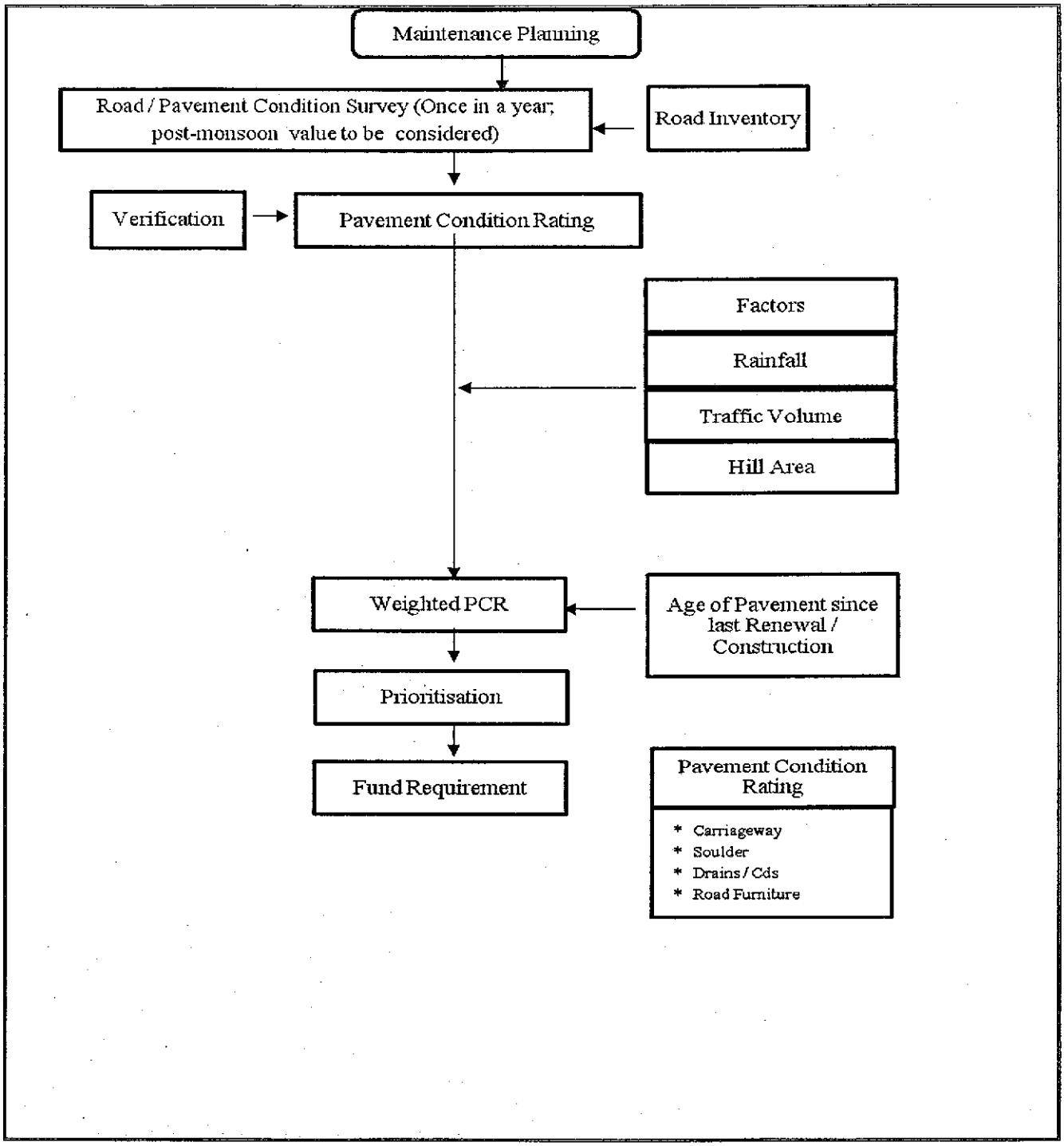
The total length of rural roads so far constructed under PMGSY in West Bengal is about 17,992 Km. and about 6,765 Km. of rural roads (PMGSY) will cross 5 years' life after construction.

Road Pavement Condition Rating:- Funds available for Road Maintenance are usually limited. It is thus important to ensure that available funds are used in most effective ways possible.

All the eligible roads falling under the category to be maintained (i.e. with an age of 5 + years) would first be assessed for the condition rating. All the roads that are qualified for improvement measure beyond routine maintenance shall be investigated for assessing their requirements of improved measures and associated quantification of work and cost estimation for budget requirement.

Condition Survey Procedure:

A flow chart of the process from condition survey to prioritization on the basis of need is shown next page:-


Maintenance Planning
Road / Pavement Condition Survey (Once in a year; post-monsoon value to be considered)
Road Inventory
Verification
Pavement Condition Rating
Factors
Rainfall
Traffic Volume
Hill Area
Weighted PCR
Age of Pavement since last Renewal / Construction
Prioritisation
Fund Requirement
Pavement Condition Rating
* Carriageway
* Soulder
* Drains / Cds
* Road Furniture

Rating of Roads as per their general condition (Visual) -

Logistics of Data Collections (Visual):-

Table-1

Condition of the road and Rating				
1	2	3	4	5
Road not accessible road pavement failed	Access is lost or at risk, passage is dangerous	Major defects, but access is not at risk	Minor defects	No defects

This rating, done visually, will be very much subjective and would vary from person to person, who will be doing it visually. This will be done by PIU or any competent officer under PIU. It is, therefore, necessary to bring in the element of objectivity by relating the pavement condition to some attributes of pavement condition.

Presently, the approximate condition of rating of a road as a whole is also being derived through safe vehicle driving speed or the riding comfort at the driving speed of 50 Km. per hour, as per the criteria given below at Table-2.

Table-2.

[Rating roads based on riding comfort or safe driving speed]

Criteria	Condition Rating				
	1	2	3	4	5
Riding comfort at 50 Km. per Hour	Very rough	Rough	Not comfortable	Comfortable	Smooth
Safe driving speed Km. per Hour	< 10	10 - 20	20 - 30	30 - 40	➢ 40

Though during the initial period the above criteria for rating related to the pavement condition measured subjectively may be used, but eventually more objective criteria will have to be adopted. It is proposed to assess the roads in terms of surface roughness levels using a Bump Integrator (BI) [to be purchased under World Bank Technical Assistance Fund] to bring in complete objectivity. The BI shall be properly calibrated as per standard procedure before taking observations (with the help of STA or PTA).

The surface roughness that would be recorded by the respective PIUs after the predominant rainy season would help rating the roads in terms of riding quality of the roads, as per the criteria given below at Table-3 shown next page :

Table-3.

[Rating roads in terms of their riding quality - Bump Integrator]

Surface Type	Condition Rating				
	1	2	3	4	5
	Very rough	Rough	Not comfortable	Comfortable	Smooth
Open Graded Premix or Mix Seal Surfacing	>4000 mm/km	3500-4000 mm/km	3000-3500 mm/km	2500-3000 mm/km	<2500 mm/km

- Roads in good condition, requiring only routine maintenance - rating 4 & 5.
- Roads in fair condition, requiring more than routine maintenance - rating 3.
- Roads requiring additional works (and additional investigation including elastic surface deflection assessment using Benkelman Beam) - rating 1 & 2.

The roads rating 1 & 2 : The road will be subjected to further investigations by the respective PIUs for assessing the following:-

- Road Condition Index (RCI) for prioritization,
- The extent of improvement measures needed to improve their present rating to rating level 4 & 5.

The PIU should visually collect pavement condition information for each candidate road from end to end preferably for each 200m. or so long-sub-section for various parameters as per the format shown in the next page at Table-4 for calculation of an aggregate Road Condition Rating.

Table 4

[Estimation of condition rating through detailed site inspection]

(BITUMINOUS ROAD)

Road condition score for different distress levels

Distress	Quantum	Condition Rating				
		1	2	3	4	5
Potholes & depressions	% area	>1%	0.5% - 1%	0.1% - 0.5%	<0.1%	-
Camber	Condition	Very poor	Poor	Fair	Good	Very Good
Pavement cracking	% area	>30%	20%-30%	10%-20%	5%-10%	<5%

Distress	Quantum	Condition Rating				
		1	2	3	4	5
Ravelling	% area	>30%	10%-30%	5%-10%	1%-5%	<1%
Shoving	% area	>1%	0.5%-1%	0.1%-0.5%	<0.1%	-
Settlement & depressions	% area	>5%	3%-5%	1%-3%	<1%	-
Rutting	mm	>50	20-50	10-20	5-10	<5
Pavement edge break	% length	>50%	30%-50%	20%-30%	10%-20%	<10%
Shoulder (grading, vegetation, trees, shrubs)	Condition	Very poor	Poor	Fair	Good	Very Good
Rain cuts along side slopes	Condition	Very poor	Poor	Fair	Good	Very Good
Side drains	% silted	100%	75% - 100%	50%-75%	25%-50%	Up to 25%
CDS – blocked, sedimented (erosion)	% blocked	>75%	50-75%	25-50%	<25%	All open
Road furniture and signs	Condition	Very poor	Poor	Fair	Good	Very Good

Table 5

[Estimation of condition rating through detailed site inspection]

(Concrete Road)

Road Condition Score.

Defect	Quantum	Condition Rating				
		1	2	3	4	5
Rectangular (block) cracking	Extension & width of crack	Extensive >10mm crack width	Many >10mm Crack width	Moderate 5 – 10mm crack width	Isolated <5mm crack width	-
Corner cracking						-
Diagonal cracking						-
Longitudinal cracking						-
Shrinkage cracks						-
Transverse cracking						-
Joint stepping		>5cm	3 – 5cm	<3cm	Slight	-

Rocking	Incidence	Severe	Moderate	Slight	-	-
Joint Sealant defects	Length	Failure	Joints open	Major loss or sealant	Partial loss of sealant	-
Surface spalling	% Surface area	>50%	25 - 50%	<25%	Slight	-
Box-out spalling		Severe	Extensive	Moderate	Slight	-
Ravelling		Severe	Extensive	Moderate	Slight	-
Pavement edge break	% length	>50%	30 - 50%	20 - 30%	10 - 20%	<10%
Shoulder (grading, vegetation, trees, shrubs	Condition	Very poor	Poor	Fair	Good	Very Good
Rain cuts along side slopes	Condition	Very poor	Poor	Fair	Good	Very Good
Side Drains	% silted	100%	75%	50%	25%	<25%
CDS - blocked sedimented (erosion)	% blocked	>75%	50 - 75%	25 - 50%	<25%	All open
Road furniture, signs	Condition	Very poor	Poor	Fair	Good	Very Good

Calculation of RCI:-

Calculation of Rating Score for each sub-section given in Annexure-1, 1A & 2 is equal to summation of the Rating Score of individual items i.e. Scores [(1+2) + (9+10)]/2 +(3+8)/2 + (4+5+6+7) + (11+12) + 13].

Additional factors to be considered in calculating the Road Condition Index (RCI), as below:-

Table-6

[Normalization Factors for universal application of RCI concept]

Factor	Criteria	Multiplier
Rainfall	Low: <500mm / year	1.25
	Medium:500-1000mm / Year	1.15
	High: 1000mm/year	1
Terrain	Mountain & hill areas	1
	Plain & rolling terrain	1.25

Weighted Road Condition Score WRCS = RCS x Rainfall multiplier x Terrain multiplier NB: If the calculated WRCS > 50, use maximum value of 50				
Factor	Criteria	Add-on		
Age of road pavement	>5 years 4-5 years 3-4 years 2-3 years 1-2 years	1 5 15 25 30		
Traffic volume (commercial vehicles per day)		Through road	Major link	Link
	0-50 51-150 151-300 >300	5 4 2 1	10 8 6 2	20 15 10 5

RCI (overall condition index / serviceability of rural road) = WRCS + Age factor score + Traffic Volume score							
WRCS		Age factor score		Traffic volume score		Total (Overall RCI)	
Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
10	50	1	30	1	20	12	100

The factors of Rainfall and Terrain, both varying from 1 for difficult situations warranting early attention, to 1.25 for easy situations, are multipliers.

The outcome of the condition survey is an objective RCI which, in comparison with other surveyed roads, will result in a compilation of a list of all surveyed roads prioritized on a basis of need i.e. the higher the RCI the better the road condition. RCIs can theoretically range from 12 (notionally a through road over 5 years old in mountainous / hill terrain in very poor condition, subject to heavy traffic and high rainfall) to 100 (notionally a link road less than 2 years old in very good condition, subject to low traffic and low rainfall). In practice neither extreme is likely to be encountered and an indication of RCI values for different condition ratings are shown in Table-7, given next page:-

Table 7

[Indicative range of RCI for different road condition rating]

	Condition Rating				
	1	2	3	4	5
Road condition	Very poor	Poor	Fair	Good	Very good
RCI range (indicative only)	<40	40-60	60-75	75-90	>90

[Detailed calculation sheets are **annexed herewith** as examples for calculation of RCI.] (Annexure-1, 1A, 2 & 3)

Estimation of Quantities and Costs:

Costs can be estimated in various ways - usually a trade-off between accuracy, irrespective of date collection and detailed identification of inputs or methods require identification of required maintenance works and an estimate of the quantities of work. Also all methods require estimation of costs in detail (for individual work items) or in a 'broad brush' approach (cost per Km.) for different. Either way, quantities of works and costs should be estimated based upon local conditions and should include all components of cost (labour, equipment, materials, mobilization and overheads, profits & labour cess charges as per SOR of the State).

Table 8, as shown next page, indicates the remedial actions needed for different condition ratings:

Table 8

[Indicative remedial actions for different condition ratings]

Rating	Carriageway & Shoulder		Drainage		Culverts		Bridges	
	Description	Remedy	Description	Remedy	Description	Remedy	Description	Remedy
1	Road not accessible road pavement failed	Reform camber and drains; reconstruct pavement and improve surface	Complete failure of drainage system	Reconstruct drainage system	Collapsed / absent Culvert	Replace Culvert; consider enlarging	Collapsed / absent Culvert	Replace bridge; requires detailed survey.
2	Access is lost or at risk; passage is dangerous	Reform camber and drains; reconstruct	Major damage to drains; access at risk	Repair erosion; construct scour checks;	Impassible /dangerous to pass	Structural repair; equivalent to half replacement	Impassible /dangerous to pass	Structural repair; equivalent to half replacement

		pavement and improve surface		dig new drains		cost		cost
3	Major defects, but access is not at risk	Major surface repair	Minor sedimentation /erosion but no danger or risk to access	Clear drain / repair erosion; construct scour checks	Major sedimentation / erosion, but access is not at risk	Major clearing or repair required	Major Sedimentation / erosion, but access is not at risk	Major clearing or repair required
4	Minor defects	Minor surface repair	Minor sedimentation / erosion	Clear drain / repair erosion	Minor sedimentation / erosion	Clear silt / repair erosion	Minor sedimentation / erosion	Clear silt / repair erosion
5	No defects	Routine activities only	No defects	Routine activities only	No defects	No work required	No defects	No work required

Total Cost for Budgetary Requirements and Provisions:

The total cost for Periodic Maintenance requirements assessed for the identified Group of Roads (ratings 1, 2 & 3), Routine Maintenance of roads with ratings 1 to 5, reconstruction or Renewal out of roads with ratings 1 & 2 (over and above periodic maintenance cost) and Emergency and Special repairs would be the Budgetary Requirement that the PIU would put up to the higher authority in the State for approval and allocation at the proper time. The whole exercise of undertaking the condition surveys, rating, prioritization and preparation of budgetary requirements should be done in a cyclic manner every year at the appointed time.

After budget allocations, for putting works to tendering, a more detailed Engineer's Estimation should be prepared based on more detailed recording of defects, diagnosis, identifying remedies and similar activities using tools such as Benkelman Beam, etc. Estimation of quantities or works and costs should also be undertaken afresh at this stage. The current State Schedule of Rates (S-OR) may be applied to the estimated quantities of works to give an estimate of total costs of works.

In case of budgetary insufficiency adjustment of the proportions of activities for the annual programme - indicative figures are shown in Table 9, given below:

Table 9

[Suggested allocations of insufficient maintenance budget]
(Condition rating 3)

Activity	% of budget needs actually available				
	100%	80%	60%	40%	20%
Routine maintenance	10%	15%	20%	35%	75%
Periodic maintenance	40%	45%	50%	50%	-
Reconstruction	45%	30%	20%	-	-

/ renewal					
Emergency	5%	10%	10%	- 15%	25%

As the budget sufficiency reduces, the maintenance programme becomes increasingly reactive - routine maintenance becomes heavier and more frequent as actually needed repairs are not undertaken or are not funded and emergency response becomes more frequent. At extreme level of budget deficit, emergency response is almost inevitable since the condition of the road worsens. Therefore, long term budget insufficiency can only lead to maintenance neglect and deterioration of rural road network to despair. It is, therefore, suggested that prediction of such effects should be a component of longer term network management. The reduced budgetary provisions should be so readjusted amongst different maintenance activities i.e. while the overall network condition does not go down appreciably, the investment is put to best use.

Procurement:

Tenders should be invited on e-tendering basis following the principles of e-tendering. Estimate should be technically vetted by the Officers concerned as per ***Order No.5458-F(Y) dated 27-06-2012 of the Finance Department, Govt. of West Bengal.***

The Tenders will be accepted by the Executive Engineer after getting financial clearance from the Govt.

CONTRACTING:

While Road Maintenance and Road Construction comprise essentially the same engineering activities, new construction involves a concentration of activities in a limited area or length of road, maintenance involves limited volume of works at multiple locations over a larger geographical are. Logistics and supervision activities can thus be different. Standard Bidding Documents, approved by the Competent Authority, should be followed so long separate SBD is not prepared for exclusive purpose of Rural Road Maintenance. These documents should be familiar to Contractors and proven to be contractually robust and fair.

Estimates

The Maintenance Estimate should be prepared on the basis of prevalent S.O.R. of the WBSRDA. Contingency @ 3% should be provided for preparation of DPRs, Data Collection and Survey for Pavement Condition Index & consequently Road Condition Index.

Monitoring

At least two tier system should be used for the purpose. The District Laboratory and Laboratory to be set up by the Contractor where required should be regularly used for the purpose.

Measurement Contracts

Quantities of work activities are estimated and a Bill of Quantities (BOQ) is prepared. Each measured item of work has an agreed unit rate (unit cost) upon which payment is made. A Contractor is thus paid for measured work certified as having been undertaken in accordance with specification (i.e. completed works). Obviously, larger and more complicated works will require more sophisticated design and contract documentation than similar works and simpler contract documentation can be used in such circumstances. However, the sophistication or simplicity of contract Documents is not usually a stumbling block as the procurement process is often of similar length whether for a large or a small value contract., due to the established procedures required for public procurement. It should be noted that the nature and scope of periodic maintenance works are more akin to new construction than routine maintenance and thus similar contract formats may be used effectively for both types of work.

Petty Contract (Local Community, Panchayati Raj Institutions and Women Self Help Groups):-

This category usually consists of one man firm, sometimes assisted by a limited unskilled workers. They may be labour only contractors, often sub-contracted to carry out specific work, mainly relaying on casual labour. Local artisans such as Bricklayers, Carpenters, Plumbers & Electricians together with their semi-skilled or unskilled workers can be classified as Petty Contractor. Local community groups such as Farmers' Associations, Village Welfare and Women Self-help Groups can also be classified in this category. A common feature for this group is that they are not formally registered.

Besides some simple hand tools, Petty Contractors normally do not possess any equipment and often lack of their own means of transport. These contractors can be used for some routine maintenance works or simple, clearly defined sub-contracts requiring a minimum of skilled labour and hand tools.

When dealing with the activities such as off-carriageway maintenance, the volume of works and contract amount are much smaller, and really do not justified the use of comprehensive contract intended for larger civil works projects. Due to limited size of these contract, a simplified system can be applied.
Equally, the process of recruiting the contractors can be simplified. Instead of carrying out a full tendering process, the smaller routine maintenance works can be awarded through direct selection and negotiated prices.

Audit:

In order to further improvement, accountability for maintenance delivery, samples stretches of roads, should also be subjected to Technical and Financial Audit, as per the procedure prescribed by the State Government.

Specifications & Quality Control :

The Specifications & Quality Control measures as detailed in MoRD Specifications for Rural Roads (1st Revision) shall be followed.

Sec. 1900 of the above book is for the purpose of Routine Maintenance and Sections 400, 500 & 800 for periodic Maintenance (Renewal) to be used as far as applicable.

Enclosure : Annexure-1,IA, 2 & 3.

<u>**ANNEXURE -1**</u>

Specimen Condition Assessment & Calculation of RCI

Bituminous Road

Condition Assessment

District Block Class

Road Name (From / To) Road Length

Road Chainage (From / To)

Year Constructed

Date of Condition Survey

Start Km	LHS Drain		LHS Shoulder	Carriage Way				RHS Shoulder	RHS Drain		CDS		Road Furniture	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
0-200	1	1	3	3	3	3	3	3	2	1	2	1	2	22.5	
200-400	2	2	3	2	3	3	3	3	2	1	3	1	2	23.5	
400-600	3	3	3	3	3	4	3	3	3	2	4	2	4	31.5	
600-800	4	4	4	3	4	4	4	4	3	3	4	3	4	37	
800-1000	4	4	4	4	4	4	4	4	4	4	5	4	4	41	
Average															[illegible]

1000 - 1200	4	4	4	4	4	4	4	4	4	4	4	4	4	40
1200 - 1400	4	4	3	5	5	4	5	3	3	3	5	4	4	42
1400 - 1600	3	3	4	4	4	4	3	3	3	3	4	4	4	36.5
1600 - 1800	2	2	3	4	4	4	4	3	2	2	4	4	4	35
1800 - 2000														
Average														38.4

ANNEXURE-1A

For illustration purpose separate assessments have been made of two sections of the (link) road:-

Km 0+000 - 1+000	Km 1+000 - 1+800
RCS = 31.1	RCS = 38.4
WRCS = 31.1x1x1 .25 = 38.88	WRCS = 38.4x1x1.25 = 48.0
(i.e. rainfall - high; terrain - plain	
RCI = 38.88+5+5 = 48.88	RCI = 48.0+5+20 = 73.0
(i.e. link road 4-5 years old; Traffic >300 commercial vpd)	(i.e. link road 4-5 years old; Traffic 0-50 commercial vpd)

ANNEXURE-2.

Specimen Condition Assessment & Calculation of RCI

Concrete Road

Condition Assessment

District Block Class
Road Name (From / To) Road Length
Road Chainage (From / To)
Year Constructed
Date of Condition Survey

Start Km	LHS Drain		LHS Shoulder	Carriage Way				RHS Shoulder	RHS Drain		CDS		Road Furniture		
	Shape/Rain cut/side slopes/condition	Silting/% silted	Grading/vegetation/trees/shrubs/condition	Cracking/joint stepping/Extension & width of cracks	Joint sealant defects/length	Spalling & ravelling/% surface area	Edge break/length	Grading/vegetation/trees/shrubs/condition	Shape/rain cut/side slopes/condition	Silting/% silted	Opening/Painting/Silting/% open	Sediment/erosion	Condition	Overall visual rating	Visual rating/Km
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0-200	1	1	3	1	2	2	3	3	2	1	2	1	2	18.5	
200-400	2	2	3	2	3	3	3	3	2	1	3	1	2	23.5	
400-600															
600-800															
800-1000															
Average															21

For illustration purpose the concrete road section is assessed in isolation from the Bituminous sections of road each side of the village:
Km 0+000 - 0+400

RCS = 21.0

WRCS = 21.0x1x1.25 = 26.25 (i.e. rainfall - high; terrain - plain)

RCI = 26.25+5+1 = 32.25

(i.e. road >5 years old; traffic 0-50 commercial vpd)

This concrete road is in poor condition; much worse condition than the bituminous road. The maintenance needs of this section of village road are high and complete replacement of the concrete slab may be necessary.

ANNEXURE-3

HOW RCI CAN BE AN OBJECTIVE TOOL FOR PRIORITISATION – CASE STUDY

Sl. No.	Kilometre-wise Overall rating based on Condition of all he parameters – RCR Score = Value{[1+2)+(9+10)]/2+(3+8)/2+(4+5+6+7)+(11+12)+13}	Factors for Converting RCR Score into RCI for Universal Application				Road Condition Index (RCI)
		Multiplier Factor for		Add on for		
		Rainfall	Terrain	Age of Road Pavement	Category of Road and traffic volume	
1.	17.5	1.15	1.25	05	04	34.2
2.	28.0	1.15	1.25	15	08	63.3
3.	26.0	1.15	1.25	15	08	60.4
4.	33.0	1.15	1.25	25	15	87.4
5.	33.0	1.15	1.25	25	15	87.4
6.	21.0	1.15	1.25	05	04	39.2
7.	20.0	1.15	1.25	05	04	37.8
8.	34.5	1.15	1.25	25	15	89.6
9.	29.0	1.15	1.25	15	06	62.7
10.	35.0	1.15	1.25	25	15	90.0
11.	29.0	1.15	1.25	15	06	62.7
12.	25.0	1.15	1.25	15	08	58.9
13.	19.0	1.15	1.25	05	04	36.3
14.	32.0	1.15	1.25	25	20	91.0
15.	30.0	1.15	1.25	15	08	66.1
16.	29.5	1.15	1.25	15	08	65.4
17.	27.0	1.15	1.25	15	06	59.8
18.	15.0	1.15	1.25	01	04	26.6
19.	18.0	1.15	1.25	05	04	34.9
20.	29.0	1.15	1.25	15	08	64.7
21.	32.5	1.15	1.25	25	20	91.7
22.	27.0	1.15	1.25	15	06	59.8
23.	34.0	1.15	1.25	25	20	93.9
24.	13.0	1.15	1.25	01	04	23.7
25.	36.0	1.15	1.25	25	20	95.0
26.	29.0	1.15	1.25	15	06	62.7
27.	22.5	1.15	1.25	05	04	41.3
28.	32.0	1.15	1.25	25	15	86.0
29.	31.0	1.15	1.25	25	15	84.6
30.	36.0	1.15	1.25	25	15	90.0
31.	40.0	1.15	1.25	25	15	90.0
32.	27.0	1.15	1.25	15	06	59.8
33.	35.0	1.15	1.25	25	20	95.8
34.	32.0	1.15	1.25	25	20	91.0
35.	33.0	1.15	1.25	25	20	92.4
36.	15.0	1.15	1.25	01	02	24.6
37.	26.0	1.15	1.25	15	08	60.4
38.	31.0	1.15	1.25	25	20	89.6
39.	32.5	1.15	1.25	25	15	86.7
40.	26.0	1.15	1.25	15	06	58.4
41.	38.0	1.15	1.25	25	15	90.0
42.	39.0	1.15	1.25	25	15	90.0
43.	41.5	1.15	1.25	25	15	90.0
44.	25.0	1.15	1.25	15	06	56.9
45.	29.0	1.15	1.25	15	06	62.7
46.	34.5	1.15	1.25	25	15	90.0
47.	33.0	1.15	1.25	25	20	92.4
48.	29.0	1.15	1.25	15	06	62.7
49.	45.0	1.15	1.25	25	20	95.0
50.	20.0	1.15	1.25	05	02	35.8

Sl. No.	Kilometre-wise Overall rating based on Condition of all he parameters – RCR Score = Value{[1+2)+(9+10)]/2+(3+8)/2+(4+5+6+7)+(11+12)+13}	Factors for Converting RCR Score into RCI for Universal Application				Road Condition Index (RCI)
		Multiplier Factor for		Add on for		
		Rainfall	Terrain	Age of Road Pavement	Category of Road and traffic volume	
51.	24.0	1.15	1.25	05	02	41.5
52.	16.5	1.15	1.25	05	02	30.7
53.	23.0	1.15	1.25	05	02	40.1
54.	24.0	1.15	1.25	05	04	43.5
55.	18.0	1.15	1.25	05	02	32.9
56.	29.0	1.15	1.25	15	06	62.7
57.	26.0	1.15	1.25	15	06	58.4
58.	34.0	1.15	1.25	25	20	93.9
59.	32.0	1.15	1.25	25	15	86.0
60.	31.0	1.15	1.25	25	15	84.6
61.	29.0	1.15	1.25	15	06	62.7
62.	26.0	1.15	1.25	15	06	58.4
63.	28.0	1.15	1.25	15	06	61.3
64.	29.0	1.15	1.25	15	08	64.7
65.	44.0	1.15	1.25	25	15	90.0
66.	43.0	1.15	1.25	25	20	95.0
67.	41.5	1.15	1.25	25	20	95.0
68.	42.0	1.15	1.25	25	20	95.0
69.	40.0	1.15	1.25	25	15	90.0
70.	39.0	1.15	1.25	25	15	90.0
71.	37.5	1.15	1.25	25	20	95.0
72.	31.0	1.15	1.25	25	20	89.6
73.	29.0	1.15	1.25	15	08	64.7
74.	27.0	1.15	1.25	15	08	61.8
75.	37.0	1.15	1.25	25	20	95.0
76.	39.5	1.15	1.25	25	15	90.0
77.	40.0	1.15	1.25	25	15	90.0
78.	39.0	1.15	1.25	25	15	90.0
79.	36.0	1.15	1.25	25	20	95.0
80.	41.0	1.15	1.25	25	15	90.0
81.	46.0	1.15	1.25	25	20	95.0
82.	47.0	1.15	1.25	25	15	90.0
83.	21.5	1.15	1.25	05	04	39.9
84.	21.0	1.15	1.25	05	04	39.2
85.	25.0	1.15	1.25	15	08	59.9
86.	18.5	1.15	1.25	05	04	35.6
87.	28.0	1.15	1.25	15	08	63.3
88.	31.0	1.15	1.25	25	15	84.6
89.	32.0	1.15	1.25	25	15	86.0
90.	26.0	1.15	1.25	15	08	60.4
91.	28.0	1.15	1.25	15	08	63.3
92.	34.0	1.15	1.25	25	15	88.9
93.	32.0	1.15	1.25	25	15	86.0
94.	15.0	1.15	1.25	01	04	26.6
95.	26.5	1.15	1.25	15	06	59.1
96.	28.0	1.15	1.25	15	08	63.3
97.	29.0	1.15	1.25	15	08	64.7
98.	31.0	1.15	1.25	25	20	89.6
99.	35.0	1.15	1.25	25	15	90.0
100.	32.5	1.15	1.25	25	20	91.7

RCI AS MONITORING AND AUDIT TOOL

Sl. No.	RCR Score	RCI	Priority	Sl. No.	RCR Score	RCI	Priority	Sl. No.	RCR Score	RCI	Priority	Sl. No.	RCR Score	RCI	Priority
24	13	23.7	1	95	26.5	59.1	26	15	30	66.1	51	70	39	90.0	76
36	15	24.6	2	17	27	59.8	27	29	31	84.6	52	76	39.5	90.0	77
18	15	26.6	3	22	27	59.8	28	60	31	84.6	53	77	40	90.0	78
94	15	26.6	4	32	27	59.8	29	88	31	84.6	54	78	39	90.0	79
52	16.5	30.7	5	3	26	60.4	30	28	32	86.0	55	80	41	90.0	80
55	18	32.9	6	37	26	60.4	31	59	32	86.0	56	82	47	90.0	81
1	17.5	34.2	7	90	26	60.4	32	89	32	86.0	57	99	35	90.0	82
19	18	34.9	8	63	28	61.3	33	93	32	86.0	58	14	32	91.0	83
86	18.5	35.6	9	74	27	61.8	34	39	32.5	86.7	59	34	32	91.0	84
50	20	35.8	10	9	29	62.7	35	4	33	87.4	60	21	32.5	91.7	85
13	19	36.3	11	11	29	62.7	36	5	33	87.4	61	100	32.5	91.7	86
7	20	37.8	12	26	29	62.7	37	92	34	88.9	62	35	33	92.4	87
6	21	39.2	13	45	29	62.7	38	38	31	89.6	63	47	33	92.4	88
84	21	39.2	14	48	29	62.7	39	72	31	89.6	64	23	34	93.9	89
83	21.5	39.9	15	56	29	62.7	40	98	31	89.6	65	58	34	93.9	90
53	23	40.1	16	61	29	62.7	41	8	34.5	89.6	66	25	36	95.0	91
27	22.5	41.3	17	2	28	63.3	42	10	35	90.0	67	33	35	95.0	92
51	24	41.5	18	87	28	63.3	43	30	36	90.0	68	49	45	95.0	93
54	24	43.5	19	91	28	63.3	44	31	40	90.0	69	66	43	95.0	94
44	25	56.9	20	96	28	63.3	45	41	38	90.0	70	67	41.5	95.0	95
40	26	58.4	21	20	29	64.7	46	42	39	90.0	71	68	42	95.0	96
57	26	58.4	22	64	29	64.7	47	43	41.5	90.0	72	71	37.5	95.0	97
62	26	58.4	23	73	29	64.7	48	46	34.5	90.0	73	75	37	95.0	98
12	25	58.9	24	97	29	64.7	49	65	44	90.0	74	79	36	95.0	99
85	25	58.9	25	16	29.5	65.4	50	69	40	90.0	75	81	46	95.0	100

Grouping Roads as per their Condition Rating- the Existing Methodology					
Criteria	Condition Rating				
	1	2	3	4	5
Number of Roads falling in various Groups	15	21	24	25	15
Number of Roads falling in the various Groups Before Improvement Works	15	14	22	31	18
Number of Roads falling in the various Groups After Improvement Works	06	15	10	33	36

EVALUATION AT INDIVIDUAL ROAD LEVEL

Sl. No.	RCI Before Improvement Works	RCI After Improvement Works	Sl. No.	RCI Before Improvement Works	RCI After Improvement Works
1	34.2	47.8	26	62.7	75.2
2	63.3	75.9	27	41.3	53.7
3	60.4	72.9	28	86.0	86.9
4	87.4	88.3	29	84.6	93.0
5	87.4	88.3	30	90.0	90.9
6	39.2	54.9	31	90.0	90.9
7	37.8	52.9	32	59.8	77.8
8	89.6	90.5	33	95.0	96.0
9	62.7	75.2	34	91.0	91.9
10	90.0	90.9	35	92.4	93.4
11	62.7	75.2	36	24.6	34.4
12	58.9	76.6	37	60.4	72.5
13	36.3	50.8	38	89.6	90.5
14	91.0	91.9	39	86.7	87.6
15	66.1	79.4	40	58.4	75.9
16	65.4	78.5	41	90.0	90.9
17	59.8	77.8	42	90.0	90.0
18	26.6	37.2	43	90.0	90.0
19	34.9	48.8	44	56.9	74.0
20	64.7	77.6	45	62.7	75.2
21	91.7	92.6	46	90.0	90.0
22	59.8	77.8	47	92.4	93.4
23	93.9	94.8	48	62.7	75.2
24	23.7	31.2	49	95.0	96.0
25	95.0	96.0	50	35.8	50.1

This issues with concurrence of the Finance (Audit) Department, Govt. of WB. vide their U.O. No. Group-T/2015-2016/0339 Dated 31.07.2015.

By order of the Governor

(Saurabh Kumar Das)
Principal Secretary
to the Government of west Bengal

No.219/SS/WBSRDA/2E-9/Engg Cell/2014 Dated : 09/03/2016

Copy forwarded for information & necessary action to:

1) The Accountant general (A & E) West Bengal, Treasury Building , Kolkata- 700 001;
2) The Accountant general (Audit) West Bengal, Treasury Building , Kolkata- 700 001;
3) The Finance (Audit) Department , Govt. of West Bengal , Group-T, Nabanna, Mandirtala, Howrah-700 102;
4) The Finance Department , Group-R , Nabanna , Mandirtala, Howrah-700102;
5) The Finance Bugged Department , Nabanna , Mandirtala, Howrah-700102;
6) The Additional Chief Executive Officer , WBSRDA
7) The District Magistrate, _____ District;
8) The District Magistrate & Executive Officer _____Zilla Parishad;
9) The pay Accounts Officer, Kolkata , Pay & Accounts Office-III, Block-IB, Sector-III, Salt Lake, Kolkata- 700 106
10) The Chief Engineer, P & RD Department;
11) The Director, SIPRD, Kalyani, Nadia;
12) The Advisor ADB, WBSRDA;
13) The Technical Advisor, WBSRDA;
14) The Consultant, WBSRDA;
15) The Superintending Engineers, P & RD & WBSRDA;
16) The Financial Controller, WBSRDA;
17) The Executive Engineers, P & RD; Deptt. (H.Q)
18) The Executive Engineers & Head of PIU of WBSRDA(District Level);
19) Guard file(with 5 s/c)

(Saurabh Kumar Das)
Principal Secretary
to the Government of west Bengal