Pradhan Mantri Gram Sadak Yojana-III
PMGSY-III: Draft Concept Paper

1. Context

1.1 Rural development has been a matter of continuing priority and urgency for considerations of social justice, national integration and economic uplift. And, rural roads are recognized as a key ingredient of rural development since they provide access to economic and social services. They are an entry point for poverty alleviation. These roads influence the process of growth by facilitating dispersal of knowledge and reduction of inequalities. They act as facilitators to create agricultural surplus, improve basic health, provide access to schools and other educational centres besides creating direct and spin off employment opportunities. Allied agricultural activities such as animal husbandry, dairy development and fisheries are closely linked to the availability of rural road network. Agriculture markets and promotion of agri-products owe their success, among others, to the farm and market connectivity and setting up storage and warehousing facilities. Rural roads thus act as infrastructure multiplier and poverty reducer.

1.2 Rural transport is part of a transport chain with one end in the agricultural fields and the other on the local market/mandi. It is also the transport chain from the main roads network upto the local market. As such, development of rural roads need to be integrated with district roads so that they feed traffic into and receive traffic from the secondary road system.

1.3 In order to give boost to rural connectivity, Pradhan Mantri Gram Sadak Yojana was launched in December 2000. As a departure from the earlier programmes, the PMGSY was being implemented as a 100 percent funding for construction by the Central Government upto 31st March 2015 and 100 percent funding for maintenance by the state governments. It is a special central intervention on a state subject. Since 1st April 2015, there has been a change in financing pattern of construction whereby the Central Government provides 90 percent share of construction cost for rural roads in the NE states, Sikkim, Jammu & Kashmir, Himachal Pradesh and Uttarakhand and 60 percent share of construction cost for rural roads in other states. Balance share of construction cost and full funding for maintenance are now to be provided by the states. The programme envisages connecting all habitations with population above 500 in plains and above 250 in hill, tribal and desert areas (Census 2001). The programme covers rural roads required for new connectivity and upgradation of existing roads. Some dispensations have been given to accelerate the pace in Left Wing Extremism (LWE) affected areas and Integrated Action Plan (IAP) districts.

1.4 Considerable progress has been made and is continuing under the current PMGSY. For the first time, well-engineered roads are being provided in rural areas. The programme owes its success to several policy and implementation strategies (see Box 1).

Box 1: Salient Features of PMGSY

- Programme administered by Ministry of Rural Development as per laid down guidelines
- Dedicated funds out of Central Road Fund
- Technical and Managerial support from National Rural Roads Development Agency
- Preparation of District Rural Roads Plans with full involvement of PRIs, MLAs, MPs and vetting by State Level Standing Committee
- Sound implementation by states
- Common set of:
  - Engineering Standards and Specifications
  - Contract documents
  - Three Tier Quality Control
  - Operating and Financial Procedures
- Online Monitoring, Management and Accounting System
- Technical support from academia, IRC, C-DAC
- Strengthening capacity of PIUs, local contractors
- Achieving resource efficiency through technology initiatives

2. Launching of PMGSY-II: Focus on consolidation of existing road network

2.1 Several states have undertaken rural connectivity programmes on their own and adopted similar standards and procedures. A three-tier quality control arrangement has helped in improvement of the quality culture among the PIUs and contractors entrusted with execution of works. A timely updated website and OMMAS along with e-procurement have ensured higher levels of transparency and governance in management of the programme. Financial support from RIDF window of NABARD, World Bank and Asian Development Bank has been instrumental in accelerating the progress towards universal connectivity and capacity building initiatives. At the beginning of the 12th Five Year Plan (April, 2012), about 50-60 percent of the length of rural roads under the PMGSY had been completed and works in another 20 percent of the length were in progress. The regional imbalances in the rural connectivity got considerably reduced.

2.2 It was, therefore, thought prudent to start focusing on consolidating the existing rural road network comprising of both PMGSY and other rural roads side by side of continuing the momentum in fast-tracking the completion of the ongoing PMGSY programme. This led to opening in May 2012 of a small window, labelled as PMGSY-II, for upgradation of existing rural roads connecting the major district roads and other growth centres. Box 2 captures the key strategies adopted for PMGSY-II. (The earlier PMGSY is henceforth labelled as PMGSY-I).

Box 2: Strategic Framework adopted for PMGSY-II

- Updating and revision of DRRP based on Census 2011 following the extant guidelines of MORD
- Upgradation of Through Routes out of DRRP. Selection parameters being:
  - Growth centre potential, rural hub
  - Traffic
  - Road condition
- Target length: 50,000 km
- States to share construction cost (25 percent) and full maintenance cost
- All states to be eligible. However, date of joining PMGSY-II linked to achieving substantial progress under PMGSY
- Matching steps advocated for strengthening of rural engineering departments, SRRDAs and PRIs
- States could approach NABARD, World Bank and Asian Development Bank for loan assistance to supplement their financial resources
- Implementation arrangements as per ongoing PMGSY

2.3 A length of 50,000 km under the PMGSY-II was approved. So far, works of upgradation have been sanctioned in a length of 29,000 km. By now, thirteen states have benefited from this programme. These are Haryana and Punjab in the North; Chhattisgarh and Madhya Pradesh in the Centre; Gujarat, Maharashtra and Rajasthan in the West; Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Telangana in the South; and Uttar Pradesh in the East.

3. District Rural Roads Plans (DRRPs)

The PMGSY has channelled the interest of PRIs, MLAs and MPs into a structured planning system. They have been involved in preparation of comprehensive block level master plans and District Rural Roads Plans (DRRPs). Under the PMGSY-II, it has been proposed to review and update the DRRPs duly covering habitations crossing threshold population as per Census 2011 and even include some critical multiple connectivity such as interlinking rural hubs with existing road network and expansion of market size and interface through roads with major district roads. It is essential that in close coordination with PRIs, each of the SRRDAs may now complete the process of updating the DRRPs as under:

(a) Digitise the maps and host on a GIS platform. The maps should indicate roads constructed, roads to be constructed, roads upgraded and roads yet to be upgraded, internal village roads and non-core roads.

(b) Each rural road in every block and district should be given a Unique ID number just as Aadhaar Card for every citizen so that total stock of rural roads is available at one place in the SRRDA and the Zila Panchayat Headquarter. Further, the SRRDA through the GIS platform can monitor and track the

progress of road activities including maintenance in respect of core network and Zila Panchayat can do so far the non-core roads.

(c) The SRRDA may provide support in training of Gram Panchayat and Block/Mandal Panchayat Engineers and Revenue Officials, such training being conducted at training centres in respective district headquarters to start tracking progress in respect of non-core roads as well.

4. Progress of PMGSY including PMGSY-II (as on 31st December 2017)

4.1 The statewise physical and financial progress of rural roads under the PMGSY-I and PMGSY-II are given in Annexure Á Table 1 gives an overall picture of achievements so far.

Table 1: Physical and Financial Progress of PMGSY

S.No.	Particulars	Unit	Total Eligible	Achievement				In progress as on 31.12.2017
				During 2002-07	During 2007-12	During 2012-18 (upto 31.12.2017	Total upto 31.12.2017	
1.	Number of habitations	Number	183,599*	36,694	47,824	58,055	1,57,193 (includes 14,620 under state schemes)	26,406
2.	Length of rural roads							
(i)	New connectivity	km	367,673**	86,716	122,130	129,178	338,024	73,593
(ii)	Upgradation	km	224,906#	33,861	107,726	47,300	188,887	40,016
	Total	**km**	**7,76,178**	**120,577**	**229,856**	**176,478**	**526,911**	**113,609**
3.	Number of bridges	Number				2458	2458	3393
4.	Expenditure							
(i)	Central share	Rs.crore		21,000	70,500	81,990	173,490	64,000
(ii)	State share	Rs.crore				8,040	8,040	

* Includes additional 5415 habitations in LWE Blocks
** Earlier estimates. Likely to be exceeded as per approved DRRPs
# Includes 50,000 km under PMGSY-II

4.2 It would be seen that now balance work of new connectivity is required for about 19,000 habitations under the ongoing PMGSY-I. The PMGSY-I completion target has been advanced from the year 2002 to 2019 and all sanctions pending under this programme are likely to be accorded by end March 2018.

5. Performance Guarantee and Maintenance of Roads:

5.1 PMGSY Roads are constructed for the designed life of 10 years. Para 17.1 of PMGSY Guidelines regarding maintenance states that 'the putting in place of institutional measures to ensure systematic maintenance and providing adequate funding for maintenance of the rural

Core Network, particularly the Through Routes, will be key to the continuance of the PMGSY programme in the States. PMGSY for the first time brought in the concept of defects liability period, where the contractor is obligated to carry out maintenance of the road constructed by him for the first five years and also to rectify any deficiencies noticed during this period. This strategy has also helped in assured quality during construction by the contractors. Nearly 3,72,450 km of roads have completed more than five years of defects liability period and are being maintained by the respective state governments with their funds. In many cases, it has been found that owing to the increased traffic on these roads, the states have at their own level strengthened, maintained and even upgraded some of the roads constructed under PMGSY. Timely maintenance of these road assets is important to maintain its access function on a sustainable basis. See Box 3 for benefits of sustained maintenance.

Box 3: Benefits of Sustained Maintenance

- Lower vehicle operation cost, longer life of vehicles
- Improved business environment for farmers and local entrepreneurs
- Better access to local communities for education, healthcare and agricultural extension services
- Savings in government budget to avoid premature reconstruction and rehabilitation expenditure
- Prolongs life of roads
- Enhances community satisfaction
- Regular and direct employment to local communities, especially, women self help groups
- Reflects good governance by government

5.2 While maintenance of rural roads continues to be an area of concern, there is growing recognition among states regarding the need to mobilize additional financial resources towards maintenance and preserving the rural road assets being created at a huge cost to the economy. Table 2 gives a broad assessment of the replacement value of rural road assets.

Table 2: Replacement Value of Rural Road Assets

(Broad Assessment* as of 31 December 2017)

S.No.	Particulars	Amount in Rs. crore
1.	PMGSY: 527,000 km @ Rs.45 lakh/km	2,37,150
2.	Non-PMGSY: (i) Core Road Network: 6,10,500 km @Rs.20 lakh/km (ii) Non-core Roads: 21,12,162 km @Rs.12 lakh/km	 1,22,100 2,53,460
	Total	6,12,710
	Say	Rs. 6,00,000 crore

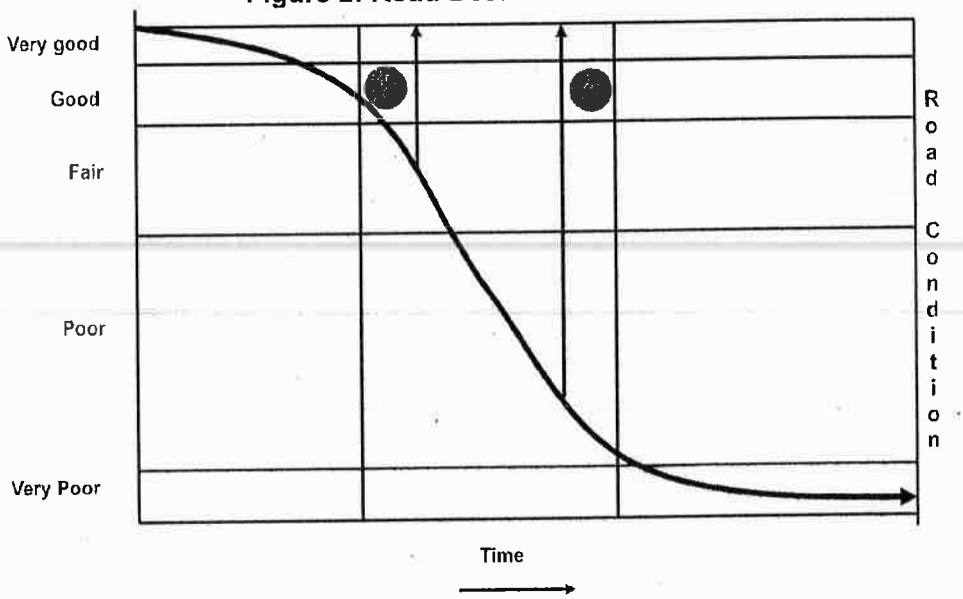
* Assessment by DP Gupta, former DGRD and Additional Secretary, MORTH

Even if such an assessment could be open to debate, yet for a policy and strategic approach to maintenance, there could be no two opinions that the scale of these assets is huge and they justify preservation. Rural roads should receive dependable and adequate allocation of funds accompanied with well laid down principles and mechanism for sound implementation and management of funds.

5.3 Several good practices on the front of mobilizing additional funds for maintenance and execution of maintenance works through performance based maintenance, community contracting, post-five year maintenance have emerged in various states. These are worthy of being upscaled by the state governments within their own administrative and technical framework. Needless to add that this needs to accompany a facilitating role by the SRRDAs in hand holding of petty and small local contractors besides local communities and self help groups.

5.4 A simplified Asset Management System needs to be evolved by each state building up from the current arrangements for collection and analysis of data. The system should enable maximising the benefits of the allocated maintenance funds. Figure 1 gives a typical road deterioration curve. Preventive treatment during the phase when road is in fair condition is much less costly compared to intervention in poor condition (see the ordinate at (1) which is much less than at (2). This is a surrogate of the cost involved in the two stages).

Figure 2: Road Deterioration Curve



5.5 The states could consider allocating funds for maintenance in the following itemized priorities as far as possible:

(a) Routine maintenance of roads which are in good and maintainable condition including requirements to ensure safe movement of vehicles, cyclists and pedestrians.

(b) Routine and periodic maintenance of roads which are in fair condition.

(c) Removing backlog of maintenance including rehabilitation of existing roads which are in very poor condition. Funds for removal of backlog should ideally be met out of plan funds. Thereafter, ensure routine maintenance of such rehabilitated roads and timely periodic maintenance.

5.6 Another good practice in maintenance of rural roads under PMGSY worthy of national level adoption is the e-MARG developed by the Madhya Pradesh Rural Road Development Authority (MPRRDA) of the Panchayat and Rural Development Department of the state government. It is a GIS-based Enterprise e-Governance solution to assist the government officials, civil contractors, banks and general public. Currently, it covers all roads covered under Core Network of Madhya Pradesh (65,000 km serving 23,000 panchayats, 53,000 villages, all 51 districts and 95 PIUs). Box 4 captures the salient features of e-MARG.

Box 4: Salient Features of e-MARG

A. Features

- Uniform standardized transparent process oriented system
- Fusion of various technologies GIS, Cryptography, Open Source, Remote Sensing, 3 M (Mobile, Messaging and Mail).
- Facilitate packaging of roads for maintenance
- Online monthly bill generation, submission and tracking by the Contractors
- Road Inspection based on Geo-tagged photographs
- Inspection linked Payments to the Contractors through PFMS/ National Bank using Digital Signature.
- Query/ search/ reports
- Notification/ alerts through SMS/ SMTP services
- Geospatial functionality

B. Data requirements (in database format)

- Core Network data of roads/ habitations (PIU wise, Blockwise)
- Package details (NIT No., Package No., Roads, Contractor etc.)
- Length of Road (BT & CC), updated CD structures after completion of construction phase along with completion

This is being implemented successfully by the MPRRDA for maintenance of PMGSY rural roads in Madhya Pradesh and is in operation since the year 2014. So far, around 260,000 inspections have been carried out and an amount of Rs.700 crore has been disbursed to contractors through the e-MARG. It has clear potential of being implemented by all states learning from steps taken by the MPRRDA in roll out of this unique fusion of new and emerging technologies and enhanced e-Governance.

6. Safety Aspects

6.1 With the expansion and upgradation of rural road network under the PMGSY and other state level schemes and rise in income levels of rural population, traffic on rural roads has been witnessing an accelerated growth. Increase in the surplus disposable income of the households and easier financial loans for two-wheelers and cars, ownership of motorized vehicles has been increasing in rural areas as well. One negative externality for such road development programmes is increase of road accidents causing fatalities and serious injuries to the road users and drivers. Such accidents also result in direct and indirect economic loss besides causing trauma to all involved.

6.2 Road safety is a multi-disciplinary activity. It involves joint and complimentary inputs by the departments dealing with roads, police, transport, health, insurance, educational institutes. Support is also required from mass media, and local communities, civil society and non-government organizations. With the support of Asian Development Bank, a Rural Road Safety Manual has been prepared by the NRRDA and circulated to all SRRDAs for promoting safer rural roads. The Manual covers guidance on accident data records, safer road design, road safety audit checklists, community awareness and education. Suggestive training modules for PIUs, consultants and other stakeholders have also been given.

6.3 Road safety should receive increasing attention in planning, design and implementation of engineering measures on rural roads. Safety aspects have to be integral part of road design during the preparation of Detailed Project Report (DPR). At the 'transect walk' stage itself, the PIUs need to engage with the local communities to identify hazards, local black spots and possible rectification measures. Major aspects that require special attention are presence of physical hazards, inadequate sight distance at intersections, inadequate road signs, pavement markings and crash barriers, delineator posts. There is virtual absence of traffic calming measures on stretches passing through villages and settlements. Attention is also required for safety arrangements in construction zones during construction stage by providing traffic control devices such as cones, traffic cylinders, drums, cautionary signs to guide the drivers to move along a safe path and to control the flow of traffic. Box 5 gives at a glance key aspects that should receive special attention in preparation of DPRs and subsequent execution on the ground.

Box 5: Safety Engineering Measures on Rural Roads

- Design and Layout of intersections that ensures adequate sight distance
- Removal of encroachment at junctions
- Provision of rumble strips close to meeting point of rural roads with main roads
- Provision of road signs, pavement makings and other traffic control devices as per IRC Codes
- Rectification of geometric deficiencies and other hazardous locations (black spots) on existing roads. In the mean time, appropriate cautionary signs and speed limit signs to be posted.
- Ensuring provision of horizontal and vertical curves as per design speeds. Where this is not possible due to site constraints, there is need to install appropriate traffic calming measures to reduce operating speeds along with speed limit signs.
- Provision of adequate space for turning of vehicles at either end, particularly on link roads
- Provision of bus bays close to villages, habitations
- Speed management measures on roads passing through villages and habitations.
- Road stretches exceeding a length of 5 km should be subjected to road safety audit.

6.4 The engineers responsible for rural roads in the states and those engaged in preparation of DPR by the consultants must undergo training on road safety and road safety audit being provided by IAHE, CRRI and other training institutions.

6.5 It is also necessary to sensitize the communities and users of rural roads to road safety concerns and the role they can play in reducing the accident burden. Help of NGOs, who are already doing very useful work on this front may be sought. Several methodologies are at work in designing and organizing public advocacy campaigns which targets road user behaviour change leading to safer roads to all. Some of the critical approaches include:

(i) Showing and convincing that unsafe road user behaviour is dangerous and even unacceptable

(ii) Showing and convincing that unsafe road usage puts entire community to risk

(iii) Convincing that safe road use behaviour is good for them and their society

From among the local communities, attempt could be made to identify and select safety champions/volunteers to act and serve as facilitators along with the NGOs.

6.6 The PIUs may be obligated to report cases of accidents involving fatalities and grievous injuries on rural roads to the SRRDA Headquarters under intimation to the relevant Police Station. A system to record accidents and monitor treatments / rectifications at such locations on rural roads should be incorporated. A Road Safety Module may be developed within the OMMAS. Such a module may cover:

(a) Accident data recording

(b) Treatment of hazardous locations with photographs

It would be necessary to impart training to the PIUs for proper data entry under the road safety module.

6.7 The SRRDAs may formulate Road Safety Action Plan specific to rural roads and take steps for implementation thereof. It is understood that BRRDA has drafted an Action Plan for safety on rural roads in Bihar with the support of the World Bank. This can serve as a guide for other states.

7. Research Development and Technology Initiatives

7.1 The basic purpose of research in the road sector, including rural roads, is evolving and incorporating technology innovations for:

- Achieving cost-efficiencies, speed in construction, enhanced durability and performance
- Providing technical underpinning to evolving standards and specifications for execution on ground
- Developing a pool of scientists and engineers having knowledge of latest developments around the globe.

7.2 The NRRDA, had in May 2013 issued guidelines on mainstreaming technology initiatives under the PMGSY. Several states have taken up a number of projects using various interventions such as use of flyash, soil stabilisation, cold mix emulsions, use of iron and copper slag, plastic waste in bitumen, accredited materials. Support in hand holding of the PIUs and contractors has been provided by the Technology Provider and the State Technical Agencies. There is need to go in for increased investment in undertaking applied research activities involving the industry, academia, research organizations in a time bound manner in areas of current concern such as:

(i) Use of locally available marginal materials with or without stabilisation treatment
(ii) Promoting use of industrial wastes such as flyash, iron and steel slag, copper slag, zinc slag, marble slurry, construction and demolition waste.
(iii) Promoting use of gabions as protection structures for breast/retaining walls on hill roads
(iv) Evaluation of new materials used in the recent past and preparation of codes, specifications for wider application. Providing support to IRC in accelerating the pace of revision of old codes and preparation of new codes and standards.
(v) Promoting environmentally optimized and climate resilient designs and green technologies to achieve resource efficiency on one hand and addressing the challenge of reducing carbon footprint on the other hand.
(vi) Evolving fast construction technologies in execution of works on bridges and culverts.

8. Proposed PMGSY – III

8.1 The implementation of the ongoing PMGSY since its launch in December, 2000 and PMGSY-II since commencement of the Twelfth Five Year Plan in April 2012 as also construction and upgradation of non-PMGSY rural roads by states under their own programmes has helped immensely in lifting the income of rural masses. It has also enabled creation of a reasonable absorption capacity of rural works departments and state PWDs, structures and procedures for implementation including quality assurance arrangements.

8.2 The Hon'ble Finance Minister in his Budget Speech for the year 2018-19 announced:

"Task of connecting all eligible habitations with an all-weather road has been substantially completed, with the target date forward to March, 2019 from March, 2022. It is now time to strengthen and widen its ambit further to include major link routes which connect habitations to agricultural and rural markets (GrAMs), higher secondary schools and hospitals. Prime Minister Gram Sadak Yojana Phase – III will include such linkages".

8.3 As seen from Table 1 given earlier, the task of connecting eligible habitations under the PMGSY has been substantially completed. Only around 10 percent habitations remain and connecting them is being brought forward to March, 2019. It has accordingly been

decided to launch PMGSY–III with focus to strengthen and widen the ambit of the programme to include major link routes that connect habitations to

- Agricultural and Rural Markets (GrAMs)
- Higher Secondary Schools
- Hospitals

8.4 While executing the programmes under the on-going PMGSY-I and PMGSY-II, a few areas of concern that still require continuing attention are:

(i) Freezing of network of rural roads in each block and district through finalization of District Rural Roads Plans based on GIS platform and Census 2011.

(ii) Assured funding and implementation of timely maintenance interventions comprising routine maintenance, periodic renewal of road surface and emergency / special repairs on the entire rural road network. This has to include assessment of additional funds required for periodic renewal treatment sequel to completion of 5-year defects liability period after construction.

(iii) Embedding safety engineering measures in design of rural roads to reduce the accident risk and special priority to treatment of hazardous locations on existing rural road network. Initiating practice of road safety audits during design and construction.

(iv) Construction of bridges to open up backward areas for accelerated socio-economic development and all weather connectivity. This may also include a few ropeway suspension bridges in remote hill areas to improve access.

(v) Reconstruction of weak and dilapidated bridges and culverts on the through routes which are showing signs of heavy distress as these will otherwise become a bottleneck in smooth movement of trucks and buses to agricultural hubs/mandis.

(vi) Strengthening of pavement of roads that have crossed their designed life of ten years.

(vii) Upgradation of rural roads in areas that have witnessed high agricultural growth, emergence of growth clusters under the National Rurban Mission and development of social infrastructure by way of health care facilities, hospitals, maternity care, schools and other educational centres, banks.

(viii) Mainstreaming of Technology Initiatives to achieve resource efficiency, reducing carbon footprint and encouraging green technologies, environmentally optimized and climate resilient designs as also increased use of locally available marginal materials, Industrial wastes, construction and demolition wastes, plastic wastes.

(ix) Enhanced use of IT and Geo-spatial technology to improve efficiency and governance in implementation of the programme.

(x) Capacity building and skills development of rural road departments, consultants, contractors and Panchayati Raj Institutions in enhancing capability for planning, designs and effective delivery of the programme.

9. Components Proposed and Financial Investments

9.1 The components for the PMGSY-III are proposed keeping in view the areas of concern brought out in para 8 above. Table 3 gives a broad investment plan, looking at the progress under PMGSY-I and PMGSY-II and proposed focus on consolidation of the road network built so far.

Table 3: Components Proposed for PMGSY-III

S. No.	Particulars	Financial Investments (Rs.crore)
1.	Upgradation of Through Routes comprising major link routes (i) Widening and strengthening from single-lane to intermediate-lane width (ii) Strengthening of pavement which have crossed the threshold of 10-year design life: (a) Single lane width (b) Intermediate/two lane width	72,000
2.	Construction of bridges (i) Bridges required to open up backward areas (ii) Replacing weak/dilapidated bridges (iii) Ropeway/suspension bridges in hill areas	10,000
3.	Rectification of geometric deficiencies and treatment of hazardous locations (Black spots) with priority to Through Routes under PMGSY	6,000
4.	Improving riding quality on selected Through Routes to enhance energy efficiency and reducing pollution and carbon footprint (Renewal of road surface post 5-year construction)	8,000
	Total	**96,000**

9.2 The current system of sharing of construction cost between the Central Government and State Governments is to continue whereby the Central contribution in construction cost is 90 per cent for PMGSY projects in NE states including Sikkim and hill states of Jammu & Kashmir, Himachal Pradesh and Uttarakhand in the north. For other states, the central contribution in construction cost is 60 percent. Overall, central contribution may be around two-thirds of total construction cost for PMGSY roads in the country. As such, the share of central government for PMGSY – III is assessed to be around Rs. 64,000 crore and that of states Rs. 32,000 crore.

9.3 Component relating to Upgradation of Through Routes

9.3.1 Attempt shall first be made to identify the Through Routes that connect the agricultural and rural markets, higher secondary schools and hospitals. A suggestive matrix for PMGSY-III is given in Table 4. Priority could be considered based on the score obtained by a particular Through Route.

Table 4: Suggestive Matrix for PMGSY-III

S. No.	Parameter	Category weight	Sub-category weights
1.	Population (Census 2011) of the Habitation/village connected by the Through Route • 3000 and above • 1000 to 2999 • Less than 1000	30	 30 20 10
2.	Market facilities (cumulative score) • Mandi (Min Turn over...), Rurban growth cluster • Warehouse, cold storage	30	 20 10
3.	Educational facilities (score of the highest category) • High school • Higher secondary school, ITIs • Degree college	15	 10 12 15
4.	Medical facilities (score of the highest category) • Primary health centre, ANM Centre, Veterinary hospital • Bedded hospital, community health centre	15	 10 15
5.	Transport infrastructure (cumulative score) • Bus stand • Administrative centre (Block, Panchayat Hqr) • Bank, fuel station	10	 4 4 2

9.3.2 From Table 1, it is seen that a length of 120,577 km of new connectivity and upgradation of both through routes and link roads under the PMGSY has crossed the pavement design life of 10 years in March 2017. As such, those Through Routes out of this network as satisfy the matrix suggested in Table 4 may comprise the first lot under the PMGSY-III for preparation of DPRs and according of sanctions.

9.3.3 In addition, those Through Routes which are found to have suffered serious damage due to heavy truck traffic or other reasons may also be considered for strengthening of pavement. This will help in reducing the otherwise heavy costs involved in rehabilitation/reconstruction due to accelerated rate of deterioration.

9.3.4 Some of the existing single lane Through Routes may also require widening to intermediate-lane or two-lane where traffic growth has been high due to socio-economic and agricultural / industrial growth.

Recently, the CRRI with the support of seven academic institutions spread across the country has published an Indo-Highway Capacity Manual based on studies carried out on roads of various categories in the country. The guidelines contained therein may be adopted for identifying the requirements of widening from single-lane to intermediate-lane and intermediate-lane to two-lanes. (It may be added that, as per Indo-HCM, capacity of intermediate-lane is 2150 PCUs per hour which corresponds to Level of Service E (LOS E). Normal practice is to design road facilities for Level of Service B for which the Design Service Volume could be taken as 0.45 times the capacity, i.e 0.45x2150 = 967 say 900 PCUs/hour.

Currently, there may not be need for any Through Route to be widened to two-lane carriageway unless a policy decision is taken by the government in widening of rural roads directly from single-lane to two-lane. This aspect merits a wider debate from the perspective of safety and energy efficiency).

9.4 Component relating to Bridges

This component is proposed to provide for construction of bridges on streams/rivers on Through Routes (and even Major District Roads) connecting important agricultural mandis, rurban growth clusters to ensure all-weather connectivity and opening up of the interior areas in the states. In addition, it is proposed to include such existing bridges on the Core Network as are showing signs of distress justifying immediate replacement so that they do not constitute a bottleneck in the movement of goods and passenger vehicles in rural areas. There need not be any limit on the overall length of the bridge (as has been the case earlier). A small window is also proposed for construction of ropeways/suspension footbridges for pedestrians and animals across streams in hill areas.

9.5 Component relating to road safety works

As brought out in para 6 earlier, there is need now to pay increasing attention to provision of safety engineering measures on rural roads as well. It is, therefore, proposed to identify stretches which are hazardous and suffering from geometric deficiencies and undertake rectification measures. Preference may be given to such stretches on the Core Network as do not involve additional land being acquired or where additional land can be donated by the local communities in the interest of enhanced safety being achieved. The work of identification of such locations and proposed treatments may be got carried out with the help of road safety experts.

9.6 Component relating to Riding Quality Improvement

Despite the continuing emphasis on maintenance of rural roads by the states, there is still lack of attention to the needs of periodic surface renewal which is due after 5 years of post construction in respect of PMGSY new connectivity and upgradation projects. It is suggested that the PMGSY-III may include one-time intervention of riding quality improvement covering profile correction and bituminous wearing course on selected Through Routes where the road surface is found to be hungry. This would help in not only reducing the vehicle operating costs but would also contribute to reduction in carbon footprint due to energy efficiency being achieved through improvement in riding quality. Such a preventive treatment would also reduce the avoidable burden of demand for upgradation in immediate future.

10. Enhancements in OMMAS

A web-based electronic portal for online Monitoring, Management and Accounting System is already functional for management of PMGSY and has served as an instrument of

good transparency and e-governance. The details regarding sanction of DPRs, release of funds and expenditure, progress, quality monitoring, payments to contractors are available online. Most of the information is in public domain and available to citizens. The citizen can also now use a mobile based "Meri Sadak" to report on quality or road condition to the PIUs, SRRDAs and NRRDA. Further enhancements may be planned under PMGSY-III towards management at multiple levels with generation of performance reports.

11. Developing Green Technologies Framework

11.1 The PMGSY-III may establish a green technologies framework building up from the technology initiatives undertaken on projects under the ongoing PMGSY-I and PMGSY-II for the last five years. Recently, with the help of World Bank, a document on Environmentally Optimized Design of Rural Roads has been finalized. The Committee of NRRDA on Technology Initiatives may deliberate in the matter and work out a strategic framework in this regard which may cover review of design of roads and bridges to reduce carbon footprint and address the issues relating to climate change and methodology for vulnerability assessment.

11.2 The quantum of projects to be executed using technology initiatives may also be increased from the current guidelines of 15 per cent to at least 25 percent of all upgradation projects under PMGSY-II.

12. Development of Major District Roads

The upgradation of Through Routes under the PMGSY-III would need to be integrated with plans for development of Major District Roads so that the transport services are provided holistically for the entire transport chain linking the farms with the agricultural markets and other growth clusters, business hubs. Suitable guidelines would need to be included while drafting the implementation strategy for the works under this programme.

13. Implementation Strategies

13.1 The processes, procedures and documents developed under the ongoing PMGSY programmes for planning, design, procurement, construction, maintenance, monitoring,fund flow, institutional strengthening have considerably helped in quality and efficient execution of the projects by the states and the technical and managerial support by the NRRDA.

13.2 The support from the Asian Development Bank and the World Bank has been quite useful in not only accelerating the objective of all-weather connectivity but also mainstreaming international good practices in further improving the efficiency and transparency in project delivery. The NRRDA has been providing financial assistance to the states in skills development and training of the Engineers of the PIUs, consultants and contractors on a continuing basis. This would need to continue for delivery of PMGSY-III as well.

13.3 Based on a broad assessment of the current situation in implementation of the PMGSY-I and PMGSY-II, the following actions may require special focus:

(a) Finalization of DRRPs on GIS platform based on Census 2011 and taking stock of all rural roads, block wise and district wise.

(b) Documenting good national practices in various phases of programme delivery and regular dissemination workshops for mainstreaming such practices on a national scale.

(c) Embedding safety engineering measures and green technologies in design of roads and bridges with due attention to environment and social safeguards as per the Environmental Codes of Practice prepared by the NRRDA with the support of the World Bank.

(d) Promoting the use of locally available marginal materials with soil stabilization, industrial wastes, recycling of old and worn out pavements to effect economy in construction costs without compromise on quality and at the same time achieving reduction in carbon footprint.

(e) Improving the institutional effectiveness of the PIUs, consultants and contractors on a regular and continuing basis through capacity building and training.

(f) Pushing the states in enhancing financial allocations for maintenance and undertaking the maintenance works through performance based and community contracting with help of women self help groups duly utilizing the successful practices by the states and pilots on community contracting undertaken with support of ILO. This will ensure benefits of access being available on a sustained basis and reduce the rate of erosion of rural road assets being created at huge costs to the economy.

(g) Establishing a system of regular traffic counts on the rural road network, starting with the Through Routes of the Core Network. Such counts shall be classified and cover motorized and non-motorized vehicles and shall be carried out for 3 days twice a year during harvesting and non-harvesting season. In addition, there is need to undertake axle load spectrum surveys using Weigh-in-Motion Equipment on Through Routes on a sampling basis during the harvesting season.

(h) Enhanced use of Information, Communications and Digital Technologies in achieving effective monitoring and increased transparency and e-governance in rolling out the new programme.

14. Preparation of Manuals, Codes and Guidelines

14.1 It is proposed to seek the support of the Indian Roads Congress in updating of the Rural Roads Manual and preparation of new Codes of Practice for designs covering the following:

- Climate Resilient and Green Technologies

- Safety Engineering Measures
- Road Safety Audits
- Asset Management Framework
- Bridges and Culverts (including use of precast elements)
- Use of Gabions in protective structures on hill roads.
- Use of iron and steel slags, copper slags, zinc slags, marble slurry etc.

14.2 The NRRDA would organize dissemination workshops on the above codes in various regions of the country with the help of SRRDAs and selected STAs, SQMs and NQMs to enhance the technical proficiency of our engineers in the field.

ANNEXURE- A

Pradhan Mantri Gram Sadak Yojana

Statement showing Physical & Financial progress under PMGSY - I and PMGSY - II (including RCPLWEA)

State : All States Agency : All Agencies Year : 2017 Month : DEC Collaboration : All Collaborations Note : Rs. in Crore, Length in Km.

Sr.No.	State Name	Total Value cleared	Amount Released	Total No. of works cleared	Length of road works cleared	Total no. of works completed	Length of road works completed	% Length Completed	Expenditure
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	4,413.68	3,063.37	4,845	15,172.456	4,497	13,848.825	91.28	3,439.00
2	Arunachal Pradesh	5,240.35	3,042.15	1,130	8,200.877	774	6,031.967	73.55	2,859.96
3	Assam	16,072.57	9,577.35	9,045	25,428.863	5,149	16,645.658	65.46	9,605.89
4	Bihar	29,922.96	20,316.01	18,220	55,050.074	13,941	44,885.759	81.54	21,273.65
5	Chhattisgarh	11,393.07	7,198.67	7,641	34,816.276	6,576	27,405.775	78.72	8,230.76
6	Goa	16.44	10.00	90	182.740	70	155.330	85.00	0.00
7	Gujarat	3,533.75	2,953.08	4,573	12,720.624	4,534	12,531.578	98.51	3,482.01
8	Haryana	2,464.95	1,890.70	532	5,614.340	531	5,572.349	99.25	2,193.50
9	Himachal Pradesh	5,461.65	2,842.81	3,095	17,773.901	2,240	13,312.865	74.90	2,919.88
10	Jammu and Kashmir	8,122.23	4,374.52	2,527	13,671.707	1,484	8,017.820	58.65	3,940.98
11	Jharkhand	8,898.67	4,893.26	6,590	23,327.210	4,635	17,253.594	73.96	5,964.20
12	Karnataka	4,370.51	3,632.45	3,638	18,600.545	3,630	18,541.148	99.68	4,743.95
13	Kerala	1,916.84	1,312.03	1,502	3,798.256	1,247	2,973.489	78.29	1,514.37
14	Madhya Pradesh	24,546.50	16,812.58	19,333	77,478.378	17,085	68,820.258	88.83	19,910.34
15	Maharashtra	8,270.30	7,021.80	6,691	27,206.679	6,429	25,747.480	94.64	7,801.28
16	Manipur	4,112.17	1,816.19	1,865	9,631.710	1,292	5,867.685	60.92	1,687.61
17	Meghalaya	1,307.94	1,094.90	787	2,483.905	502	1,620.231	65.23	718.71
18	Mizoram	1,526.42	1,006.77	273	3,507.852	196	2,665.417	75.98	878.05
19	Nagaland	902.39	634.31	324	3,893.370	286	3,483.370	89.47	658.75
20	Odisha	25,155.36	15,113.79	15,919	60,045.973	11,422	43,176.580	71.91	18,628.21
21	Punjab	3,649.09	2,913.43	1,180	8,280.032	1,090	7,813.390	94.36	2,803.36
22	Rajasthan	15,277.85	12,041.40	17,329	69,738.096	16,642	63,459.701	91.00	11,816.78
23	Sikkim	2,330.09	1,295.73	1,031	4,794.500	696	3,411.613	71.16	1,155.94
24	Tamil Nadu	5,445.16	3,592.26	8,030	17,932.727	7,011	14,699.552	81.97	3,564.59
25	Tripura	3,184.18	2,708.16	1,452	4,944.265	1,197	4,002.034	80.94	2,528.11
26	Uttar Pradesh	18,043.88	13,846.38	19,034	58,278.184	17,905	52,213.674	89.59	14,564.96
27	Uttarakhand	5,077.50	3,026.77	1,533	12,039.721	1,007	8,541.743	70.95	3,105.63
28	West Bengal	16,331.81	8,735.36	7,113	34,995.088	4,632	24,173.656	69.08	9,745.27
29	Telangana	3,084.12	2,197.61	3,262	10,850.130	2,868	10,039.288	92.53	2,409.71
TOTAL		**240,072.43**	**158,963.84**	**168,584.00**	**640,458.48**	**139,568.00**	**526,911.83**	**2,347.33**	**172,145.46**
30	A & N Islands	32.39	10.59	18	0	0	0	0%	0
31	Dadra & Nagar Haveli	36.78	13.84	156	181.97	0	0	0%	0
32	Daman & Diu	10	10	0	0	0	0	0%	4.94
33	Delhi	5	5	1	0	0	0	0%	0
34	Lakshadweep	4.89	4.89	0	0	0	0	0%	0
35	Pondicherry	11.58	5	78	87.92	77	68.53	78%	9.3
Total U.Ts :		**100.64**	**49.32**	**253**	**269.89**	**77**	**68.53**	25%	**14.24**
G. Total:		**240,173.07**	**159,013.16**	**168,837**	**640,728.37**	**139,645**	**526,980.36**	82%	**172,159.70**

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