PRADHAN MANTRI GRAM SADAK YOJANA

OPERATIONS MANUAL

National Rural Roads Development Agency
Ministry of Rural Development
Government of India

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FOREWORD

Over the last 4 years, the Pradhan Mantri Gram Sadak Yojana (PMGSY) has made a place for itself as a programme characterised by detailed planning, methodical execution, careful management and high quality consciousness. This has been possible due to the close interaction between the Ministry of Rural Development and the State executing agencies as well as involvement of the Principal and State Technical Agencies and senior Engineers of the State and Central Governments including retired Engineers working as National Quality Monitors. Clear and detailed documentation on the construction standards in the form of the Book of Specifications, Rural Roads Manual and Standard Data Book published by the Indian Roads Congress (IRC) supported by the Quality Control Handbook for quality management have contributed significantly in the process.

At the operational level, the establishment of PMGSY on a firm foundation has come through a series of operational guidelines issued by the Ministry of Rural Development and the National Rural Roads Development Agency (NRRDA) from time to time, mainly the result of Regional Review meetings with the State agencies, on such matters as District Rural Roads Planning, Quality Monitoring, Online Monitoring & Management System, Fund Flow & Accounting procedures, etc. Indeed the overall volume of such guidelines has become extensive enough for a need to put them all down systematically in the form of one comprehensive 'Operations Manual'. Hence this publication.

The Operations Manual is intended for day-to-day use as a comprehensive supplement to the PMGSY Guidelines on procedural aspects. On technical aspects the IRC publications will of course need to be consulted. In the process of drafting the Operations Manual, efforts, have been made to address the need particularly of the Programme Implementation Units (PIUs) and much of the Manual is consciously targeted at them, since ultimately the success of the programme depends on the degree to which the PIU understands and complies with the letter and spirit of the PMGSY Guidelines.

Rural Roads being a State subject, the Operations Manual has rightly left sufficient flexibility and scope for the State Government and the SRRDA to be able to issue detailed guidelines in keeping with the procedures and requirements of the individual States. There is also a realisation that micro-managing the programme centrally might neither be desirable nor feasible. At the same time, there is an expectation that guidelines of the nature envisaged in the Operations Manual will facilitate to the systematic implementation of PMGSY, and in fact State Governments may find it advantageous to adopt many of the principles and practices mentioned in the Manual in rural roads Programmes other than the PMGSY.

The draft of the Manual was extensively circulated and discussed and then finalised in a workshop with representatives of State Governments and other stake-holders on 29th December 2004. Nevertheless there is always scope for improvement, and comments and feedback on the Manual are accordingly most welcome.

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February, 2005

ACKNOWLEDGEMENTS

Preparation of base document leading to the present shape was undertaken by Dr. L.R.Kadiyali of M/s. Kadiyali & Associates. Based on interaction with States and other stakeholders, many of the guidelines issued earlier underwent a few modifications in the meantime. These were woven into the base document and amplified by the Divisional Heads of NRRDA under the active guidance of the Director General, NRRDA. Comments on the draft document received from various stakeholders such as Executing Agencies, PTAs&STAs, NQMs, CRRI, IRC, World Bank, ADB etc. enabled a very useful critical review during the workshop organized for this purpose on 29th December 2004. This enabled the finalization of the document in a short time. Very useful inputs were provided by the Technical and support staff of NRRDA in bringing the Operations Manual into its present shape.

Guidance and inputs of all those who contributed is gratefully acknowledged.

ABBREVIATIONS & ACRONYMS

ACR	Annual Confidential Report
AADT	Average Annual Daily Traffic
ADB	Asian Development Bank
ADT	Average Daily Traffic
ADV	Animal Drawn Vehicle
AEE	Assistant Executive Engineer
AIV	Aggregate Impact Value
AMC	Annual Maintenance Contract
AR	Audit Report
ATR	Action Taken Report
AWR	All Weather Road
BBM	Bitumen Bound Macadam
BC	Beginning of Circular Curve
BM	Bituminous Macadam
BOQ	Bill of Quantity
BS	Beginning of Transition
BT	Black Topped
CAG	Comptroller and Auditor General of India
CAO	Chief Accounts Officer
CBF	Cash Book Folio
CD	Cross Drainage
CEO	Chief Executive Officer
C/J	Car/Jeep
CN	Core Network
CNCPL	Comprehensive New Connectivity Priority List
CPWA	Central Public Works Accounts
CS	Cross Section
CUPL	Comprehensive Upgradation Priority List
CVPD	Commercial Vehicle Per Day
CW	Carriage Way
DPC	District Planning Committee
DPIU	District Programme Implementation Unit
DPR	Detailed Project Report
DRDA	District Rural Development Agency
DRRP	District Rural Road Plan
DRRSO	District Rural Road Safety Officer
DS	Deputy Secretary
EC	End of Circular Curve
ECOP	Environmental Code of Practice
EE	Executive Engineer
ESMC	Equilibrium Subgrade Moisture Content
ESMF	Environment and Social Management Framework
FC	Forest Clearance
FDR	Fixed Deposit Receipt
FM	Financial Management
FMR	Financial Monitoring Report
FMS	Financial Management System
FWR	Fair Weather Road
GAD	General Arrangement Drawings
GCC	General Conditions of Contract
GIS	Geographical Information System
GoI	Government of India
GPS	Geographical Positioning System
GWT	Ground Water Table
HCV	Heavy Commercial Vehicle
HQ	Headquarters
IPAI	Institute of Public Auditors of India
IRC	Indian Roads Congress
ISDN	Integrated Services Digital Network
IT	Information Technology
ITB	Instruction to Bidders
ITO	Income Tax Officer
LAN	Local Area Network
LCV	Light Commercial Vehicle
LFBM	Lime-Flyash Bound Macadam
LL	Liquid Limit

LS	Longitudinal Section
LWE	Left Wing Extremists
MCW	Maternity and Child Welfare
MDR	Major District Roads
M&E	Monitoring & Evaluation
MF	Maintenance Funding
MHA	Ministry of Home Affairs
MIS	Management Information System
MoRD	Ministry of Rural Development
MOU	Memorandum Of Understanding
MRL	Main Rural Links
MSS	Mixed Seal Surface
NBF	Non (World/Asian Development) Bank Financed
NCB	National Competitive Bidding
NCR	Non-Conformance Report
NH	National Highway
NIC	National Informatics Centre
NIT	Notice Inviting Tender
NQM	National Quality Monitor
NRRDA	National Rural Roads Development Agency
OM	Operations Manual
OMMS	On-line Monitoring & Management System
ODR	Other District Road
PCI	Pavement Condition Index
PHC	Primary Health Centre
PIC	Project Implementation Consultant
PIU	Programme Implementation Unit
PI	Plasticity Index
PL	Plastic Limit
PMC	Project Management Consultant
PMGSY	Pradhan Mantri Gram Sadak Yojana
POT	Point of Transit
PRI	Panchayat Raj Institution
PTA	Principal Technical Agency
PW	Part Work
PWD	Public Works Department
QI	Qualification Information
RBH	Rural Business Hubs
RCC	Reinforced Cement Concrete
RCCP	Roller Compacted Cement Concrete Pavement
RDD	Rural Development Department
REO	Rural Engineering Organization
RES	Rural Engineering Services
RHA	Rice Husk Ash
RLW	Road Land Width
RMPL	Routine Maintenance Priority List
RMS	Road Management System
ROB	Railway Over Bridge
RRM	Rural Roads Manual
RW	Road Way
SBD	Standard Bidding Document
SDB	Standard Data Book
SE	Superintending Engineer
SH	State Highway
SHO	Station House Officer (Sub-divisional police officer)
SLSC	State Level Standing Committee
SOR	Schedule of Rates
SQC	State Quality Coordinator
SLQC	State Level Quality Control
SQM	State Quality Monitor
SRRDA	State Rural Roads Development Agency
SSR	State Schedule of Rates
STA	State Technical Agency
TE	Technical Examiner
TQM	Total Quality Management
TR	Through Road
TW	Motorised Two Wheeler
UC	Utilisation Certificates
UCM	Unsatisfactory Contract Management
UMS	Unsatisfactory Management Standard
UQW	Unsatisfactory Quality of Work
VR	Village Road
WBM	Water Bound Macadam
WP	Work in Progress
XEN	Executive Engineer

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CHAPTER 1

INTRODUCTION

1.1 VILLAGE CONNECTIVITY IN INDIA

India has essentially a rural-oriented economy with 74 per cent of its population living in its villages. At the commencement of PMGSY in 2000, it was estimated that about 330,000 out of its 825,000 villages and habitations were without any all-weather road access. A majority of the poorly connected rural communities lie in ten States (Assam, Bihar, Chattisgarh, Himachal Pradesh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal).

1.2 CURRENT PLANS FOR RURAL CONNECTIVITY: PMGSY

1.2.1 PMGSY: Programme Goals

Rural Road connectivity is a key component of rural development by promoting access to economic and social services and thereby generating increased agricultural incomes and productive employment opportunities. It is also a key ingredient in ensuring poverty reduction.

It was against this background of poor connectivity that the Prime Minister announced in 2000, a massive rural roads programme. The Prime Minister's Rural Road Programme (Pradhan Mantri Gram Sadak Yojana, PMGSY) set a target of:

- Achieving all-weather road access to every village/habitation with a population greater than 1000 by 2003
- Providing all-weather road access to all villages/habitations of population greater than 500 people [250 in case of hill States (North-Eastern states, Sikkim, Himachal Pradesh, Jammu & Kashmir and Uttaranchal), the desert areas and tribal areas] by the end of the Tenth Five Year Plan, i.e., 2007

1.2.2 Noteworthy Features of the PMGSY

The Ministry of Rural Development (MoRD) has been entrusted with the task of organising the programme. Some of the noteworthy features of the programme are:

- Full Central funding, with 50% of the cess on High Speed Diesel being earmarked for this programme.
- Preparation of Master Plans and Core Network for Rural Roads for all the Districts and Blocks, identifying the unconnected habitations and proposing the most cost-effective routes for the purpose.
- Design and Specifications as contained in the Rural Roads Manual (RRM, IRC SP:20), published by the Indian Roads Congress (IRC).
- Appointment of a dedicated State Level Agency in all States with overall responsibility for rural road planning, programme execution and management.
- Appointment of programme implementing agencies, by all States, typically Public Works Departments (PWDs) or Rural Engineering Organisations (REOs).
- Independent State Technical Agencies (STA) commissioned by MoRD to vet designs and estimates.
- Use of competitive tendering by the implementing agencies of all works on the basis of a Standard Bidding Document (SBD).
- Execution of the works within a period of 9-12 months.
- A Defects Liability and maintenance period of 5 years specified in the Contracts for the roads constructed under the programme, with funds for maintenance being provided by the States.

- A central on-line web-based financial and project monitoring system.
- A 3-tier Quality Management System.
- Operational management at Central level by the National Rural Roads Development Agency (NRRDA).

1.3 RESOURCES FOR IMPLEMENTING PMGSY

It is estimated that the total investment required to meet the new connectivity targets is of the order of Rs 79,000 crores with another Rs. 53,000 crore required to upgrade existing rural roads to prescribed standards. In 1999, a one-rupee cess on every litre of diesel and petrol sold was imposed by the Government of India (GoI), and in 2000, a Central Road Fund Act was promulgated to direct the resources obtained through this cess to the improvement of National and State Highways as well as Rural Roads. By law, 50% of the diesel cess is required to be directed towards rural road development. This amounts to about Rs 2,500 crores (US $ 500 million) per year. An additional cess of 50 paise per litre of diesel sold, provided in the Budget for 2003-04, is likely to yield another Rs. 1,250 crores/year. Additional fund requirements are likely to be met through both internal and external borrowings.

1.4 NEED FOR THE OPERATIONS MANUAL

The Indian Roads Congress (IRC) have brought out a Rural Roads Manual (RRM) (IRC: SP: 20-2002), which provides technical guidance on various aspects of rural road development. The requirements of PMGSY were specially kept in view when drafting this document. The NRRDA and MoRD have also issued several guidelines and instructions to the implementing agencies. It was, therefore, considered appropriate to bring out an Operations Manual (OM) in respect of PMGSY, to provide a systematic, comprehensive easily accessible set of operational instructions on the programme. Provisions of the Manual may be used by States for other rural roads also, with suitable adaptations. It is hoped that the OM will bring about clarity on various aspects of the programme, ensuring its timely and successful implementation. The contents of the Manual will be reviewed and revised according to the experiences gained during implementation.

The OM fully covers the PMGSY programme. It will be mandatory on the part of the State implementing agencies to follow the OM in every respect. Under the PMGSY, District Programme Implementation Units (DPIUs) have been set up. The OM is specifically targeted to these DPIUs. Since the OM embodies various instructions issued earlier, it supersedes such instructions. Where the OM refers to certain clauses of the IRC Rural Roads Manual, such clauses shall prevail. The Accounts Code and Works Manual of the States shall continue to be used, and if provisions in the OM are at variance with these, the attention of the NRRDA must be drawn and specific directions obtained.

1.5 KEY DEFINITIONS

- **Rural Roads**

Rural Roads cover the categories earlier known as “Other District Roads” (ODRs) and “Village Roads” (VRs). Other District Roads are roads serving the rural areas of production and providing them with outlet to market centres, Block, taluka/ tehsil headquarters or main roads. Village Roads are roads connecting villages and group of villages with each other or to the market centres and with the nearest road of higher category.

- **All-Weather Roads**

An all-weather road is one which is negotiable during all weathers, with some permitted interruptions. Essentially this means that at cross-drainage structures, the duration of overflow or interruption at one stretch shall not exceed 12 hours for ODRs and 24 hours for VRs in hilly terrain, and 3 days in the case of roads in plain terrain. The total period of interruption during the year should not exceed 10 days for ODRs and 15 days for VRs.

The pavement should be negotiable during all-weathers, but this does not necessarily imply that it should be paved or sealed or blacktopped.

- **Fair-Weather Roads**

Fair-weather Roads are those not satisfying the minimum requirements specified for all-weather roads. These roads could be taken to be in a stage of development to be upgraded to all-weather type.

- **Unpaved and Paved Roads**

Unpaved or Unsealed roads vary from 'clay' roads, which can only serve dry-season light traffic to heavy-duty crushed rock industrial roads which can serve heavy traffic. Typically, such roads are used for providing rural access, carrying an average of 20 to 100 vehicles per day. The base course of such roads is made from local materials e.g., natural gravels and generally using well-tried traditional methods of construction. In sustained wet weather, the unsealed roads may develop deficiencies such as rutting and potholing. On the other hand, in dry seasons, such unsealed roads can become dusty and develop corrugations. Paved or Sealed Roads are those which are rendered waterproof and dust-proof by a surfacing or base-cum-surfacing of bituminous materials or cement concrete.

- **Village/ Habitation**

The unit for this Programme is a **habitation** and not a revenue village or Panchayat. A habitation is a cluster of dwellings, in an area, the location of which does not change over time. Desam, Dhanis, Tolas, Majras, Hamlets etc. are commonly used terminology to describe the habitations. The population of all habitations within a radius of 500m (1.5 km of path distance in case of hills) may be clubbed together for the purpose of determining the population size. This **cluster approach** would enable provision of connectivity to a large number of habitations, particularly in the hill/ mountainous areas.

The population size of the habitation shall be based on the population as recorded in Census 2001. The District Rural Road Plans and Core Network shall be drawn up/ revised on this basis.

- **Accessibility Criterion**

The criterion of accessibility when any village/ habitation is deemed to have been connected by a rural road is generally the permissible maximum distance of the habitation from an existing all-weather road facility or from an already connected habitation. This permissible maximum distance has been kept at 500m for the plain areas and 1.5km of path distance in case of hills for the PMGSY. The unconnected habitations are to be connected to nearby habitations already connected by an all-weather road or to another existing all-weather road so that services (educational, health, marketing facilities etc.) which are not available in the unconnected habitation become available to the residents.

- **District Rural Roads Plan (DRRP)**

The DRRP is long-term plan of road network in a district, showing the existing road network, the habitations of various population size and roads proposed for connecting the yet unconnected habitations to already connected habitations/ all-weather roads in an economic and efficient way in terms of cost and utility. It is also known as the Master Plan for Rural Roads for the district.

- **Core Network**

The rural road network required for providing the 'basic access' to all villages/ habitations is termed as the **Core Network**. Basic access is defined as one all-weather road access from each village/ habitation to the nearby Market Centre or Rural Business Hub (RBH) and essential social and economic services.

A Core Network comprises of **Through Routes** and **Link Routes**. **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. **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.

The Core Network may not represent the most convenient or economic route for all purposes. However, since studies show 85-90% of rural trips are to market centres, the Core Network is likely to be a cost-effective conceptual frame work for investment and management purposes, particularly in the context of scarce resources.

- **Market Centres/Rural Business Hubs (RBH)**

Market Centres or Rural Business Hubs (RBH) are centres of activities for marketing of agricultural produce and inputs, servicing of agricultural implements, health, higher education, postal, banking services etc. They are generally habitations with a large population, located on higher category of roads or at the confluence of roads emanating from a number of habitations. They can be identified from data available from published census records, information available from Marketing Boards and local enquiry. The villagers should be able to go to the nearby Market Centre and come back the same day. The maximum distance between a village and a Market Centre would normally not be more than 15-20 km. In some cases, a Market Centre may not be fully developed at present, but a big village may have potential for developing into a Market Centre or Rural Business Hub (RBH). Such villages also need to be identified as potential Market Centres or Rural Business Hubs (RBH).

1.6 PROGRAMME OBJECTIVES

1.6.1 New Connectivity

The primary objective of the PMGSY is to provide connectivity, by way of an all-weather road (defined in para 1.5 earlier) to the eligible unconnected habitations in rural areas generally so as to enable access to the nearest market centre, in such a way that:

- habitations with a population of 1000 persons and above are covered in the Ist Stage.
- all habitations with a population of 500 persons and above are covered in the next stage. In respect of the hill States (North-East, Sikkim, Himachal Pradesh, Jammu & Kashmir, Uttaranchal) and the desert areas (as identified in the Desert Development Programme) as well as Tribal (Schedule V) areas, the objective would be to connect habitations with a population of 250 persons and above.

The spirit and objective of PMGSY is to provide good all-weather road connectivity to the unconnected habitations. It must be ensured that the provision of New Connectivity (i.e. connecting unconnected habitations) should be given precedence over upgradation works in keeping with the objectives of the Programme.

1.6.2 Upgradation

Upgradation of existing rural roads is not central to the programme. However, the programme will permit upgradation of existing rural roads to the prescribed standards in those Districts where all habitations of the designated population size (para 1.6.1 above) have been provided all-weather connectivity. The provision for upgradation cannot exceed 20% of the State's allocation as long as unconnected habitations still exist in the State. In other words, District-wise allocation is to be done on considerations of equity, but in such a way that new connectivity still gets priority by keeping a ceiling of 20 percent at the State level for upgradation works. Upgradation shall also be permitted in cases where the new link connects to a fair-weather road, which leads to the Market Centre. Only those rural roads are eligible for upgradation, which form part of the Core Network.

Upgradation shall cover the following types of works:

- Improving surface drainage and constructing all missing cross-drainage works to make the road all-weather.
- Improving the road pavement to standards required for the traffic, subject to a condition survey (see Chapter 3).
- Improving road geometrics to prescribed standards and improving road safety.

1.6.3 Integrated Development of Rural Road Network

Provision of all weather connectivity from habitation to the market centre is the basic feature of PMGSY. Thus, to provide assured and sustained all weather connectivity from habitation to the market centre, construction of

new links wherever necessary and upgrading existing eligible through route, upto the market centre, would form the basic feature of project proposals under the PMGSY.

1.6.4 Works not Covered by PMGSY

The following works are not covered by PMGSY:

- PMGSY envisages only single connectivity to be provided. If a habitation is already connected to another habitation (or to an existing all-weather road) by way of an all-weather road, then no further work can be taken up under PMGSY at that habitation.
- PMGSY does not permit repairs to black-topped or cement-concrete roads, even if the surface condition is bad.
- No urban roads can be constructed under the PMGSY.
- PMGSY does not permit any road to be constructed or upgraded that is not part of the Core Network.
- PMGSY does not fund RoB costs for Railway crossings, nor does it fund maintenance of manned/unmanned railway crossings.

CHAPTER-2

STATE LEVEL INSTITUTIONAL STRUCTURES

2.1 In order to ensure efficient and streamlined execution of works under PMGSY, various capacity enhancement measures have been suggested as an adjunct to the programme. These are required to be put in place for effective management. Generally, even though PMGSY is primarily aimed at providing new connectivity, at the sectoral level it seeks the development and strengthening of the rural roads sector through systematic planning and management of the entire network, and the institutional strengthening and capacity enhancement is in furtherance of these broader sectoral objectives as well.

2.2 STATE LEVEL AGENCIES

Setting up and operationalisation of an effective state level agency with responsibility to PMGSY specifically, and for the rural roads network generally is a key component to institutional development.

2.2.1 As per para 7 of PMGSY guidelines, each State Government would identify a suitable agency (or in case of large States, even two suitable agencies) having a presence in all the districts and having established competence in executing time-bound road construction work. These agencies shall be designated as **Executing Agencies**. These could be the Public Works Department/Rural Engineering Services/Rural Engineering Organisation/Rural Works Department/ Zilla Parishads/ Panchayati Raj Institutions, which have been in existence for some time and have the necessary experience, expertise and manpower. In States where more than one Executing Agency has been identified by the State Government, the distribution of work would be done with the district as a unit.

2.2.2 Each State Government shall nominate a Department as the **Nodal Department**. The Nodal Department shall have overall responsibility for the implementation of PMGSY in the State. All communication between the MoRD and the State Government would be with and through the Nodal Department/State level Agency. The Nodal Department shall normally be the State Department responsible for rural roads.

2.2.3 The Nodal Department will set up a State level autonomous Agency, to be called the State Rural Roads Development Agency (SRRDA), with distinct legal status under the Registration of Societies Act. Preferably this Agency should have a nodal or coordinating role for the entire Rural Road Sector in the State. This Agency shall receive the funds from MoRD for the PMGSY programme. Where such a agency already exists, such as Marketing Boards in Haryana and Punjab, the State can entrust the work to it, provided the necessary PMGSY provisions are brought into force. All the proposals shall be vetted by the Agency before they are put up before the State-level Standing Committee (SLSC) and are sent to the NRRDA for clearance by the Ministry of Rural Development.

The General Body of the Agency may include professionals and retired senior officials / academicians with long association with the road sector, in order to pool experiences and help develop a comprehensive approach. The Executive Committee of the Agency may include the stakeholders at the operational (Directorate) level to enable informed decision making and implementation.

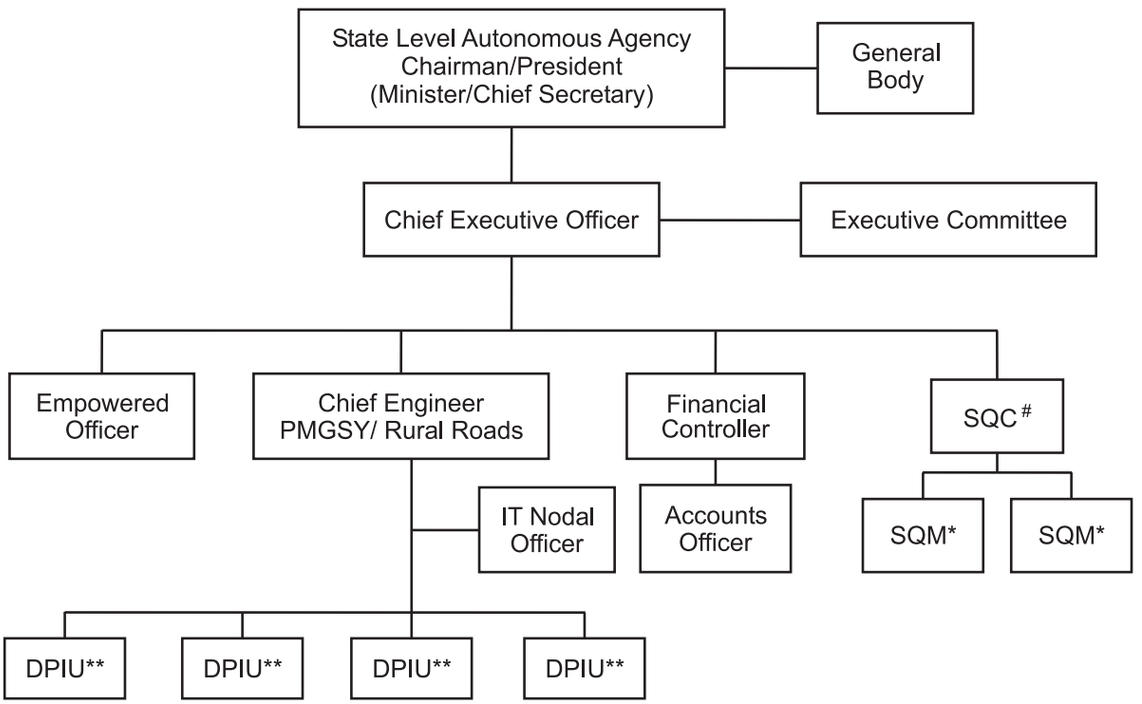
2.2.4 The functions of the Agency in relation to PMGSY would include:

- Rural Road Planning and Sectoral Coordination.
- Management of Funds.
- Preparation and submission of annual proposals.

- Works Management.
- Contract Management.
- Financial Management.
- Quality Management.
- Maintenance Management.

It is expected that the Agency would, over time, be responsible for these activities not only in respect of PMGSY, but the entire rural roads sector.

A suggested set-up for the Agency is as under



#SQC : State Quality Coordinator

* SQM : State Quality Monitors

** DPIU : District Programme Implementation Unit

2.2.5 The **Chief Executive Officer** of the Agency would need to be a Senior Officer of the Nodal/ Executing Department preferably with a presence in the State Secretariat hierarchy.

2.2.6 The Agency shall appoint a **Financial Controller**, to oversee the operationalisation of the rural roads accounting system. The Agency shall maintain centralized accounts, which will be accessed by the Programme Implementing Units (PIU) and the Financial Controller's primary responsibility would be the enforcement of accounting standards and arranging the auditing thereof. The Financial Controller would need to be a professional with adequate knowledge and experience of Works Accounting.

2.2.7 The Agency would also appoint an **Empowered Officer** (distinct from the Financial Controller). The officer would be responsible for operational management of the project funds and would need to be a senior officer (generally of the rank of Chief Engineer), familiar with Project Management of PMGSY. Since all the

implementing units would be operating on the SRRDA account simultaneously, the Empowered officers should have the necessary ability to ensure efficient management of the finances.

2.2.8 The Accounting system prescribed by the NRRDA, which is largely based on the well-established Accounting system of the Works Departments, would be utilized for this Programme. The Online Management and Monitoring System (OMMS) software supports the Accounting System and would be enabled so that PIUs, SRRDAs and Bank branch concerned can make data entry on-line for their respective transactions. The Empowered Officer and Financial Controller should have the capability of exploiting the features of the on-line system. Refer to Chapter 13 for more details.

2.2.9 The Agency would identify a State **IT Nodal officer** in order to oversee the regularity and accuracy of the data being furnished by the Programme Implementation Units (PIU) and will be responsible to oversee the upkeep of the hardware and software as well as the IT training requirements of the personnel dealing with the PMGSY. The IT Nodal officer should have a background of statistical data computation for the sector, particularly computer based systems. A qualification in IT would be an added advantage.

2.2.10 The Agency will appoint a senior Engineer (not below the rank of Superintending Engineer) to function as **State Quality Coordinator (SQC)** at the state level. His function will be to oversee the satisfactory functioning of Quality Management mechanism within the State. This would also involve overseeing the follow up action on the reports of the NQMs. Detailed description of the SQC's functions is available in Chapter 11 on Quality Management.

2.3 PROGRAMME IMPLEMENTATION UNIT (PIU)

The Programme Implementation Units (PIU) are the basic units for project planning, execution and accounting. A PIU may consist of one or more Engineering Divisions, appropriately headed by an Executive Engineer or Superintending Engineer. The PIU would be directly responsible for contracting implementation and Quality Management of PMGSY works. The PIU would also be the financial and accounting centre at the field level.

Since PMGSY has high management, quality and accounting standards, PIUs should be set up and operationalised keeping the following in view:

- PIU should be adequately dedicated to PMGSY in terms of personnel deployment. As such it is necessary that where the PMGSY workload in a Division is upto Rs 1 Crore, 1JE should be exclusively in charge. For Rs. 1-5 Crores, 1 AE/AEE should be exclusively in charge with supporting dedicated JEs, and where the work load is Rs 5 Crore or more an XEN/EE should be Incharge and the Division should be exclusively devoted to PMGSY work.
- PMGSY personnel of the PIU should be deputed for regular training in Technical, Accounting Contract Management and Quality aspects of the programme and the SRRDA should arrange for the training in coordination with the STAs and NRRDA.
- PMGSY personnel of the PIU should normally have a tenure of atleast 3 years. Frequent transfers particularly of trained and experienced staff adversely affect a fine-tuned programme like PMGSY and will have a negative impact on funding of the programme in that State.
- The supervisory structure of the PIU should be adequately dovetailed with the departmental segments and PMGSY requirements. As such, adequate technical and financial powers need to be delegated to the XEN/EE and SE in terms of the Departmental Works Manual and Financial Code.
- The PIU should be directly accountable to the SRRDA. Not only must the XEN/EE be declared an officer of the SRRDA (to enable him to access the SRRDA account) but his supervisory officers, the SE and CE should also be accountable to the SRRDA. For this purpose the CE Incharge of PMGSY should be a senior officer of the SRRDA and both he and CEO should be empowered to make entries as reporting or reviewing officers, for the ACRs of the XEN/EEs and SEs involved in the programme.

2.4 STATE LEVEL STANDING COMMITTEE

A **State Level Standing Committee (SLSC)** set up preferably under the chairmanship of the Chief Secretary will be responsible for close and effective monitoring of the programme and to oversee the timely and proper execution of works .The SLSC needs to comprise all the main stakeholders in the programme, including:

- Secretaries of the Programme Departments (Rural Development and PWD).
- Secretaries of the Transport, Finance, Forests & Environment and IT Departments.
- State Informatics Officer (NIC) and
- State Technical Agencies (STAs).

The Secretary of the Nodal Department shall be the Member-Secretary

The Committee shall vet the Core Network, the CNCPL and CUPL (see Chapter-3) and shall clear the annual project proposals. In addition to this, the Committee shall also review quarterly, the following:

- Progress of ongoing works.
- Quality Control (2nd tier at State level).
- Capacity enhancement and training of executing agency.
- Computerized online project and accounts management.
- Budgeting of maintenance funds.
- Land width availability for roads; and Forests and environmental clearance.
- Provision of public transport on PMGSY roads created.
- Road safety issues.
- Convergence with rural development and poverty alleviation programmes etc.
- Issues impinging on rural road sectoral policy.

Since the primary purpose of PMGSY (and indeed of rural connectivity) is to enable basic access to the rural hinterland and thus increase the tempo of economic activity and reach of social services, the SLSC's role is crucial to exploiting the development potential created by the new assets.

2.5 STATE TECHNICAL AGENCIES

While States are primarily responsible for the programme, in view of the need to enhance technical inputs for design and techno-economic innovation, State Technical Agencies have been appointed by NRRDA to assist the States. The main functions of the Agencies are:

- Verification of the District Rural Roads Plan prepared by the district Programme Implementation Unit (PIU).
- Post-Scrutiny of Core Network.
- Scrutiny of the Detailed Project Reports for road works prepared by the District PIU.
- Providing requisite technical support to the PIUs in design, particularly in CD works.
- Undertaking normal tests of parameters for road design and Quality Control tests for District Programme Implementation Units and State Quality Control Mechanism.
- Training and R&D Monitoring.
- The Agencies will be selected for appointment on the basis of recommendation of the State Government. In order to qualify.

- Members of STA should have a Civil engineering background and qualifications including one or more with specialization in Traffic/ Transportation/Highway Engineering.
- The Agency should have a well established laboratory with adequate testing facilities; and
- The Agency should have the infrastructure/facility necessary for organising training programmes.

2.6 MANAGEMENT AND MONITORING SYSTEM

Because PMGSY depends on clear and detailed procedures, with inbuilt time and quality parameters, monitoring and management of the programme is not only systematic but also highly amenable to computerization.

An on-line (internet based) computerized software has been operationalised by C-DAC, an Agency of Ministry of Information Technology, with the intention of –

- Creating a database of rural roads.
- Tracking annual proposals from preparation of projects to completion of works.
- Making available a simple and transparent accounting system.
- Ensuring maintenance management.

The basic principles of this On-line Monitoring and Management System (OMMS) are that:

- Data is entered at point of origin, i.e. at PIU level.
- The same data is available in processed form at SRRDA and NRRDA levels; with facility to drill down to basic units i.e. ‘road’ and ‘habitation’.
- MIS outputs can be tailor-made to suit PIU, SRRDA and NRRDA needs and thus eliminate paper reporting.

The OMMS has been created as a transparent (to citizen) website based information system with access to all stakeholders: PIUs, SRRDA, STA, SQC, NRRDA, NQM etc. to enable pooling of data emanating from a variety of sources. The effective working of the institutional structure implementing PMGSY and the successful and continued operationalisation of the OMMS are very closely bound in a symbiotic relationship.

CHAPTER 3

PLANNING

3.1 PREPARATION OF MASTER PLAN

3.1.1 The Need for a Master Plan

Connecting rural habitations through good quality all weather roads, which provide access to services and also opportunities for the rural population to increase their income, is an important part of the socio-economic development process. For sustainable development through rural roads, it is necessary that a proper Master Plan is prepared in order that all activities relating to rural roads such as Construction, Upgradation and Maintenance can be taken up systematically within the frame work of this Master Plan.

3.1.2 District Rural Roads Plan (DRRP)

The District Rural Roads Plan is a compendium of the existing and proposed road network system in the District which clearly identifies the proposed roads for connecting the yet Unconnected Habitations to already connected Habitations/ All-weather roads, in an economic and efficient way.

The District Rural Roads Plan shall be prepared at two levels – the Block and the District. Keeping in view the convenience from the point of view of Map preparation and Data collection, the work would primarily be done at the Block level. Block-wise Road Plans would be prepared in accordance with the directions contained in this Manual and the priorities spelt out by the District Panchayat. After the Block-wise Master Plan has been approved by the Intermediate level (Block) Panchayat, it would be forwarded to the District Planning Committee (DPC), where the Block Road Plans would be integrated into the District level Master Plan, called the District Rural Roads Plan. This would be placed before the District Panchayat (or the District Rural Development Agency - DRDA where the District Panchayats do not exist) for consideration and approval. Then Plan would be forwarded by the PIU to the Nodal Department/ SRRDA for the approval of the State level Standing Committee. After approval, it would become the final District Rural Roads Plan, and would form the basis for selection of road works under PMGSY, through the Core Network (see para 3.2.).

Errors and deficiencies may exist in the DRRP and Core Network, due to factual inaccuracies such as population data. These may be detected at a later stage by the PIU, or the affected people may represent against the error. All detected errors and deficiencies or representations regarding them shall be carefully examined by the PIU and action shall be taken to amend or correct the DRRP wherever required. The approval of the State Level Standing Committee shall be obtained through the SRRDA for all changes Concurrence os the NRRDA shall be obtained and thereafter changes should be made in the OMMS.

3.1.3 Programme Implementation Unit (PIU)

As per PMGSY Guidelines and as detailed in Chapter 2, every State is to identify an Executing Agency for the execution of the Programme. The Executing Agency is expected to set up the Programme Implementation Unit (PIU) in each District. In most States, the Public Works Department (PWD)/ Rural Engineering Service (RES) has been identified as the Executing Agency by the State Government. The PIU at the District Level is usually headed by a Superintending Engineer/ Executive Engineer of the Division of the PWD/ RES. The Preparation of the Master Plan for each Block is the responsibility of the PIU, who must ensure that it has the approval of the Panchayati Raj Institution. Care must also be taken to see that the proposals of the MPs and MLAs, who have an intimate knowledge of their areas, are fully taken into consideration while preparing/ finalising the Plans.

3.1.4 The Ten Steps in Preparation of DRRP

The Ten Major Steps in the preparation and finalisation of the District Rural Roads Plans are as under:

- Constitution of the Team.
- Preparation of Data base.
- Map preparation.
- Preparation of a list of Unconnected Habitations and the selection of the optimal road links.
- Consideration and approval by the Intermediate Level Panchayat.
- Submission of the Block Level Rural Roads Plan to the District Planning Committee.
- Scrutiny by the District Planning Committee.
- Consideration and approval by the District Panchayat.
- Forwarding of the District Rural Roads Plan to the State Level Standing Committee.
- Vetting of the District Rural Roads Plan by the State Level Standing Committee.

3.1.5 Step-I: Constitution of the Team

The first step in the preparation of the Rural Roads Plan is the identification of the team who will perform the work at the Block level. The Team, for this purpose, should ideally include the Sub Divisional Magistrate (SDM), the Sub-divisional Police Officer or S.H.O, a Revenue Officer of suitable rank, the Block Development Officer (BDO), local officers of the Transport and Agricultural Marketing Departments and Secretary of the Intermediate level Panchayat. The Assistant Engineer of the PIU would be the member-Secretary. In areas with special characteristics, local officials of the Department concerned should be included, if these characteristics impinge on rural transportation. The senior most officer (the Sub-divisional Magistrate if possible) should be designated to lead the Team. The Chief Executive officer (Secretary) of the District Planning Committee/ Chief Executive Officer, Zilla Panchayat/ District Collector would select the team for this purpose.

The Team should arrange to collect data on all items required for the preparation of the Block-wise Road Plans. These are as follows:

- An authentic map of the Block on 1: 50,000 scale based on Survey of India Topo-sheets.
- 2001 Census Data.
- Existing road maps and road inventory details.
- Block/ District level Statistical Handbook.

3.1.6 Step-II: Preparation of Database

The Team should thereafter undertake the task of tabulation of Data, derived from secondary sources, relating to Habitation and Rural Road inventory.

- **Habitation Level Data**

Although Habitations with population of more than 500 persons only [*more than* 250 in hill states (North-Eastern States, Sikkim, Himachal Pradesh, Jammu & Kashmir and Uttaranchal), desert areas and tribal areas] are to be taken up under the PMGSY, for the purpose of preparation of the District Rural Roads Plan, all Habitations having a population of 100 or more persons and which are more than 500 metres (half-a-kilometre) away from each other, should be listed and separately identified on the map. This will enable the plan to have the depth necessary for long term and broad based use.

Each habitation has to be given a specific code number. This code shall contain a combined identification of state, District, Block and habitation code to make a unique alphanumeric code (see annexure-3.1).

The name and code number for State, District and Block along with the habitations are to be tabulated in Format-I (Annexure-3.2). This Format gives the reference of the block and demographic and infrastructure data of habitations under that block. The explanation of abbreviations and instructions for filling the Format-I is

also given in Annexure-3.2 as “Instructions for filling Format-I”. The last two columns of Format-I (annexure-3.2) shall be filled up after completing Format-II (Annexure-3.3).

- **Road Inventory**

A comprehensive inventory of all Rural Roads including Other Districts Roads (ODR) and Village Roads (VR) and any other existing earthen roads having a Land Width of 5m or more is to be prepared at block level. The inventory details are to be filled up in format-II (Annexure-3.3). The annexure also provides the instructions for filling the Format-II as “Instructions for filling Format-II”.

- **Primary and Secondary Road Data**

The National Highways (NH), State Highways (SH) and Major District Roads (MDR), which form the primary and secondary road network in a region, will also be required for analysing connectivity of habitations. Therefore a record of all such roads passing through the Block shall be prepared as indicated in Format-III (Annexure-3.4).

It may happen that the data available through the secondary sources may not be accurate or up-to-date. These would, therefore, have to be physically verified through field visits. The most important activity in preparation of Database is the actual field visit. This must be undertaken with great care as the accuracy of maps and the data collected and tabulated in FORMATS I, II & III would depend on the rigour and discipline exercised during the field visit.

- **Condition Survey of Existing Rural Road Network**

The inventory of the road network prepared as above gives an overall assessment of each road link. It does not give a detailed account of each km of the road, in terms of its present condition. Such data is needed for selecting projects for upgradation or maintenance. A reference may be made to Chapter 14 for using the data for maintenance management. To prioritise upgradation and maintenance operations, a condition survey of all the Rural Roads in the Core Network shall be carried out periodically, the first survey results being incorporated into the District Rural Road Plan itself. The first condition survey and the field verification of the road inventory can be usefully done at the same time.

- **Pavement Condition Index**

A Simple Pavement Condition Index (PCI) based on Visual Inspection or Driving Speed or riding comfort, already in use in many States, would be used and prioritisation methodologies applied for determining Upgradation as well as maintenance priorities. Details of the procedure for determination of the Pavement Condition Index (PCI) are given in Para 14.9 and Annexure 14.7.

The PCI data is an integral part of the Online Management & Monitoring System (OMMS) and the data will be included in the ‘Road Master’ for each kilometre. The PCI data after collection in the manner described in Annexure-14.7 will be entered into the OMMS database by the PIU and a District-wise output generated, copy of which will be furnished to the State Rural Roads Development Agency. Another copy will be supplied to the STAs for record. The Proforma is given in Annexure 14.8.

3.1.7 Step-III: Map Preparation

After the database has been prepared from secondary sources and verified through exhaustive field surveys, the Team would commence the task of Map preparation. The exercise should be closely supervised by the Head of the Programme Implementation Unit. Mapping should be done by trained draftsmen, who are normally available with all Engineering Organisations/ Revenue Departments.

The map should also show the latitudes and longitudes. This will facilitate the sequential arrangement of the Block Maps and in the preparation of the District map. The basic Rural road map shall be prepared at the Block level. The scale to be adopted is 1: 50,000. For convenience, Survey of India topo-sheets available on this scale can be used as the base. On this map, the data collected on the Habitations and the Road Inventory shall be incorporated. The map shall be drawn indicating the following details: -

- ***Boundaries***

All the administrative boundaries should be shown as below:

State and National, if any

District Boundary

Block Boundary

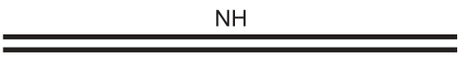
- ***Road Network***

The Road Network map should show the existing alignment (location) of National Highways, State Highways, Major District Roads, Other District Roads, Village Roads and cart tracks etc, which have land width of 5 meters or more, accurately using the information compiled in **FORMAT-II**. The legend to be used for denoting these features (also railways, if any) on the map are as under:

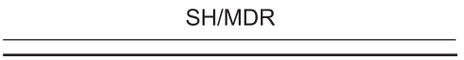
- *Roads/ Railways*

Railways

National Highways



State Highways/ MDRs

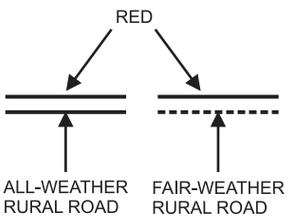


All-weather Rural Road

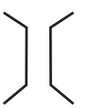
Fair-weather Rural Road

(all existing cart-tracks, kutcha roads etc having land width 5m or more)

The Core Network (see para 3.2 below) should be coloured Red, above the all-weather/ fair-weather Rural Road Line



Cross-drainage Structure



Rivers & Canals

Lake

Places of Tourist Interest ⊗

Quarry Site QS

Market Centre

Health Services	
Tehsil Headquarter	
Educational Service	
Sub Divisional Headquarter	

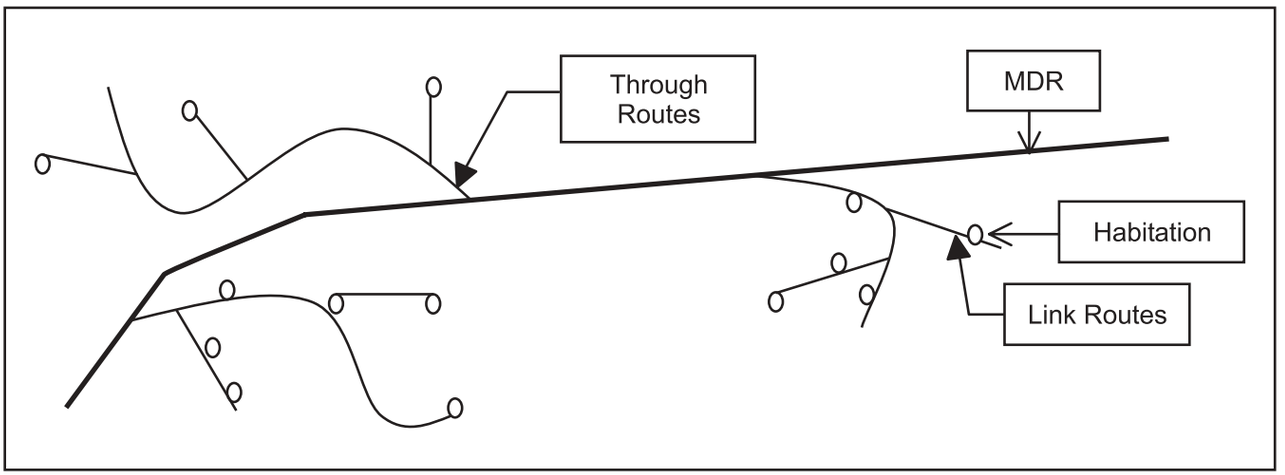
- ***Location of Habitations***

The habitations shall be shown as under	**Connected in Black**	**Unconnected in Red**
Population > 1000	□	□
Population 500 – 999	△	△
Population < 500	○	○

The three digit Habitation Code should also be indicated beside shape code of each habitation. While numbering the Habitations, it should be remembered that this will be a three digit code and would basically be the serial number of the Habitation in the Block after the habitations are arranged alphabetically.

- ***Link Route and Through Route Identification***

Link Routes are the roads connecting a single Habitation or a group of Habitations to Through Routes or District Roads leading to Market Centres. **Through Routes** are the roads which collect traffic from several link roads or a long chain of Habitations and lead it to Marketing centres either directly or through the higher category roads i.e., the District Roads or the State or National Highway. Link routes generally have dead ends terminating on a Habitation, 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.



It is possible that some of the Through Routes (sometimes even Link Routes) may cut across Block boundaries. While integrating the Block Plans into the District Rural Roads Plan, it should be ensured that the continuity is maintained. Link Routes and Through routes will be distinguished on the Map by use of the Letter L and T respectively followed by the relevant road code.

- *Colour Scheme of Map*

The use of too many colours makes the presentation and interpretation of the maps difficult. Accordingly the existing roads should be shown in black, while the ultimate "Core Network" (see para 3.2) should be shown in Red. The proposed roads for linking the unconnected habitations shall be shown dotted in red. The legend for the habitations of various population sizes is also indicated therein. All habitations should be code numbered in the map.

All the Block level maps should then be integrated into a District level map, taking care to match all roads, railway lines, rivers, canals etc. The District level map shall be to the same scale as the Block level maps.

The maps should in due course be got digitised so that it becomes easy to put them all on a computer-based system, preferably on a GIS platform. Separate detailed instructions will be issued by NRRDA in this regard in order to facilitate a web-based GIS which can be used for monitoring and decision support.

3.1.8 Step-IV: Preparation of the list of unconnected habitations and the selection of optimal road links

Next, the Team has to undertake the task of using the available data and the information available from the Map to prepare the Rural Roads Plan of the Block. The Team should make two separate lists of Unconnected Habitations : (i) those which are connected only by a fair weather road which needs to be upgraded to the prescribed specifications and (ii) those which have no connection at all, not even by a fair-weather road. Both the lists should be in descending order of their population. A Habitation with higher population will rank higher in the list.

Once the lists have been prepared, the next task is to find out the most efficient and economic route, in terms of cost and utility, for providing access from an eligible unconnected habitation to an existing All-weather road or to an already connected habitation. Studies have revealed that upto 95% of the trips made by villagers are to Market, Health, Education and Administrative centres. Consequently, while selecting the road link, the Team would have to take into account the requirements of the residents of the Unconnected Habitation and also see as to which connection best serves their needs. The views of the Village Panchayat or the Gram Sabha may also be ascertained for this purpose.

Quite often, an Unconnected Habitation can be connected in more than one way. Often the Market Centre is in a different direction from say, the Taluka Headquarters. In case a consensus is not easily reached, the choice from various alternative links may need to be made on the basis of weightages accorded to different Socio-economic services. Since PMGSY envisages only single connectivity, it is necessary to choose the most efficient road link in terms of utility. The District Panchayat shall be the competent authority to select the set of Socio-economic/infrastructure variables best suited for the District, categorise them and accord relative weightage to them. This would be communicated to all concerned *before* commencing the preparation of the District Rural Roads Plan. Numbers of people benefited per unit cost, number of persons having all weather access to a hospital/school etc are a few examples of services/factors.

The proposals of the MPs and MLAs would be taken into account by the Team preparing the Draft Rural Roads Plan for the Block. A specific list would be made of the roads suggested by the MPs and MLAs and remarks indicated whether they are included or not; if not, the reasons thereof should be recorded. The Team would then prepare the Draft Rural Roads Plan for the Block.

3.1.9 Step-V: Consideration and Approval by the Intermediate Panchayat

This Draft plan would be presented before the Intermediate Panchayat by the Leader or the Member- Secretary of the Team preparing the Draft Rural Roads Plan for the Block. In this meeting, Officers of appropriate level, who have knowledge of the area, may also be called. The Plan should be finalised by the Intermediate Panchayat. Any changes made by the Intermediate Panchayat should be separately mentioned and causes thereof should be indicated.

3.1.10 Step-VI: Submission of the Block Rural Roads Plan to the District Planning Committee

The Team will, after obtaining the approval of the Intermediate Panchayat, submit the Block Rural Roads Plan

to the District Planning Committee where these have been constituted, along with original map and all the Formats and Tables. In its absence, the Plan would be submitted to the Chief Executive Officer/ District Collector. The Team would record its views in case it feels that the Intermediate Panchayat has deviated from the Guidelines in this regard.

3.1.11 Step-VII: Scrutiny by the District Planning Committee

The District Planning Committee is the body created in the District for ensuring proper preparation of Plans for the development of the District. The District Rural Roads Plan is one which would have a tremendous bearing on the all round socio-economic development of the District. Therefore, it is appropriate that all the Block Rural Roads Plans are scrutinised by the District Planning Committee.

After the Rural Road Plans have been received from all the Blocks, these would be scrutinised by the Chief Executive of the District Planning Committee/ Chief Executive Officer/ District Collector. He would be assisted by a Committee comprising of the Head of the District Programme Implementation Unit (Member Secretary); Superintending Engineer/ Executive Engineer PWD; Executive Engineer, Rural Engineering Service and senior officers of the Revenue, Rural Development, Transport and other concerned Departments, as Members. They should look into the deviations, if any, made by the Intermediate Panchayat and the justifications therefore. They must ensure that the Road Plan is according to the criteria given by the District Panchayat with respect to the Socio- Economic/ Infrastructure variables and also that the proposals of the MPs and MLAs have been duly considered. If any provision made by Intermediate Panchayat or the Team preparing the original plan is not as per the Guidelines, such provisions should be changed. The reasons thereof should be mentioned clearly.

The Committee, after collating all the Block Rural Road Plans will prepare the draft District Rural Roads Plan as per the format shown in Annexure 3.4. It would also contain the priority list of road works to be taken up under the Pradhan Mantri Gram Sadak Yojana, in line with the principles enunciated in Para 3.3.

3.1.12 Step-VIII: Consultation with the District Panchayat and Elected Representatives and Approval of the DRRP

The Draft District Rural Roads Plan would then be presented to the District Panchayat by the Chief Executive of the District Planning Committee. MPs should be specially invited to this Meeting. Members of the Committee who prepared the District Rural Roads Plan should be present in the Meeting. It should be discussed and adopted by the District Panchayat, with such changes as may be considered appropriate, but strictly within the framework of the PMGSY Guidelines.

3.1.13 Step-IX: Forwarding of the District Rural Roads Plan to the State Level Standing Committee

After approval by the District Panchayat, the District Rural Roads Plan, along with the District Priority list, would be forwarded through the SRRDA to the State Level Standing Committee.

3.1.14 Step-X: Vetting of the District Rural Roads Plan by the State Level Standing Committee

The District Rural Roads Plan would be vetted by the State level Standing Committee, headed by the Chief Secretary/ Additional Chief Secretary, as the case may be. The Committee could call the Chief Executive Officer/ District Collector to present the Plan before the Committee. This Committee should go into the details of the Plan and priorities and links decided by the District Panchayat. The changes made by the District Panchayat and reservations, if any, of the District Planning Committee, can also be discussed. The State level Standing Committee should ensure that priorities decided by the District Panchayat, as well as direction of the Government of India, have been followed in preparing the District Rural Road Plans in totality and the proposals of the MPs have been duly considered. The Plan, after it has been vetted by this Committee, would be the final District Rural Roads Plan. A copy of the District Rural Roads Plan would be sent to NRRDA for record.

The District Rural Roads Plan would, henceforth, constitute the basis of preparation of projects under the Pradhan Mantri Gram Sadak Yojana as far as that particular District is concerned. The State Governments would be required to attach the approved the *Core Network* along with project proposals under Pradhan Mantri Gram Sadak Yojana.

3.2 IDENTIFICATION OF CORE NETWORK

3.2.1 Core Network-Definition

The Core Network is the network of all the Rural Roads that are necessary to provide basic access to all the Habitations. Basic access is defined as single all-weather road connectivity to each Habitation. As already indicated, the effort under the PMGSY is to provide single all-weather road connectivity to each eligible Habitation by way of connecting it to another Habitation having all-weather connectivity or to an all-weather road, in such a way that there is access to, inter alia, Market Centres.

A Core Network is extracted out of the total Network mentioned in the DRRP and consists of existing roads as well as the roads required to be constructed to the as yet unconnected Habitations. However, it will not consist of all the existing roads of the DRRP since the objective is to establish 'basic access' i.e., one all-weather road connectivity to each habitation.

3.2.2 Why Core Network

The Core Network has the following advantages:

- It will help in optimising the requirements of fresh construction and upgradation, for ensuring connectivity to all the Habitations.
- It is primarily intended to mark out the essential network that is required to be maintained in good condition at all times.
- It would optimise the resource allocation in respect of the network management within the District.

3.2.3 Steps Involved in Establishing the Core Network

The following four major steps are involved in establishing the Core Network.

- Prepare Block Maps as part of the District Rural Road Plan process.
- Identify the Market Centres.
- Identify the Network of roads to provide single access to the eligible habitations.
- Catalogue the roads by giving them code numbers.

These steps are explained below:

3.2.4 Preparation of Block Maps

The preparation of the Block Maps using topographical Maps at 1:50,000 scale has already been explained in Para 3.1.7 for preparation of the district Rural Roads Plan. It may be ensured that the Block Maps show the following:

- All Habitations upto a population of 100.
- All roads viz., NH, SH, MDR and Rural Roads, constructed by different agencies including the roads under construction as well as cart tracks and paths (in hilly areas especially).
- Major Rivers/ Streams.
- Administrative office location like Block & Tehsil headquarters.
- Gram Panchayat Headquarters, Patwari office etc.
- Health Service facilities (including veterinary facilities).
- Educational Service Facilities.
- Market Centres and Rural business hubs.
- Places notified by State govt. as being of tourist interest.

- Quarry Sites.
- Market Centres, Administrative Centres like sub divisional headquarters and main roads which are outside the Block boundary but serve the Habitations in the Block must also be marked, outside the Block boundary.

3.2.5 Identification of Market Centres and Rural Business Hubs

Before preparing the Core Network, one needs to identify all the Market Centres in the Block. This is because an analysis of the transport patterns in the rural areas reveals that most of the travel is to the Market centres. These are generally located either on bigger roads or at the confluence of roads leading from a number of Habitations. Because they are easily accessible from the rural hinterland and are linked to the main road network, they function as Rural Business Hubs and generally have facilities for marketing of agricultural surpluses, Banking and telecommunication facilities, large stores for agricultural inputs as well as consumer items (durables and consumables). Facilities like agricultural equipment repair shops may also exist. Consequently they are likely to have developed public transport, Higher Education and Health care facilities. The Market Centres should be identified using the data available from published Census records/information available from Marketing Board/ local enquiries. For purposes of inclusion in the Core Network, market centres need to be identified to the extent that the local villagers should be able to go to the Market centre and come back within *the same* day. The maximum distance between a village and a Market centre would thus normally not be more than 15-20 km. In some areas, the Market centres may not be fully developed. In such cases the big villages having potential for developing into suitable Market Centres because of road connectivity etc *should* be identified. All the Marketing Centres should be marked on the Block Map.

3.2.6 Identification of the Core Network

There are three types of habitations in the Block Map – those which are connected, having all-weather roads, (ii) those which are not connected at all, (iii) those which are connected only by a fair-weather road. In the case of connected Habitations, it is possible that there are more than one road connections. In such a case, one road should be selected using Socio- Economic infrastructural parameter criteria. If, for any reason, an alternative road is the preferred choice of the local people, that road may be chosen, but, in any case, only one road should be selected for the Core Network, as the intention is to provide Basic access. In case of unconnected habitations, a suitable road connection should be identified, which would generally follow the alignment of an existing track. If there is more than one track, selection has to be made on the basis of the parameters, as already explained in 3.1.8.

The Core Network Plan shall thus be prepared for the entire Block. It should be checked again that all the Habitations are connected or will be connected to the nearby Market Centres, either directly or indirectly through other all-weather roads. It is not necessary that each Habitation is directly connected to the Market centre in a hub-and-spoke configuration.

Going by the definition of an all-weather road given in Chapter-1, it is not necessary to provide a road to a Habitation that is within 500 metres of an already connected habitation or an all-weather road. All such habitations should be treated as falling on the concerned road.

Suggestions/ proposals received from elected representatives including MLAs and MPs, Panchayats, and local population must be properly examined as these ca0n provide very useful information about the missing bridges, missing links and other priority demands of the local community. The existing road Network, location of major Market Centres, topographical features, and local travel pattern should be kept in mind. While deciding the Core Network, the fact that it will be used primarily by the local people must be uppermost in the mind.

3.2.7 Numbering of Core Network Roads and Tabulation of Data

Once the Core Network is identified, the details of all these roads should be listed in the Proformae CN 1 to CN 6. The Proforma are given at Annexure 3.5. The data in the Proforma should be uploaded or entered in the DRRP Module of the Online Management and Monitoring System (OMMS). For purpose of numbering, it is always better to start with the North-East corner of the Block and workout clock-wise giving progressively higher numbers.

3.2.8 Miscellaneous

In some areas, even the Network of higher order roads like Major District Roads (MDR) and State Highways (SH) may not be fully developed. Many of the major bridges may be missing. The investment in Rural Roads will not show expected results unless these major roads and bridges are constructed. The requirements of such roads and bridges may be identified even though these are not to be included under the Pradhan Mantri Gram Sadak Yojana. Such information should be provided to the State PWD to incorporate these in their plans.

3.2.9 Approval of Core Network

The procedure to be adopted for the approval of the Core Network shall be the same as that for the Master Plan (Para 3.1).

3.3 IMPLEMENTING THE CORE NETWORK PLAN

3.3.1 Comprehensive New Connectivity Priority List (CNCPL)

The Core Network is the only basis for selection of works under PMGSY. Once the Core Network is ready, the States are required to prepare Comprehensive New Connectivity Priority List (CNCPL), at Block and District level, of all proposed road links under PMGSY (with road code, names of habitations being connected with habitations code, population served and length), grouping them in the following **Order of Priority:**

Priority No.	Population Size	Category
I	1000+	New Connectivity
II	500-999	-do-
III	250-499	New Connectivity [where eligible in respect of Hill States (North-East, Sikkim, Himachal Pradesh, Jammu & Kashmir, Uttaranchal) and the Desert Areas (as identified in the Desert Development Programme) as well as the Tribal (Schedule V) area].

The CNCPL list will be prepared with the following format:

S.No.	Name of road	TR/ LR	Code in CN	Length	Population served	Habs to be connected	Present status (earthen track etc.)	Name & no. of TR associated

(CN – Core Network / TR – Through route / LR - Link Route)

The priortisation may be done in one of several ways, but whatever methodology is selected has to be uniformly applied in the State. The basic features of the prioritisation methodology would have to be as follows:

- The proposed links would need to be categorized in the Order of Priority at the outset.
- Further prioritisation within the Order of Priority may be done with the State, District or Block as the planning unit, as convenient.
- For a given Order of Priority and a given planning unit, the listing can be on basis of total population benefited.
- Further refinements in terms of population per Km. benefited, etc may be adopted if found useful.

Depending on whether State or District is the unit, the SRRDA or PIU will prepare the CNCPL (and CUPL, See para 3.3.3).

3.3.2 Prioritisation of New Connectivity Road Works in Annual Proposals

The issue of criteria for selection of roads to be taken up has figured several times in Parliament and its Committees and it is apparent that the District Panchayats in the States need to adopt a uniform and objective methodology in a transparent manner, and to also enable full consultation with lower level Panchayati institutions and elected representatives.

Since the Core Network is now the basis for making Annual Proposals, and as given in Para 3.3.1 above, a Block/ District-wise Comprehensive New Connectivity Priority List (CNCP List) has been prescribed, all consultations for new connectivity will be based on such lists, and Panchayati Raj Institutions and Elected representatives may be furnished a copy of the relevant up-to-date CNCP List in order for them to indicate their choice of road works. Where road works of a higher Order of Priority still remain to be taken up, road works of a lower Order of Priority will not be taken up in the same District except when it is not feasible to execute the road work for reasons of non-availability of land etc. While finalising the District proposal, the District Panchayat shall record reason for such cases.

3.3.3 Upgradation Works

Upgradation works will be proposed in a district only if no new connectivity remains to be taken up. The selection of roads for upgradation will be done on the basis of a Road Condition Survey (Annexure 3.6) of the Core Network of the District which will establish a Pavement Condition Index (PCI) on a rating scale of 1 to 5 (see Chapter 14, and Annexure 14.7). After the Road Condition Survey is completed, a Comprehensive Upgradation Priority List (CUPL) for the District shall be prepared.

The only exception is if the Through Routes in the District are in such poor condition that the new connectivity link does not give all-weather farm to market access. In such cases, from the CNCPL, it is possible to identify such Through Routes (called associated Through Routes) and conduct a Road Condition Survey for such roads only, in order to be able to decide whether or not they need to be upgraded along with the new connectivity of the attached link road.

The Road Condition Survey results will first be entered into the PCI register and the Road Master under OMMS in all cased. In cases where no new connectivity is involved, the PIU will then prepare the Comprehensive Upgradation Priority List (CUPL) for the District based on the following:-

(i) The roads to be included in the CUPL will necessarily be Through Routes already included in the Core Network. Presently 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 PCI is less than 2) will not be taken up for upgradation.

(ii) **Priority-I** will be Through Routes which are presently WBM roads. In such cases, upgradation will comprise of bringing the existing profile to good condition (along with improvement in geometrics, necessary drainage works and road signages) and providing the appropriate crust and surface as per design requirement.

(iii) **Priority II** are other fair weather through routes or gravel through routes or through routes with missing links or lacking cross drainage. In such a case upgradation will consist of converting the road into an all-weather one with appropriate geometrics and all necessary provisions.

(iv) **Priority III** will be other through routes which are at the end of their design life, whose PCI is 2 or less, i.e., are ‘poor’ or ‘very poor’. In such road width, surfacing, etc., as per normal projected traffic requirements.

(v) Within each priority class, qualifying roads will be arranged in order of population served (directly and through population served in link routes), as a rough indication of traffic expected. However, States are advised to conduct an Average Daily Traffic (ADT) Survey at the earliest. Based on the time at which the traffic survey is carried out (such as Peak or Lean Seasons) the same is to be adjusted for seasonality in order to arrive at the Annual Average Daily Traffic (AADT) count, which is the basis for the prioritisation as well as the design. (An axle load survey may also be carried out, on selective basis, on the roads where

heavy traffic is expected with wide variations in the Axle Load Spectrum. Proposals for this purpose approved by NRRDA will be eligible for reimbursement of expenses).

(vi) In case, in any District, the Through Roads defined in the Core Network do not belong to the Rural Roads category, the main rural links (emanating from the Through Route) will be considered for upgradation on similar lines indicated above. The basis for Prioritisation will be, in addition to PCI, the population served by the link in each category. In such cases the selection will be validated by the STAs and data entry made in OMMS Road Master accordingly after categorising them as main rural links (MRL).

Preparation of CUPL

The work of preparing the CUPL will be taken up only in those districts which are likely to complete new connectivity to eligible habitations within the next 1 year. The list will be prepared District-wise for each Priority class on the following proforma (where only a truncated portion of the road is to be taken under upgradation, only that portion needs to be mentioned by chainage):-

District _____Priority Class _____

Block	Road code in CN	Name of through route / MRL*	Year of construction	Year of last periodic renewal	Present surface type	PCI	Total Population of the habitations served by the road	AADT

* where TR is not a Rural Road

Verification of CUPL

The CUPL will be got verified on the ground on sample basis through the STAs and the NQM system before it is processed for further approvals. The STAs will do 100% verification on the basis of the PCI data given by the District and sample ground checking.

Approval

After the CUPL is prepared and verified, it shall be placed before the District Panchayat for approval thereafter it shall be vetted by the State level Standing Committee (SLSC). After the District is eligible to take up upgradation works, annual proposals will be made for upgradation in the same manner out of the CUPL, as new connectivity proposals are made out of the Comprehensive New Connectivity Priority List (CNCPL).

3.3.4 Consultation with the Members of Parliament

The Comprehensive New-Connectivity Priority List (CNCP List) identified to connect unconnected habitations (along with names of habitations and population served and length) or the Comprehensive Upgradation Priority List (CUPL) as the case may be, should be sent to the Members of Parliament, to facilitate the Members of Parliament in making their suggestions. It will be incumbent upon the District Panchayat to ensure that full consideration is given to the proposals received from the Members of Parliament.

While Lok Sabha Members will be consulted in respect of their constituencies, Rajya Sabha Members will be consulted in respect of that District of the State they represent for which they have been nominated as Vice-Chairman of the District Vigilance & Monitoring Committee of the Ministry of Rural Development.

- The proposals received from the Members of Parliament by the stipulated date should be given the full consideration in the District Panchayat which should record the reason in each case of non-inclusion and the Members of Parliament should be informed of the inclusion/ non-inclusion of their proposals along with the reasons in each case in the event of non-inclusion. It would be preferable if the communication is issued from the Nodal Department at a senior level.

- The State Government should also arrange to supply to each Member of Parliament, an annual list of road works taken up under the Programme for the period ending 31st March. State Governments have already been advised to print such lists annually, in English and local language. Copies of these may be conveniently supplied to elected representatives and Panchayati Institution and 10 copies of the English version and 5 copies in the local language version should be sent to NRRDA by 31st May of each year.
- The Programme Implementation Units (PIU) at the District Level should facilitate Members of Parliament in knowing the status of implementation of the road works in their areas in case they visit their District. The website (omms.nic.in) may also be kept updated for this purpose.

3.4 DATA ENTRY IN OMMS

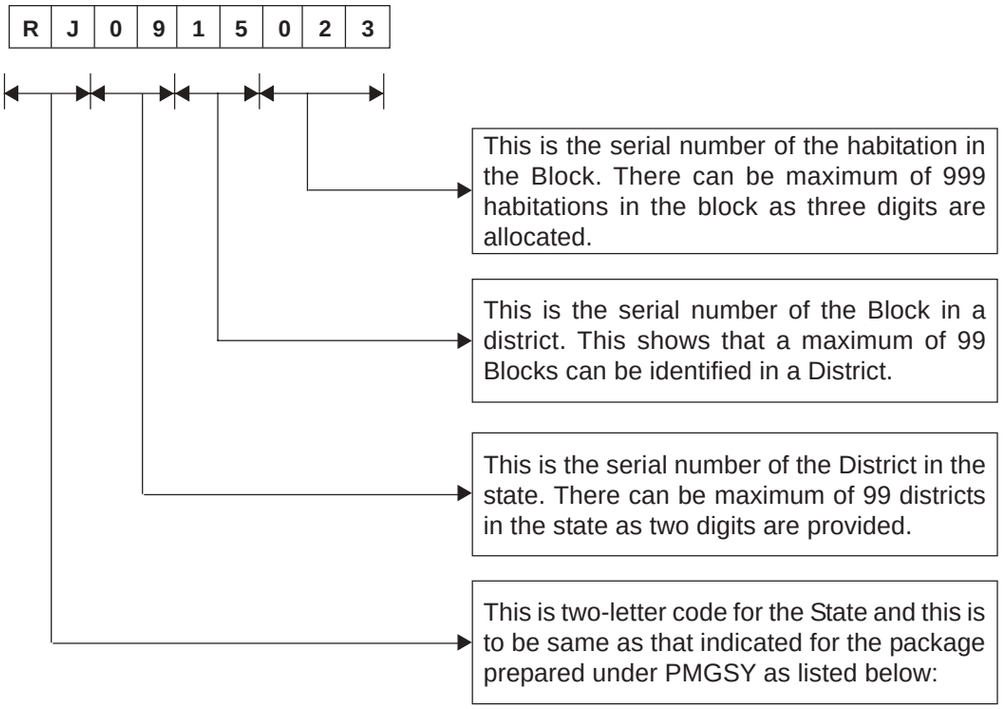
3.4.1 As soon as the DRRP is finalised, the PIU shall enter the data in the OMMS after logging in. Unless already entered, Master Data for the district has to be entered first followed by the details of habitations (as per 2001 census) and roads connecting them. Unless this data is entered, further data entry relating to the Annual Proposals, Execution of projects and Expenditure cannot be entered, since for all these purposes, the road will have to be selected out of the DRRP (and infact the Core-Network).

3.4.2 Once the Core-Network roads are identified in the OMMS, the OMMS is enabled to produce the CNCPL for the district and also, once the Pavement Condition Index has been entered, the CUPL.

Annexure 3.1
(See Para 3.1.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

CODE FOR HABITATION



STATE/ UNION TERRITORY CODES

Name of State	Code	Name of State	Code
Andhra Pradesh	AP	Nagaland	NG
Arunachal Pradesh	AR	Orissa	OR
Assam	AS	Punjab	PB
Bihar	BR	Rajasthan	RJ
Chattisgarh	CG	Sikkim	SK
Goa	GA	Tamilnadu	TN
Gujarat	GJ	Tripura	TR
Haryana	HR	Uttaranchal	UT
Himachal Pradesh	HP	Uttar Pradesh	UP
Jammu & Kashmir	JK	West Bengal	WB
Jharkhand	JH	**Name of Union Territory**	
Karnataka	KN	Andaman & Nicobar Islands	AN
Kerala	KR	Chandigarh	CH
Madhya Pradesh	MP	Dadra & Nagar Haveli	DN
Maharashtra	MH	Daman & Diu	DD
Manipur	MN	Delhi	DL
Meghalaya	MG	Lakshadweep	LK
Mizoram	MZ	Pondicherry	PD

Annexure-3.2
(See Para 3.1.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

HABITATION DATA **FORMAT-I**

A : REFERENCE DATA

STATE : CODE | DISTRICT : CODE | BLOCK : CODE:

B : DEMOGRAPHIC & INFRASTRUCTURE DATA (FOR ALL HABITATIONS) :

Provide the following information for each Habitation in the block (Available facilities may be indicated by number of units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Name of Revenue/Census Villages	**Sl. No. of Habitations in the Block**	**Name of the Habitation**	**Total Population**	**SC/ST Population**	**Primary School**	**Middle School**	**High School**	**Intermediate Schools (Plus Two)**	**Degree College/ Vocational School**	**Health Service**	**Dispensary**	**MCW Centres**	**PHCs**	**Veterinary Hospital**	**Commercial Establishment**	**No. of days Market held per week**	**Post, Telegraph Office**	**Telephone Booth**	**Bus Services (Y/N)**	**Railway Station (Y/N)**	**Electrified (Y/N)**	**Panchayat HQ (Y/N)**	**Hilly (H)/ Coastal(C)/ Plain Areas (P) (H/C/P)**	**Name of MLA/MP Constituency**	**List of Roads Connecting the Habitations (give code)**	**Type of the Road (AWR/FWR)**
																								MLA :	L1 :	
																								MP :	L2 :	
																									L3 :	
																								MLA :	L1 :	
																								MP :	L2 :	
																									L3 :	
																								MLA :	L1 :	
																								MP :	L2 :	
																									L3 :	
																								MLA :	L1 :	
																								MP :	L2 :	
																									L3 :	
																								MLA :	L1 :	
																								MP :	L2 :	
																									L3 :	

Note: Please see the instruction sheet for detail

Certification: certified that the above information is correct : | **Name:** | **Designation:** | **Signature:**

INSTRUCTION-I
REF: ANNEXURE 3.2

INSTRUCTIONS FOR FILLING FORMAT-I

The form has three parts as explained below: -

A. Reference data: It contains the name and code number for State, District and Blocks. The two-letter code for various States/ Union Territories, are given in Annexure 3.3. The State administration will first list all the Districts (preferably alphabetically) and number them serially for use as the District code. The District administration will list all the Blocks (preferably alphabetically) and number them serially for use as the Block code.

B. Demographic and Infrastructure data: This data can be provided for each Habitation, as defined earlier. One revenue village may have one or more Habitations. Therefore, for all such Habitations, suitable codes should be provided. For code number, all Habitations within a Block may be alphabetically arranged and then serially numbered, while Habitation within a village should be alphabetically arranged and then serially numbered. The instructions to fill up each column are given below :

Col 1 Write the name of revenue village and code number.

Col 2 Write the code number of Habitation (this is a serial number only from the list of all Habitations in the Block).

Col 3 Write the name of Habitation.

Col 4 Give the current population of Habitation based on 2001 Census.

Col 5 Give the current SC/ST population based on 2001 Census.

Col 6 Write the number of units of each facilities available in Habitation under.

to 19 relevant column. If not available write zero.

Col 20 Write Yes, if the Habitation is connected with bus facility, otherwise write No.

Col 21 Write Yes, if the Habitation is connected with railway station, otherwise No.

Col 22 If the Habitation is electrified write Yes, otherwise, write No.

Col 23 Write Yes, if the Habitation is the Panchayat Headquarter, otherwise No.

Col 24 Write (H) if the Habitation is in a Hilly area (C) for Coastal area and (P) Plain.

Col 25 Give the name of MLA and MP constituency.

Col 26 The Habitation may have one or more roads coming from different direction. One or more of them may be All-weather road. On the other hand none of these may be All-weather road. They may be fair-weather road e.g. earth road, track, bridle path, etc. Give the list (code number and type only) of all such roads. If the numbers of such roads are more than the rows specified in the format, then additional rows of the table should be used. These roads will be required to be inventorised in FORMAT-II with the same code numbers. Fill the code number of road from inventory FORMAT-II (after it is prepared) here also.

Col 27 The type of the road i.e. AWR for All-weather Road or FWR for Fair-weather Road.

Certificate: Give the certificate and sign it.

Annexure-3.3
(See Para 3.1.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

INVENTORY OF RURAL ROADS **FORMAT-II**

A : REFERENCE DATA

STATE :	CODE				DISTRICT :	CODE				BLOCK :	CODE			

B : Provide the following details of all types of Rural Roads in the Block

Sl. No.	Name of Road	Road Code	Category of Road (ODR/VR/Others)	Length (Km) (Ex. 12.935)	Predominant Soil Type	Terrain Type	Width (m)			Length (Km) with Surface Type)				All-weather Road (AWR) or Fair-weather road (FWR)	Condition Rating (PCI)	Existing CD Works				List of Habitations on the Road	
							Road Land Width	Formation Width	Carriageway Width	BT	WBM/ Metal	Earthen	Gravel			Number	Type	Total Length	(waterway span) Width (m)	Habitation Code	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
																CD1				H1	
																CD2				H2	
																CD3				H3	
																CD1				H1	
																CD2				H2	
																CD3				H3	
																CD1				H1	
																CD2				H2	
																CD3				H3	
																CD1				H1	
																CD2				H2	
																CD3				H3	

Note: Please see the instruction sheet for detail

Certification: certified that the above information is correct :	**Name:**	**Designation:**	**Signature:**

INSTRUCTION – II
REF: ANNEXURE 3.3

INSTRUCTIONS FOR FILLING FORMAT-II

A comprehensive inventory of all types of Rural Roads has to be prepared and all these roads should also be marked on the map. The code number of all such roads should be given in the map.

A. Reference data: Provide the name and code numbers for State, District and Block.

B. Road Inventory:

Col 1 Serial number.

Col 2 Name of road may be formed by giving the names of starting and/ or ending Habitation. The road may have a normal name for it.

Col 3 Give the code number for each road which may be the serial number of road added to the Block code, number may be L1. L2. L3 and so on.

Col 4 Specify the category of road (ODR/ VR/ Other category).

Col 5 Give the total length of the road accurately. For example, 12.935 km indicates it to be 12 km and 935 metres long.

Col 6 Give the major type of soil of the road such as Black Cotton (BC), Silty (SL), Sandy (S), Gravel (G) etc.

Col 7 Terrain type may be classified into Plain (P), Rolling (R) and Hilly (H).

Col 8 Give the three parameters of the road geometry. The land-width

to 10 formation-width and carriage-way are to be recorded.

Col 11 Surface condition: Give the lengths of the road sections having different

to 14 surface type in different parts of the road.

Col 15 Give whether the road is All-weather (AW) or Fair-weather (FW).

Col 16 Give the condition rating (Present Condition Index) in a scale of 1-5 (1 : Very Poor, 5 : Very Good).

Col 17 Cross Drainage (CD) works: Give the details for all existing CD works

to 20 along the road. If more than three CD works are there, use additional rows of the Format. For each CD show the waterway span (metres) and carriageway width (metres) of the CD.

Col 21 Give the list of all Habitations within 500 metres from the centre of the
to 22 road. Details of all these Habitations are given in FORMAT-I.

Annexure: 3.4
(See Para 3.1.6)
Format-III

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
RECORD OF PRIMARY AND SECONDARY ROADS

State:		Code:			District:		Code:	
					Block:		Code:	
Sl. No.	Name of Road	Identification code (eg NH-33)	Kilometer		Length (KM)	Carriage-way width (m)	Surface type (BT/WBM/Gravel/ Earth)	Remarks AW/FW
			Starting (eg.24.750)	Ending (eg. 29.770)				
1	2	3	4	5	6	7	8	9

ANNEXURE : 3.5
(See Para 3.2.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA -CN-1
DETAILS OF CORE NETWORK ROADS

State: **Block:** **District:**
District:

Sl. No.	Road No.	From	To	Total Length in Km	Existing Surface Type								Miss-ing CDs	Habitation Served Directly				Population served indirectly by link routes		Total Population served	Owner ship of the road
					BT		WBM		GRAVEL		TRACK			Name	Code	Population	C / UC	Link routes	Popul-ation		
					L Km	Con	L Km	Con	L Km	Con	L Km	Con									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-2 (a)
BLOCK WISE DETAILS OF CORE NETWORK

State: **District:**

Sl.No.	Name of Block	No of Habit ations	No of conneted habitations																Total
			1000+				500-999				250-999				<250				
			BT	WBM	GR	Total	BT	WBM	GR	Total	BT	WBM	GR	Total	BT	WBM	GR	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Total																			

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-2 (b)
BLOCK WISE DETAILS OF CORE NETWORK

District:
Block:

No of unconnected habitations				
1000+	500-999	250-499	<250	Total
21	22	23	24	24

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-2 (C)
BLOCK WISE DETAILS OF CORE NETWORK

District:

Length of roads for connected habitations of core network (In KM)														
1000+			Balance 500-999			Balance 250-499			Balance <250			Total		
BT	WBM	GR	BT	WBM	GR	BT	WBM	GR	BT	WBM	GR	BT	WBM	GR
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-3
BLOCK WISE DETAILS OF CORE NETWORK

State: **District:**

Sl. No.	Name of Block	Total Road Length in the Block (in Km)					Total Road Length in Block for Identified Core Net Work (In Km)				
		BT	WBM	Gravel	Track	Total	BT	WBM	Gravel	Track	Total
1	2	3	4	5	6	7	8	9	10	11	12
Total											

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-4(a)
BLOCK WISE DETAILS OF CORE NETWORK

State: **District:**

Sl. No	Name of Block	Total Road Length in Core Net Work in Km					Total Length of NH & SH in Core Net Work in Km					Total Length of MDR in Core Network in Km				
		BT	WBM	Gravel	Track	Total	BT	WBM	Gravel	Track	Total	BT	WBM	Gravel	Track	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Total																

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-4(b)
Pradhan Mantri Gram Sadak Yojana-Block wise Details of Core Network

State: **District:**

Sl. No	Name of Block	Total Length of Through routes in Core Network in Km (excluding NH,SH & MDR. ie. Rural Roads)					Total Length of Link routes in Core Network in Km (excluding NH,SH & MDR. ie. Rural Roads)					Total Length of Roads in core network (Rural Roads)
		BT	WBM	Gravel	Track	Total	BT	WBM	Gravel	Track	Total	
1	2	18	19	20	21	22	23	24	25	26	27	28
Total												

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PROFORMA CN-6

State: **Block:** **District:**

Sl. No	Unconnected habitation No.	Name of unconnected habitation	Population	Name of proposed road				Habitations being connected		Population subserved by Link Route (col 4+10)
				From	To	Length (in Km)	Link route Number	Number	Population	
1	2	3	4	5	6	7	8	9	10	11

Annexure-3.6
(See Para 3.3.3)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
RURAL ROAD INSPECTION FORM - I

Name of Rater : ..... Date of Inspection : .....

District : ..... Block : .....

Name of Road : ..... Functional Class : **ODR / VR** Code No. .....

Topography : ..... Plain / Rolling / Hilly From : ..... Km to .....Km.

Traffic Volume(ADT) : ..... Traffic Composition : .....

Approx.Percentage of : HCV : ..... LCV : ..... AT/T : .....

C/J : ..... TW : ..... ADV : .....

esign Speed : ..... Kmph. Pavement Thickness & Composition :.....

Pavement Surface Type : ..... Pavement Width : .....m .

Shoulder Surface Type : ..... Shoulder Width : .....m .

GWT Depth : .....m . Indicate Waterlogging ..... Km to .....Km.

Soil Type : ..... Indicate Problematic Soils : Type ..... Km to .....Km.

Year of Construction ..... Construction Agency .....

Year of last Renewal ..... Maintenance Agency .....

Approx.No.of CD Structures Per Km and their condition :

Pipe Culverts ..... Box Culverts .....

Causeways ..... Vented Causeways .....

Minor Bridges ..... Other .....

Remarks : .....
.....
.....

Note :

ADT : Average Daily Traffic
LCV : Light Commercial Vehicles (including Mini Buses)
C/J : Cars/ Jeeps
ADV : Animal Drawn Vehicles
HCV : Heavy Commercial Vehicles (including buses)
AT/T : Agricultural Tractor/ Trailer
TW : Motorised Two-wheelers

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
RURAL ROAD INSPECTION FORM - II

Kilometerage →

A. Distress Type & Severity			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rutting	Slight	< 10 mm															
	Moderate	10 - 20 mm															
	Severe	> 20 mm															
Cracking width	Slight	< 6 mm															
	Moderate	6 - 15 mm															
	Severe	>15 mm															

B . Distress Type & Density			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rutting (% Area)	< 15	Slight															
	15 - 30	Moderate															
	> 30	Severe															
Cracking (% Area)	< 15	Slight															
	15 - 30	Moderate															
	> 30	Severe															
Depressions & Potholes (% Area)	< 15	Slight															
	15 - 30	Moderate															
	> 30	Severe															
Shoulders		Slight															
		Moderate															
		Severe															
Roadside Ditches/ Drains		Slight															
		Moderate															
		Severe															
Cross-Drainage Structures		Slight															
		Moderate															
		Severe															
Safety Features		Slight															
		Moderate															
		Severe															
Safe Travel Speed (Km/hr)		40 - 50															
		30 - 40															
		20 - 30															
		10 - 20															
		0 - 10															
Riding Comfort at 50km /hr		Smooth															
		Comfortable															
		Uncomfortable															
		Very Rough															
		and Bumpy															
		Dangerous															

CHAPTER 4

ANNUAL PROPOSALS AND THEIR CLEARANCES

4.1 FUNDING AND ALLOCATION

4.1.1 Once the Core Network is prepared, it is possible to estimate the length of roads for New Connectivity from the CNCP List. Similarly, after the Condition Survey in districts having no new connectivity remaining, it is possible to estimate the length of roads required to be upgraded. States may, each year, distribute the State's Allocation among the Districts distributing atleast 80% to New connectivity Districts on the basis of ratios of road length required for providing connectivity to Unconnected Habitations and not more than 20% to districts with no new connectivity on the basis of ratio of road length requiring Upgradation under the PMGSY. The District-wise allocation of funds would also be communicated by the SRRDA to the Ministry/ NRRDA and to the State Technical Agency, in order to enable the STA to scrutinize the DPRs of the District. Depending on the extent of new connectivity backlog, absorption capacity, position of the ongoing works etc, the State will be asked to prepare DPRs for upto twice the PMGSY allocation.

4.1.2 To ensure due primacy to new connectivity, in case only a few Districts have achieved full connectivity, it is not necessary to distribute the entire 20% among them. A smaller percentage would suffice, based on a simple arithmetical average of what the Districts share would be.

4.2 PROPOSALS

4.2.1 Annual proposals consisting of list of roads eligible under PMGSY are to be finalized by the District Panchayat. As mentioned in Para 3.3.1, based on the DRRP and Core Network, a CNCP List or a CUPL is to be prepared by the PIU/ SRRDA prioritising the list of eligible road works and the annual proposal will be prepared on the basis of the List as follows:

- In States where existing rural through routes are in reasonably good condition (i.e. PCI is generally above 3) the prioritisation of new links will be taken up for construction in the order of the CNCPL. Based on the likely value of proposals required to be submitted, the PIU will mark off the eligible road works in the Order of Priority to the required total value of the District allocations, applying the per km cost based on previous years cost for similar type of work (new connectivity/ Upgradation etc).
- In States where the existing rural through routes are in very poor condition (PCI is generally 3 or less) because of neglect of maintenance, upgradation / renewal of through routes may be taken up as an adjunct to new connectivity and the procedure will be as follows:-

  Step 1: Select the New Connectivity Link as per CNCPL in order of priority.

  Step 2: Identify the rural Through Routes (called associated Through Route) from which the new link is taken off till such road reaches the nearest market centre/ higher category road.

  Step 3: Find out the Pavement Condition of the associated rural Through routes identified in Step 2 (from the PCI register, See Para 14.9).

  Step 4: Decide the type of intervention required based on the PCI. This implies a decision whether the roads leading to the market centre require Upgradation or Surface Renewal or routine Maintenance. Associated Through Routes having PCI 3 and below and 6 years or more old can be taken up for Upgradation/ Renewal. For the roads with PCI above 3, or whose age is less than 6 years, Routine Maintenance or, if due, Renewal will be adequate, unless there are structural / geometrical/ drainage deficiencies which need to be improved through Upgradation.

Step 5: Include all other eligible new links as per Comprehensive New Connectivity Priority List (CNCPL) coming on to the Through Routes identified in Step 3 even if such links are lower in the Order of the Priority. These eligible new links would be the subsidiary link routes.

Step 6: Each project will thus comprise of a sub-network of a primary new connectivity link, the associated Through Route (s) and subsidiary new connectivity links (falling on the associated Through Routes). The project proposal will include new construction for the new links and Upgradation/ renewal of the Through Routes based on age and PCI. Generally each such project would form a package for tendering purposes (all the packages of a particular year would form a Batch for future maintenance purposes).

Step 7: Make a rough estimate of the project cost based on per km construction/ upgradation cost. Through Routes and subsidiary Link routes required to be considered, are also be included while calculating the total value. Take up additional links from the CNCP list and repeat steps 1 to 5 till the total cost of the selected projects cover the District allocation.

- In case of Districts where no new connectivity remains, only the existing rural Through Routes may need Upgradation. In such cases the Comprehensive Upgradation Priority List (CUPL) will apply and road works will be selected out of the CUPL in order of priority, to the extent of the District allocation.
- In drawing up the annual list of the road works, it shall be ensured that the **Order of Priority** for New Connectivity/ Upgradation is strictly followed. The only exception (in new connectivity links) from the order of priority is in respect of those routes of the Core Network that include the Village Panchayat Headquarters or Market Centres or other educational or medical essential services or those which stand notified by the State Government as places of tourist interest. In such cases, new connectivity may be taken up irrespective of the population size.
- A Preliminary Survey should be done by the PIU in all cases to ascertain from the Local Panchayat that land is likely to be available for the road work.

4.2.2 A copy of the CNCPL/ CUPL is sent by the PIU to the Member of Parliament concerned seeking his suggestions for the annual proposals. At least 15 days time may be given. In order to ensure that the prioritisation has some reference to the funding available, the size of proposals expected may also be indicated to the Members of Parliament while forwarding them the List. Para 4.1 gives the basis of District-wise allocation of fund. All States should allocate the amounts accordingly and also further distribute it Block-wise to enable lower level Panchayati Institutions and elected representatives to indicate their choice with the requisite geographical spread. It is expected that such proposals of Members of Parliament which adhere to the order of priority given in Paras 3.3.1 and 3.3.3 would be invariably accepted subject to consideration of equitable allocation of funds as per Para 4.1. (See 4.2.4 below)

4.2.3 The list of proposed road works based on the above will be submitted to the District Panchayat by the PIU. The List will clearly indicate the suggestions received from MPs and the status of eligibility. Along with the estimated cost of construction based on line estimate, the 5 year routine maintenance estimate will also be depicted by the PIU.

The District Panchayat will be requested to indicate its approval, and in case any changes are proposed, the reasons for such changes. The District Panchayat may hold internal consultations or take further suggestions from lower level Panchayat institutions. A time frame may be indicated, generally about 15 days, to enable full consultation. Any suggestions received in the meanwhile from the Members of Parliament shall also be forwarded to the District Panchayat for taking into consideration.

4.2.4 After obtaining the approval of the District Panchayat, the PIU will prepare the MP I and MP II statements and forward them along with the approved list to the SRRDA. While filling up the MP I and MP II formats (Formats at Annexure 4.1), the PIU will ensure that

- All MPs have been duly consulted.
- Proposals of MPs qualifying under the guidelines have been included in the annual proposal list. In case,

for reasons of budgetary constraints, lack of land availability or forest clearance, the District Panchayat has not been able to approve the road work, the specific reason shall be clearly stated in MP II, as to why it is not feasible to take up the work at the present stage.

- Where the road work is relatively low in the Order of Priority, it shall specifically be mentioned as to what the present population level of coverage is, and what the population benefited by the proposed work is, in relation to that.
- In all cases where the proposed road work is not eligible because it is not a rural road; is not the part of Core Network, it connects an already connected habitation; it is being covered under some other programme etc, the specific reason shall be clearly stated in MP II.

4.2.5 Since the State annual allocation is known in general terms, in the interest of speeding up the matter without curtailing the consultative element, even before the communication of the actual allocation from the State Government, the SRRDA may initiate the process in such a way that the District Level Lists are ready by June each year, and the consolidated State list is ready for submission after scrutiny by SRRDA by July.

4.2.6 On receipt of the District proposals list, the SRRDA will scrutinize the list to ensure that

- The road works have been approved by the District Panchayat.
- All the road works are part of the Core Network, follow the order of the CNCPL/CUPL as the case may be, except where the road work is not feasible for specific and justified reasons.
- In case Associated Through Route has been taken up along with a Primary New Connectivity, that all subsidiary New Connectivities as per Core Network has been included.
- The proposals of MPs have been given due consideration and MP I and MP II have been correctly filled in.
- The total value of the proposal (based on the line estimate) is as per requirement.

After proposals from all the districts have been scrutinized and found to be in order, the list along with MP I & MP II will be placed before the State Level Standing Committee. This may be done as soon as District Level allocation is available. At that time the SRRDA shall compile and submit the MP III format. The SRRDA will also compile the likely 5 Year routine maintenance estimate and submit the estimated amount annually required.

4.2.7 The State Level Standing Committee shall normally consider the complete proposal for the State, except that where there is more than one Executing Agency; the matter may be taken up Agency wise. Clearance by the Committee, which is chaired by the Chief Secretary/ Additional Chief Secretary and includes Finance Secretary as a Member is in the nature of Administrative Approval for the works and annual maintenance (based on the line estimate) enabling the preparation of DPRs required for obtaining project funds from the PMGSY. As such the Committee shall

- Review the progress of ongoing works and ensure that the Executing Agency is progressing well in terms of speed and quality.
- Ensure that adequate contracting capacity will be available for the proposed road works.
- Ensure that the proposed road works are fully in accordance with the PMGSY Guidelines.
- Satisfy itself that all necessary clearances can be obtained and policy, funding and procedural issues impeding execution are identified and resolved. In particular, the Committee shall ensure that maintenance of the rural Core Network in general and PMGSY roads in particular are fully catered to.
- Approve the budgeting of the 5 year routine maintenance fund requirement.
- The Committee shall then accord its approval to the proposal. The minutes of the meeting shall be drawn, and copy endorsed to NRRDA as well as SRRDA.

4.2.8 On receipt of the approval of the SLSC, the SRRDA shall communicate the approval to the PIUs and coordinate the process of preparation of DPRs. It shall then:-

- Hold a coordination meeting with STAs and PIUs to determine the schedule for scrutiny of DPRs of the various PIUs. At this meeting issues of Design and DPR preparation can also be usefully discussed (See Chapter 6).
- Determine the funding limits to be allowed to PIUs for preparation of DPRs/ trace cutting and communicate the details to the Bank branches.
- Monitor the progress of preparation of DPRs and ensure that necessary data on DPRs prepared is entered by the PIU in the OMMS data base.

4.3 PREPARATION OF DPRS

4.3.1 The PIU will bear in mind the following Guidelines in preparing the Detailed Project reports in accordance with Chapter 5 **'Design'** of this Manual :

- Rural Roads constructed under the Pradhan Mantri Gram Sadak Yojana must meet the technical specifications and geometric design standards given in the Rural Roads Manual of the IRC (IRC:SP20:2002) and also, where required, the Hill Roads Manual (IRC:SP:48)
- The choice of design and surface for the road would be determined, inter alia, by factors like traffic density, soil type and rainfall, following the technical specifications laid down in the Rural Roads Manual (IRC:SP:20:2002). Normally rural roads would need to be designed to carry upto a limit of 45 commercial vehicles per day (CVPD) only. All cases of design for new construction where a higher traffic is projected need detailed justification. In the case of new construction for eligible Habitations of population below 1000 where traffic expected is likely to remain low (below 15 CVPD), in the interest of economy, the road would generally be designed for a gravel or other unsealed surface as provided in the Rural Roads Manual, subject to considerations of rainfall. In case of new construction to connect Habitations with population below 500 where the projected traffic growth is likely to be very low, the carriageway may further be restricted to 3.0 m.
- Where the road passes through a Habitation, the road in the built-up area and for 50 metres on either side may be appropriately designed preferably as a Cement Concrete Black Pavement Road or Paved with Stones, besides being provided with side drains. Appropriate side drains and cross drainage will be provided, so that improper drainage does not damage the road or the dwellings alongside.
- Wherever locally available materials, including products like Fly Ash are available, they should be prescribed subject to adherence to technical norms and relevant Codes of Practice.
- The Rural Roads constructed under PMGSY must have proper embankment/ drainage. Adequate number of Cross Drainage (CD) works, including cause-ways where appropriate, must be provided based on site requirement ascertained through investigation. Minor bridges may be provided where necessary. In case the length of the bridge exceeds 15m, a separate DPR will be prepared after site inspection jointly by the Superintending Engineer and the State Technical Agency. In case the length of the bridge exceeds 25m, the project will be separately executed by the engineering division of the State Government having jurisdiction and the pro rata costs beyond 25 m and agency charges, if any, will be borne by the State Government.
- In the case of Hill States, the estimates for new construction works may be prepared in 2 parts wherever circumstances so require as under:
  - The first stage will consist of formation cutting, slope stabilization, protection works and drainage works. The second stage will include the WBM layers and bituminous surface course. The second stage may be taken up after two rainy seasons have elapsed to ensure adequate stabilization of the side slopes. The habitations concerned will not be counted as 'connected' till the second stage is taken up.
  - Where 'unsealed' surfaces are adequate in certain conditions like low traffic, the formation cutting, slope stabilization and protection works, complete drainage works and appropriate surface course treatment (to ensure all weather connectivity) will all be included in the first stage and work executed.

In such cases, the habitations will be counted as 'connected' on completion of the first stage itself, as there will be no second stage.

4.3.2 The maintenance component to be funded by the State Government out of its resources will also be provided in the DPR. Annual Lump sum estimate will be made for the routine maintenance items specified in the Rural Roads Manual. As such:-

- In case of link routes (new construction) the component shall comprise of 5 year routine maintenance.
- In case of associated rural Through Routes not requiring upgradation, the component shall include 5-year routine maintenance including one renewal as per cycle.
- In case of Through Routes taken up for upgradation, 5-year routine maintenance and a renewal at the end of the period.

The maintenance component is to be contracted out along with the new construction / upgradation, to the same contractor. In case the Through Route is not a rural road, the same provision will apply to the Main Rural Links (MRL) identified in the Core Network.

In respect of Hill roads, if construction is in 2 stages, the initial 5-year maintenance contracting will be done at the time of contracting the work for the 2nd stage. Interim maintenance, clearance of slips etc., in the period between the 1st and 2nd stage may be done departmentally.

4.3.3 The cost of preparing DPR, including investigation, survey and testing and trace cutting (in case of hill areas) will form part of the project cost, and may be met from the funds in hand with the SRRDA subject to future book adjustment on clearance of the proposal at such rates as may be prescribed by the Ministry / NRRDA from time to time.

4.3.4 The detailed estimates will be based on the State Schedule of Rates (SSR) prepared using the Book of Specifications and Standard Data Book published by IRC and prescribed by the NRRDA.

The State Schedule of Rates (SSR) shall be published annually and used for all rural roads. The Schedule may be District or Circle specific.

4.3.5 As work commences on preparation of DPRs, the PIUs will conduct the Transect Walk (See Chapter 5), and prepare necessary papers to obtain land, forest clearance etc. so that before road work is put to tender, the land for the road is available.

It is the responsibility of the State Government/ District Panchayat to oversee that lands are available for taking up the proposed road works. A certificate that Land is available must accompany the proposal for each road work. It must be noted that the PMGSY does not provide funds for Land Acquisition. However, this does not mean that acquisition cannot be done by the State Government at its own cost. The State Government may also lay down guidelines for voluntary donation, exchange or other mechanisms to ensure availability of land. The process of making land available for the road works should sub-serve the common good and also be just and equitable. The details of land made available should be reflected in the local land records to avoid dispute**.** As far as possible, voluntary donations should be documented through agreements, copy of which should be forwarded to the local revenue officials for making necessary changes in the ownership/ possession record of the land. Specimen of such an agreement is at Annexure 4.2 and 4.3. The States may adopt the appropriate format.

4.4 ENTRY OF DPR DATA ON OMMS

After DPR has been prepared (See Chapter 5) based on soil survey to estimate CBR, and traffic expected (to estimate Annual Average Daily Traffic or AADT), the essential data of the DPR is to be entered by the PIU after logging into the Proposals module of OMMS. The following essential data has to be entered:

- Name of the road (selected from DRRP/Core Network) along with road and habitation data.
- The CBR, AADT values and the design curve being used as per Rural Roads Manual.

- The type of pavement, pavement and CD Costs.
- Year- wise 5 -year routine maintenance cost estimate etc.
- Road construction history and PCI values in case of upgradation of Through Routes.

The STA will scrutinize only such DPRs whose data have been correctly and completely entered in OMMS. (See Chapter 7).

4.5 SCRUTINY BY STATE TECHNICAL AGENCY

The STA will scrutinize each DPR after checking that it has been entered in the proposals module of OMMS. Detailed procedure for scrutiny is given in Chapter 7. After scrutiny, the STA will clear the DPR, make confirmatory entries in the OMMS data for the DPRs and return the DPR documents duly certified and countersigned. In case OMMS data is incomplete or changes are required as a result of the scrutiny, the STA will ask the PIU to make the changes and verify that they have been made before countersigning the DPRs. The PIU will forward the DPRs to the SRRDA after ensuring that the STA has made the confirmatory entry in the OMMS.

4.6 FORWARDING OF ANNUAL PROPOSALS

After scrutiny is complete, the SRRDA will intimate the NRRDA of its readiness to forward the proposals for clearance of the Ministry under PMGSY.

The SRRDA shall send to NRRDA the following information along with the check list (Annex. 4.5) for the purpose:

- Status of Core Network.
- Certificate for Maintenance by State Government.
- Status of Connectivity (District-wise).
- Status of ongoing PMGSY projects.
- Status of Quality Control Monitoring.
- Status of OMMS.
- Details of proposals for the current year.
- Cost of projects (Construction and Maintenance).
- Proceedings of the State Level Standing Committee clearing the proposals.
- Capacity and institutional readiness for the projects.

Annexure 4.4 gives the prescribed formats.

4.7 UPLOADING OF TENDER DOCUMENTS

After compilation of DPRs by PIU, the PIU will prepare the bidding document for every package as detailed in Para 8.6. The above details will be filled up into the Draft Tender Document module of OMMS and draft bidding document will be generated. As soon as the Ministry of Rural Development clearance is received and technical sanction is accorded by the competent authority, the necessary input regarding dates and modifications in respect of other items will be carried out by the PIU in the draft bidding document and the final bidding document will be published on the website.

4.8 The NRRDA will review the status of readiness of the State Government and at the appropriate time shall obtain the date and time from the Ministry for holding of a meeting of the Empowered Committee for the purpose. For this purpose NRRDA shall forward the checklist (Annexure 4.5) with its Comments/ Recommendations regarding completion of the requisite formalities to the Ministry. The NRRDA will communicate the schedule of meeting of the Empowered Committee to the State Government, at least 7 days in advance.

The NRRDA shall at the same time prepare:

(i) A Technical brief for the Empowered Committee on the Proposals (covering design, estimates for construction and maintenance and their reasonability).

(ii) A quality brief on, the Quality of on-going works.

(iii) An IT brief giving details of data on OMMS and their adequacy.

(iv) Financial Management brief, giving details of status of audit and accounts and use of accounting software and

(v) Project brief giving status of ADB/World Bank related activities.

These briefs shall be submitted along with the proposals of the State for scrutiny in a Pre-Empowered Committee Meeting chaired by the Director General, NRRDA and attended by representatives of the State Government.

4.9 In case all required documents are complete and there is no major capacity or institutional deficiency, and data in OMMS has been found to be satisfactory, the proposal is placed before the Empowered Committee. The Empowered Committee may recommend clearance of the proposals in accordance with the requirements of the PMGSY guidelines.

The Ministry will communicate the clearance of the Proposals to the State Government with a copy to NRRDA as well as to the STAs. The clearance letter will enclose package wise details of proposals cleared with details of cost, length, habitations benefited etc. Clearance by the Ministry does not imply Administrative or Technical sanction of the proposals. The well-established procedures of the Executing Agency/ies in this regard would continue to be followed.

4.10 CLEARANCE OF PROJECT ON OMMS

Based on the clearance letter, NRRDA will log into the proposals module and make confirmatory entry clearing the proposals into Project Mode, so that further data entry for tendering can be done by the PIU.

Annexure - 4.1
(See Para 4.2.4)
MP-I

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Proposals received from MPs
(to be filled by PIUs on receipt)

Name of District: **Year:**

Name of MP: **Constituency:**

S. No.	Name of Road Proposed	Whether included in Core Network	Order of Priority

Total no of roads:

Total number of roads included in Core Network:

MP-II

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Action on Proposals of MPs included in Core Network
(to be filled up by PIU after consideration by District Panchayat)

Name of District: **Year:**

#	Name of MP	Name of Road*	Road Code	Order of Priority	Cost (Rs Lakhs)	Whether approved by District Panchayat	Reasons, if not approved

*** Extracted from MP-I in respect of roads in Core Network**

MP-III

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Abstract of MP Proposals for year_____
(To be filled by SRRDA from MP-I & MP-II)

#	Name of MP	Name of District	Value of Proposals for District	No. of Proposals made by MP (as in MP-I)	No. in Core Network	Value of Work in Col (6)	No. of Works approved (as in MP II)	Value approved	Col (9) as percentage of Col (4)	Col (9) as percentage of Col (7)
1	2	3	4	5	6	7	8	9	10	11
	Total for MP :									

Annexure 4.2
(See Para 4.3.5)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

MEMORANDUM OF UNDERSTANDING

This memorandum of understanding is made on _____ day of _____ between Sri _____ son of _____ resident of _____ (hereinafter referred to as "the first party") and the Governor of (State) through Sri _____ (designation) _____ (hereinafter referred to as "second party").

THESE PRESENTS WITNESS AS FOLLOWS:

1. That the first party is landowner with transferable right _____ acre of land bearing khasra No. _____ in village _____ Block _____, tehsil _____, district _____.
2. That the first party hereby grants to the second party above said land for the construction and development of PMGSY road in the village _____ for the benefit of the villagers and the public at large.
3. That the first party would not claim any compensation against the above said grant of land.
4. That the second party agrees to accept the above grant of land for the purposes mentioned in clause 2.
5. That the second party shall construct and develop the PMGSY road and take all possible precautions to avoid damage to land adjacent to PMGSY road.
6. That the first party also assures the second party that the first party will not indulge in any willful act of damaging it or obstructing the movement of public and vehicles on the PMGSY road.
7. That both the parties hereto agree that the PMGSY road so constructed/developed shall be public premises.
8. That the provisions of the MEMORANDUM OF UNDERSTANDING will come into force from the date of signing of this deed.

IN WITNESS WHEREOF the parties hereto have signed this deed on the day and the year first above written.

_____ _____

Signature of the first party
Witness:-

1. _____

2. _____

(Signature, name and address)

Signature for and on behalf of the second party
Witnesses:-

1. _____

2. _____

(Signature, name and address)

Annexure 4.3
(See Para 4.3.5)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Affidavit for land donation

I, _____ wife / son / daughter of Sh. _____, resident of _____ do hereby solemnly affirm and declare as under:-

1. I am the landowner with transferable right of _____ acre of land bearing khasra No. _____ in village _____ block _____, tehsil _____, and district _____.
2. That under the PRADHAN MANTRI GRAM SADAK YOJANA a road is to be constructed, which will be of benefit to all residents of the area. Accordingly, I hereby agree to donate a portion of land, … m long for a width of ….. m (as delineated in the sketch appended to this affidavit by the letters ABCDEF) absolutely and forever.
3. I hereby grant the above said portion of the land for the construction and development of PRADHAN MANTRI GRAM SADAK YOJANA road in the village _____ for the benefit of the villagers and the public at large to Government of _____(State).
4. I/my successors would not claim any compensation against the above said portion of land.
5. I hereto agree that the PRADHAN MANTRI GRAM SADAK YOJANA road so constructed/developed shall be public premises.
6. I hereby commit that this affidavit shall be valid strictly only to the extent of land specified in the affidavit and shall not spillover into the residual holding. In the event of any violation of the same or any damages to structure/assets outside the said portion during the project implementation, the liability towards payment for damages shall be of the DoRD, Government of _____(State).

PLACE : **DEPONENT**

DATED :

I affirm that the contents of the above affidavit are true and correct to the best of my knowledge and belief and nothing has been concealed therein.

PLACE : **DEPONENT**

DATED :

Annexure: 4.4
(See Para 4.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
BRIEF FOR THE EMPOWERED COMMITTEE

Name of the State :

Part I - Institutional

1	Name of the Nodal Department :					
2.	Name of the Executing Agency(ies):					
3.	a) Name of the State Level Autonomous Agency & Date of Registration					
	b) Name & Designation of CEO					
4.	Name & Designation of main SRRDA functionaries					
	a) Chief Engineer					
	b) Financial Controller					
	c) Empowered Officer					
	d) State Quality Coordinator					
	e) IT Nodal Officer					
5	Bank Account with					
	a) Program Account	A / C No				
	b) Administrative Account	A / C No				
	c) Maintenance Account	A / C No				
	d) Status of Utilization Certificates (UC) e) Audit Report (AR)		Year	UC	AR	
6	a) Date of approval of Core network					
	b) whether DRRP entered in OMMS					
	Maintenance					
	a) Mechanism for overseeing maintenance					
	b) Maintenance budget & expenditure for Rural Roads		Year	Budget	Exp	Of which Exp. On PMGSY Roads

Part II – Progress under PMGSY

1. Status of Connectivity

	1000+	500-999	250-499	Less than 250	Total
Total number of Habitations					
Total number of Connected Habitations (as on 25-12-2000)					
Total number of Unconnected Habitations (as on 25-12-2000)					
Coverage of Habitations					
2000-01 (Phase I)					
2001-03 (Phase II)					
2003-04 (Phase III)					
2004-05 (Phase IV)					
Under other Programs					
Balance Unconnected Habitations					

2. PMGSY 2000-01 & Subseqent Years:

		2000-01	2001-03	2003-04	2004-05	2005-06
Allocation (Rs. in crore)						
Value of projects cleared (Rs. in crore)						
Amount released (Rs. in crore)						
BMS Works (Rs. in crore)						
Total No. of road works						
Total length of road works						
Total No. of Habitations benefited						
New Connectivity	Cost (Rs. in crore)					
	No. of road works					
	Length (km)					
	Number of Habitations covered					
Upgradation	Cost (Rs. in crore)					
	No. of road works					
	Length (km)					
	Number of Habitations covered					
Progress						
Total Expenditure upto (Date)						
Total No. of road works completed						
Total Length of roadworks completed						
Total No. of Habitations benefited						
Likely date of completion						
New Connectivity	Expenditure upto _____ (Rs. in crore)					
	No. of road works completed					
	Length of road works completed (km)					
	Number of Habitations benefited					
Upgradation	Expenditure upto _____ (Rs. in crore)					
	No. of road works completed					
	Length of road works completed (km)					
	Number of Habitations benefited					

☛ **It may be ensured that the information given in the website tallies with the information above at Sl.No. 1 & 2.**

3.a) Quality Control Monitoring by 2nd tier State Level Quality Control Agency (SQC):

Sl. No.	Name of District	Total No. of road works in the district	Total No. (& %) of Road works inspected by SQC	Quality Grading No & (%)									
				Complete					In Progress				
				P	A	G	VG	Total	P	A	G	VG	Total
	Total												

Note: P – Poor. A – Average. G – Good. VG – Very Good.

ii) Details of State level Quality Control Mechanism

iii) Status of District Labs

iv) Action on NQM Reports

- No. of reports received
- No. of reports on which action taken
- No of cases of action pending with Contractor (with details of penalty)

4. OMMS Data entry (as on)

Item	Actual	As entered in OMMS

5. Training:

Year	No of Trained			Contractor Personnel
	JE	AE	EE / SE	

Part III Current Proposals

1. Details of Proposals :

		Year ( )	
Allocation (Rs. in crore)			
Value of projects proposed (Rs. in crore)			
Total No. of road works			
Total length of road works			
Total No. of Habitations benefited			
New Connectivity Works	Cost (Rs. in crore)		
	No. of road works		
	Length (km)		
	Number of Habitations covered		
	Average cost per km		
Upgradation	Cost (Rs. in crore)		
	No. of road works		
	Length (km)		
	Number of Habitations covered		
	Average cost per km		
Maintenance	Year	Estimated Cost (Rs. in Lakhs)	% of Construction Cost
	1st Year		
	2nd Year		
	3rd Year		
	4th Year		
	5th Year		
	Total		

2. Special Cases [Roadworks included in S No. 1 above] :

a) Cement Concrete Roads :

Sl. No.	Name of District	No. of road works	Length of road works (in km)	Cost (Rs. in lakh)	Average cost (per km)
Total					

b) Modified Bitumen Roads:

Sl. No.	Name of District	No. of road works	Length of road works (in km)	Cost (Rs. in lakh)	Average cost (per km)
Total					

c) Gravel Roads :

Sl. No.	Name of District	No. of road works	Length of road works (in km)	Cost (Rs. in lakh)	Average cost (per km)
Total					

d) Lime / Cement Stabilized Roads :

Sl. No.	Name of District	No. of road works	Length of road works (in km)	Cost (Rs. in lakh)	Average cost (per km)
Total					

e) Fly Ash Stabilized Roads :

Sl. No.	Name of District	No. of road works	Length of road works (in km)	Cost (Rs. in lakh)	Average cost (per km)
Total					

f) Any others (please specify) :

Sl. No.	Name of District	No. of road works	Length of road works (in km)	Cost (Rs. in lakh)	Average cost (per km)
Total					

3. District-wise summary of proposals attached (Format enclosed - Annexure 7.2)

4. Details of MPs Proposals: (MP-I and MP-II enclosed)

Based on MP-III Totals :

Name of MP	Road works taken on recommendation		% of value to total Value
	No	Value	

Total :

Signature
Secretary
Nodal Department

Annexure 4.5
(See Para 4.6 & 4.8)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
CHECK LIST FOR DATE FOR EMPOWERED COMMITTEE

State_____ Phase_____

Annual Allocation_____ Value of proposals_____

1.	Core Network ready	Yes	No
2.	Whether DRRP data entered in OMMS	Yes	No
3.	CNCP/CUP list used	Yes	No
4.	(a) Whether proposals approved by District Panchayat	Yes	No
	(b) Whether proceedings of SLSC attached	Yes	No
5	DPRs scrutinised and entered in OMMS	Yes	No
6	If upgradation included, whether PCI register Completed	Yes	No
7	Whether designed for unsealed surface for roads below 1000 population	Yes	No
8	MP I, II and III received	Yes	No
9	5-year maintenance lump sum estimates given year-wise	Yes	No
10	(a) Whether estimates prepared using latest SSR for Rural Roads (b) Date of SSR:	Yes	No
11	DPR clearance Okayed in OMMS by STA	Yes	No
12	Whether Draft Tender Document uploaded in proposals module	Yes	No
13	Whether capacity currently exists to take up the works (Please give status of on-going works)	Yes	No
14	Whether IPAI Accounts system adopted	Yes	No
15	For Border /LWE areas: Whether recommended by MHA	Yes	No

16 In case of ADB/WB proposals

(a) Value of proposals in relation to approved size of batch	Yes	No
(b) Whether ECoP etc. applied	Yes	No
(c) Whether sub-projects cleared by TE/PIC &STA	Yes	No

17. Remarks: _____

_____

CE, SRRDA

18. Comments/Recommendation of Director (Technical) NRRDA

_____

_____

CHAPTER 5

DESIGN

5.1 ROUTE SELECTION AND ALIGNMENT

The District Rural Roads Plan gives guidance on the general topology of the network of rural roads required to connect all eligible rural habitations. This will have to be translated on to the ground in the form of properly aligned road links.

The IRC: SP 20:2002, Rural Roads Manual gives detailed guidance on selection of the alignment. The following supplementary points need to be kept in mind at the time of alignment definition: -

- In order to minimise/ avoid land acquisition, the alignment should follow existing cart tracks and footpaths to the maximum extent possible, subject to considerations of geometrics and hydrology.
- It is always useful to consider 2 or 3 possible route alignments and evaluate each alternative for the construction costs to be incurred and related benefits accrued, before finalising an alignment. By adopting such an approach, many unfavourable features can be avoided like long length covered by problematic soils (e.g., Black Cotton soils), too many cross-drainage works, high cost bridges, landslide susceptible slopes on hill roads etc. Similarly, the ease with which the desired geometric design standards can be attained may vary from one alternative to another alternative.

5.2 GEOMETRIC DESIGN STANDARDS

The IRC Rural Roads Manual gives the geometric design standards to be followed. Particular attention is required in adopting the Carriageway Width (CW) based on traffic volume considerations. Once the CW is fixed, compatible Roadway (RW) and Road Land Width (RLW) will have to be provided. Where traffic is likely to be very low as in short roads terminating in dead ends, and is not likely to increase substantially in future, a carriage way of 3.0 m may be designed instead of the normal 3.75 m.

5.3 TOPOGRAPHICAL AND RELATED GROUND SURVEYS

The recommended ground survey technique comprises of three sequential stages viz (i) Reconnaissance (ii) Preliminary Survey and (iii) Final Location Surveys.

5.3.1 Reconnaissance starts with a field inspection by walking, riding on ponies (in hills) or driving in jeeps. All information of value, either in design, construction, maintenance or operation of the facility should be collected, which may include, *inter alia*, the following:

- Details of route vis-à-vis topography of the area – plain, rolling or hilly.
- Requirements of cross-drainage works – type, number and length.
- Gradients that are feasible, specifying the extent of deviations needed.
- Curves and hair-pin bends etc.
- Existing means of communication – mule tracks, jeep tracks, cart tracks etc.
- Constraints on account of built-up areas, monuments and other structures.
- Road length passing through different terrains, areas subjected to inundation and flooding, areas of poor drainage conditions, unstable slopes etc.

- Climatic conditions – temperature, rainfall, water table and its fluctuations etc.
- Facilities/ Resources available e.g., availability of local labour, contractors etc.
- Access points indicating possibility of induction of equipment.
- Period required for construction.
- Villages, hamlets and market centres connected.
- Economic factors – population served, agricultural and economic potential of the area.
- Crossing with railway lines and other existing roads.
- Position of ancient monuments, burial grounds, cremation grounds, religious structures, hospitals and schools etc.
- Ecology or environmental factors.

Only simple instruments like Compass, Abney level, Altimeter, Clinometer, Ghat tracer etc are required in the Reconnaissance survey.

5.3.2 Preliminary survey is a relatively large-scale investigation of the alternative(s) thrown up as a result of the Reconnaissance survey. The survey consists in establishing a base-line traverse. For hill roads, it may be necessary to cut a trace of 1.0-1.2m wide to enable the traverse survey to be carried out. A theodolite or compass is used for traversing and levels are taken along the traverse and across it. The distances are measured continuously along the traverse line with a metallic tape. Bench marks should be established at intervals of 250 m to 500 m and the level should be connected to the GTS datum. Physical features such as buildings, trees, burial grounds, monuments, railway lines, canals, drainage channels etc should be located by means of offsets. The width to be covered for such detailing should be about the land width proposed to be acquired. Information on highest flood level, rainfall intensity, catchment areas of streams etc should be collected. The survey enables the preparation of a map including the plan and longitudinal section. The scales generally recommended are:

- Built-up areas and hilly terrain : 1:1000 for horizontal scale
  1:100 for vertical scale
- Plain and rolling terrain : 1:2500 for horizontal scale
  1:250 for vertical scale

It is desirable to mark the contour intervals at an interval of 1 to 3m. The map should show all the physical features surveyed.

5.3.3 At the end of the preliminary survey, it is useful to involve the local community in the process of deciding on the alignment since several social issues are also involved. As such the JE/AE must conduct a Transect walk along the alignment /trace together with the Panchayat Pradhan/ Ward Panch, local revenue and forest officials. For the purpose, the following steps are suggested:-

- The AE/JE may intimate the Gram Panchayat Secretary as soon as the preliminary survey operations start so that the Panchayat gives it due publicity.
- Date and time for the transect walk may be decided by the AE in consultation with the Pradhan of the Panchayat/Ward Panch and may be put up by the Panchayat as a public notice. The AE will intimate the local revenue official (Patwari) and local forest official (Ranger) and the Secretary of the Panchayat.
- The Transect Walk will be conducted by the AE/JE along with the contour map of the proposed alignment (s). The Patwari will identify all the plot numbers (Khasra No) and distinguish between Government /Public land and Private land. All lands likely to involve Forest (Conservation) Act and other regulatory forest enactments shall be identified in consultation with the Ranger. Where Private land is required, it shall be procured in a manner that is just and equitable and best subserves the common good. The local Panchayat may be involved in the process.

- If possible, borrow areas and areas likely to require protection/treatment shall be identified. Areas suitable for road side plantation by the Panchayat may also be similarly identified.
- Local people including those likely to be affected by the proposed alignment may be given opportunity to put forth their views. Issues relating to cattle crossings, irrigation field channels, integration of inter-village and field paths with the alignment, road safety, drainage measures to prevent damage to agricultural fields and dwellings will all be discussed.
- The proceedings of the Transect Walk reflecting all of the above will be drawn up by the AE/JE and countersigned by the Panchayat Secretary. A list of Plot Numbers involved along with area and ownership/ possession status shall be provided by the Patwari and appended to the proceedings.

5.3.4 Final Location Survey: - After the preliminary survey and Transect Walk, the final alignment is to be determined. The purpose of the final location survey is to fix the centreline of the selected alignment in the field and to collect additional data for the preparation of the drawings. The centreline is translated on the ground by continuous transverse survey and pegging the same. The points of transit (POT) should be clearly marked on the ground by a nail in the existing pavement or a hub in concrete on a new alignment. Suitable references (at least two) should be marked permanently on the ground. The horizontal intersection points (HIP) should be similarly marked on the ground and referenced. All curve points viz beginning of transition (BS), beginning of circular curve (BC), end of circular curve (EC) and end of transition (ES) should be marked and referenced. The centreline should be staked at 50 m intervals in plain terrain and 20m intervals in hilly terrain. Bench marks should be left permanently at 250 m intervals. The cross-sections taken during the preliminary survey should be supplemented by additional cross-sections at the curve points. Generally, cross-sections should be available at intervals of 50-100m in plain terrain, 50-75m in rolling and 20 m in hilly terrain. Survey can be accomplished these days by a Total Station, with assistance from GPS (Geographic Positioning System) which determines the location of survey points by satellite. But in the absence of these instruments, an ordinary theodolite, levelling instrument and compass would be acceptable.

5.4 SOIL SURVEY AND MATERIALS

The IRC Rural Roads Manual SP: 20 contains instructions on Soil Survey and materials for the road projects. Supplementary guidance on these subjects is given in Annexure 5.1.

The identification of the soil type in the field and the quick determination of its properties , including CBR are the basic requirement for an economical pavement design. The grain-size (wet sieve) analysis leading to the soil classification is a simple test and must be carried out to have an idea of the CBR value with a reasonable level of accuracy, the nomograph given in Annexure 5.2 can be used. This would minimise the need for CBR determination in lab. The determination of CBR by a rigorous CBR apparatus on a large number of samples may not be possible unless properly planned, and hence the Nomograph given in Annexure 5.2 may be used.

5.5 CROSS-DRAINAGE STRUCTURES

The Rural Roads Manual contains instructions on the suitability of various types of cross-drainage structures. Generally, the provisions of the Rural Roads Manual are adequate for CD Structures for Rural Roads. However, when special CD Works are needed due to location specific conditions, such CD Structures are to be designed after appropriate exploratory investigations. In such cases, a separate DPR is to be prepared for the CD Works as a part of the main DPR for the sub project proposal.

5.6 TRAFFIC SURVEY

A traffic survey is needed for existing roads that are proposed for upgradation in order to estimate the extent of pavement strengthening. Such surveys may also be useful in prioritising maintenance activities The purpose of the traffic survey is to establish the Average Annual Daily Traffic (AADT). Traffic is likely to be the highest in the post-harvest season. But the survey cannot always wait till the post-harvest season, and has to be taken up immediately after a particular project is identified for being included in that year's programme. If the traffic survey is done in a lean season, local enquiry should be done to ascertain the post-harvest traffic, particularly

of agricultural tractor-trailers, LCVs and trucks, and necessary adjustments for traffic are to be made for seasonal variation.

Since rural roads have hardly any traffic during night time, a 16-hour (say 5 AM to 9 PM) 3-day classified volume count is sufficient. Hourly count is not of importance and a daily total is adequate. The standard proforma is given in Annexure 5.3(a&b). The output of this survey is the base year traffic.

Based on the historical data or by elasticity method, the Growth rate is arrived at and using this Growth rate, the base year traffic is projected to obtain the design traffic for the horizon year. Normally a 10 year design life is considered for Traffic Projections.

For new roads, which give access to unconnected villages, it is not possible to carry out an actual traffic survey for the road. But, the traffic likely to use the facility can be taken from the traffic counts on newly constructed roads of similar conditions. As an approximation, the following categories may be generally adopted:

Traffic (Average Annual Daily Traffic-AADT) projected over 10 years

- New link roads taking off from existing roads. Less than 150
- New through roads directly leading to Market centres. 150-500

The AADT above signifies the Average Annual Daily Traffic consisting of all motorised and non-motorised vehicles, including two-wheelers. For pavement design, only commercial vehicles need to be considered. These form generally 10-15 percent of the ADT. Accordingly, the link roads proposed for new connectivity shall be designed for A Curve (0-15 CVPD) and in certain cases B Curve (15-45 CVPD). In case of new through routes, the design will be normally done with B Curve (15-45 CVPD). Only in exceptional cases would the design traffic be of Curve C (45-150 CVPD). Each such case needs to be substantiated with reasons. In estimating the base year traffic due care is to be taken in adjusting the traffic for seasonal variations with the use of suitable adjustment factors.

As part of the database for each rural road, a traffic count needs to be carried out atleast once in 2 years and the traffic data updated for each road in the OMMS.

5.7 USE OF LOCAL MATERIALS

Recognising that the low volume rural roads are essentially low cost roads, the specifications for pavement materials in various layers should be as economical as possible, consistent with the traffic expected to use the road, the climatic conditions etc. From this angle, local materials which are cheaper to extract and involve minimum haulage cost should be used to the maximum extent feasible. A variety of local materials can be used which may be grouped under the following categories.

- Better granular soil for use on improved subgrade/ sub-base or as surfacing for earth roads.
- Mechanical stabilisation of local soil with blending of different materials; stabilisation with lime, cement, lime and flyash, as appropriate.
- Naturally occurring low grade marginal materials like moorum, kankar, gravel etc.
- Brick and over burnt brick metal.
- Hard stone aggregates.

Past experience gained from long-term performance of test tracks in India on the use of local materials shows that for the same pavement thickness, the use of local materials in lieu of the conventional hard stone aggregates can bring about savings to the tune of 25% of conventional construction costs. In situations where hard stone aggregates have to be carted from long distances of the order of 200 km, the maximised use of local materials can bring about savings in material costs to the extent of even 40% of the conventional material costs. Some of the more important points in the use of these materials are discussed in Annexure 5.4.

In most of the regions where black-cotton soil is predominant (parts of Karnataka, Andhra Pradesh, Maharastra, Gujarat, Madhya Pradesh and Chhattisgarh), it is very economical to stabilise the soil by adding lime, and such

layers can be used as sub-base courses. For base courses, further addition of a small quantity of cement/ fly ash could be beneficial. The same treatment can be applied to areas with clayey soil in the delta regions of Orissa and West Bengal. For the silty soils of the Gangetic plains, cement stabilisation can be a good alternative to the costly stone aggregates courses in the sub-base and base courses.

Flyash can replace upto 50 percent of cement in concrete roads, which then become viable alternative to flexible pavement, particularly in areas where stone aggregates are costly and soils are poor. Fly-ash shall also be used in the body of the embankment provided it is possible to provide a cover of soil at least 1000 mm thick on the slopes and 500mm below the bottom layer of pavement. Lime-flyash stabilised courses can be used as subgrade and sub-bases.

5.8 ROADSIDE SHOULDERS

Adequately designed shoulders should be provided on rural roads. In case soft soils are used for embankment, hard shoulders of 1 m width shall be provided on either side. Where availability of land is not a constraint, extra width of shoulders can be provided near bus stops and to provide platforms for storing material during maintenance.

5.9 DRAINAGE

One of the very important reasons for a very rapid loss in the level of serviceability of most of the rural roads in the country is the lack of attention to appropriate drainage. It is basically due to the lack of proper drainage that the maintenance requirements of a rural road rise rapidly even during the early years of its service life. The modern trend is to incorporate maintenance considerations at the design stage itself. Ensuring proper drainage during the design life is considered one of the most essential pre-requisites for a satisfactory performance of the road during its service life.

Provision of adequate drainage should be considered more of an investment than an expenditure, since it yields benefits by way of more economical designs and much reduced subsequent maintenance costs.

It is mandatory under PMGSY to have a drainage plan prepared for each rural road project. Annexure 5.5 gives guidelines for achieving good drainage of Rural Roads. The following points must be taken into the design of Rural Roads:

- Provide the specified camber both for the carriageway and the shoulder. Shoulders should never be allowed to be higher than the pavement.
- Roadside drains, with proper longitudinal slopes leading the water to cross drains and hence to a natural water course, must be provided.
- When the road passes through a village, keep the road level high, with side drains on both sides to ensure proper drainage and to prevent water from entering dwellings. The drains should be open L Shaped drains or U shaped depending upon site conditions.
- In hill roads, provide lined (dry stone lining) side drains to avoid scour, as well as interceptor drains (catch water drains).
- Integration of cross-drainage and longitudinal drainage is essential in the project.
- Hydrological design of waterway considering afflux, scour due to restricted water way is essential. High afflux causes flooding of up-stream and excessive scour on the downstream.
- Water balancing culverts (average 2 Km per Km) needs to be provided in areas which do not have a well defined water channel to drain out rain water.

5.10 PAVEMENT CRUST DESIGN

5.10.1 Design Methodology for New Connectivity Roads: The design of the crust thickness for new connectivity roads is as suggested in the Rural Roads Manual IRC SP:20:2002. Special care is to be taken while assessing the design parameters, namely the CBR of subgrade soil and projected traffic for the design life period in terms of CVPD.

When Local materials are used with or without stabilization, material characterization is required for determining the thickness of the layers used in the design.

The choice of surface for the road would be determined by traffic density and rainfall, as per the Rural Roads Manual. In the case of new construction for eligible habitations of population below 1000, where traffic expected is likely to remain low, in the interest of economy the road would generally be designed as Gravel road or other Unsealed surfaces provided in Rural Roads Manual subject to considerations of rainfall. In case of roads leading to habitations below 500 (where eligible) where the projected traffic is likely to be very low, the carriageway may further be restricted to 3 m.

5.10.2 Design methodology for Upgradation roads: The Upgradation of the existing roads include strengthening the crust with an overlay, Geometric improvements and improvements in surface drainage or additions of CD Works, where necessary. The data needed on an existing road proposed to be upgraded should include:

- Pavement condition as explained in the Chapter 14 dealing with Rural Roads Maintenance.
- Shoulder condition and Shoulder width or combined pavement and shoulder condition, as explained in the Section dealing with Rural Road Maintenance.
- Pavement design of the existing road.
- Geometric design of existing road.
- Existing surface and cross drainage.
- Materials and soil properties.
- Climatic conditions.
- Traffic studies.
- Safety considerations.
- Age of the road with records of routine maintenance and periodic surface renewals.

5.10.3 Pavement Design: The suggested methodology for design of Pavements for Upgradation is as given below:

(i) Determine the field moisture content and the field density, after the rains, at a distance of 0.6m to 1 m from the pavement edge, below the pavement crust. Collect a representative subgrade soil sample for laboratory tests.

(ii) The field moisture content and field density determinations as at (i) above must be carried out at a number of locations, not less than 3 per Km length of the road if the same type of soil and drainage conditions prevail. For different types of soils and for different sets of drainage conditions, the number of field tests must be suitably increased.

(iii) Prepare laboratory CBR samples of subgrade soil conforming to the density and moisture content determined from field tests as described at (i) and (ii) above, for each of the locations selected for the tests.

(iv) Determine the CBR value of subgrade soil for each location selected for field tests as at (i) and (ii) above.

(v) Evaluate the Traffic parameter by carrying out 24 hour field traffic counts during the lean season and during the harvesting seasons, finally arriving at the Commercial Vehicles per Day (CVPD). A suitable rate of growth of traffic can be selected depending on the economic potential of the area but bearing in mind that in most cases traffic levels would have plateaued.

(vi) For each of the subgrade CBR values at (iv) above, determine the pavement thickness requirement corresponding to the traffic parameter evaluated as at (v) above. Let the pavement thickness requirements at each of the locations 1,2,3…….(at different chainages) applicable in the corresponding lengths be T_1, T_2, T_3——

(vii) Determine the thickness of the pavement in the existing road at each of the above locations of the field tests 1,2,3…….Let these be t_1, t_2, t_3 ———. Also examine the thickness and quality of subbase and base materials in the existing pavement.

(viii) The amount of strengthening / overlay thickness required is thus T_1-t_1; T_2-t_2; T_3-t_3; ——. The type of material in the layers for the overlay will depend on the residual subbase and base materials used in the existing pavement and will be adopted in the corresponding lengths of the road.

5.10.4 Geometric Design: There may be geometric deficiencies in the alignment, either horizontally or vertically. These would have to be seen on a case-by-case basis depending on the severity of the problem, road safety implications, availability of land etc.

Upgradation may require widening of the carriageway to 3.75 m in case the earlier width was less. This will also require corresponding road way width of 7.5 m and land width of 11-12 m. While formation width may not always be available it must be ensured that in all upgradation cases roadway width of 7.5 m is available (except in habitation portion). The design of the pavement must take into account the difference in the over lay crust thickness over the existing pavement and in the widened portion. Due to changes in centre line etc. appropriate changes in the surface profile and camber will also have to be designed, where necessary.

5.10.5 Drainage: It is possible that the road to be upgraded may suffer from inadequate side drains or lack of integration of the drains with the cross drainage. In adequate cross drainage (in terms of number of CDs, their proper siting or their capacity) may also need to be addressed. Inspection of the road will generally reveal the nature of the deficiency and necessary hydrological investigations may be made in the case of CD Works.

5.11 SOME IMPORTANT ISSUES IN THE DESIGN

5.11.1 Geometric Design-

It has been indicated that the geometric standards for Rural Roads are to be as given in IRC SP 20:2002. However, practical difficulties sometimes normally arise in providing the recommended geometrics due to non-availability of land, with no scope even for acquisition. In such cases, efforts must be made to provide the geometrics within the land available by shifting the centre line to the extent possible. If even after this, Standard Geometrics like Radius of Curvature, gradient etc. cannot be provided for the normal design speed, the geometrics are to be designed as per the ground conditions and the corresponding safe speed determined. Appropriate signboards must be erected on either side indicating the **safe speed** at which the vehicles can travel in such stretches. In addition at accident prone locations, speed reducing devices such as rumble strip should be provided.

5.11.2 Pavement Design-

- The estimation of design parameters is the most important issue in the design of pavement. It has been noticed quite often that there is a tendency to estimate the design CBR on the conservative side and also to inflate the amount of traffic expected. The combined effect of this is over design of the pavement, which in turn is reflected in higher costs of construction. This engineering skill of the PIU lies in ensuring quality with economy. Not only must CBR be estimated properly, the conditions in which it is to be estimated also need to be consciously determined. It is always not necessary to adopt 4 day soaked CBR for design, since this represents the worst condition of design. Depending upon the pattern of conditions prevailing at the site, the CBR may be determined at the equilibrium moisture content (Annexure 5.6) in cases where the sub grade is not likely to come in contact with water either due to capillarity or through percolation from the top. Similarly, the estimation of base year traffic should be done judiciously taking guidance from the recently constructed roads in similar conditions. The traffic must have some correlation with the agricultural surplus of the area and its expected growth rate.
- When marginal aggregates and locally available material are used, special care should be taken in material characterization. While adopting a particular method of stabilization, the efficacy of use of the most suitable stabilizing agent is to be established and accordingly used in the design. Detailed specifications are available for various methods of stabilization in the publication ‘Specification for Rural Roads’ published by the IRC.

- In the conditions where the lead distance for bringing the aggregates is high, alternative methods of aggregate free construction or limited use of aggregates shall be explored.

5.11.3 Design of CD Structures-

- The proper location of the CD works and their design with proper estimation of expected discharge from the catchments is extremely important. The type of CD Structure is to be decided based on the site conditions. Type designs sometimes may lead to problems at a later stage. Therefore, care must be taken in the location of CD Works, estimation of discharge and designing appropriate CD Structure.
- The possibilities of adopting causeways need to be fully explored where minor /major bridges are proposed, for cost effectiveness.

Annexure 5.1
(See para 5.4)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

SOIL SURVEY

1. The Need

For the construction and maintenance of low cost rural roads catering to relatively low volumes of traffic, local soil is not only the cheapest but also the highly versatile road material which can be used directly or after suitable processing or by modification or stabilisation by additives. It is, therefore, necessary that the needed field and laboratory investigations are carried out to scientifically evaluate the engineering properties of the various types of soils encountered adjacent to the centreline of the alignment. These investigations are needed for the evaluation of the strength of subgrade soil(s) for pavement design and to determine the type of processing that may be necessary for its use in a pavement layer. It is to be recognised that the procedures for both the field and laboratory investigations should be simple enough as would be practicable within the available resources and skills in rural areas. Available information on soil types of an area in the form of soil maps (Refer Map given in IRC : SP-20 : 2002) is often helpful.

2. Field Investigations

In order to evaluate the types of subgrade soils, field investigations should be carried out along the alignment so as to collect representative soil samples wherever there is a visible change in the soil type. Even if the same soil type continues, at least 2 representative samples should be collected from each kilometre length of road alignment. In its simplest form, the method of collecting soil samples consists in digging a pit about 1mx1mx1m. Within this pit, it should be possible to determine the depth of topsoil and the soil type(s) underneath. Generally, it is possible to get acceptable quality of soils within about 0.6m depth below the ground level, which can be used in the subgrade and even in subbase/base courses. It is necessary to collect representative soil samples for the different soil strata as visible from the test pit. Ordinarily, the depth of the pit should not be more than 1m and must not exceed 1.5m since the depth of borrow pits normally would be limited to 1.5m. It is often expedient to use a post hole/helical auger (Fig. 1) with or without the digging of pit to a certain depth. It must be ensured that the samples collected are representative of soils to be evaluated. Samples of adequate size (2 to 5kg for gradation and plasticity tests; 20kg where detailed strength tests like CBR are to be carried out). All samples should be collected in sample bags on which the location, depth of strata etc should be tagged.

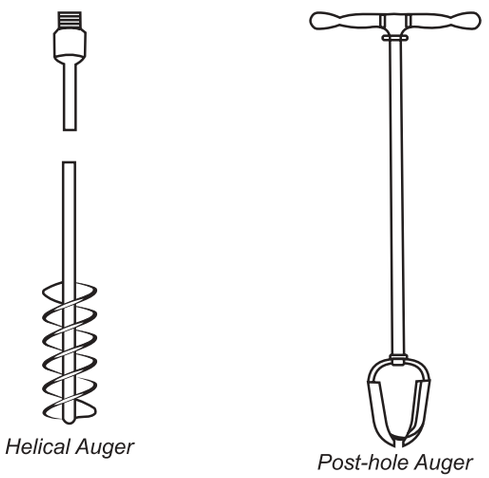


Fig. 1: Hand-Operated Augers (A) Helical Auger (B) Post-Hole Auger

3. Visual Classification

In order to identify the broad soil types in the field without any laboratory testing, a visual classification is recommended. The following are the categories of soils visually categorized (Fig. 2).

Gravels : These are coarse materials with particle size over 2.36 mm. These may have little or no fines contributing to cohesion of the material.

Moorums : These are distinctly different materials from gravels and are products of decomposition and weathering of the parent rock. The properties of these materials naturally depend on the parent rock and the process of weathering and decomposition. Visually they look like gravels except for the difference that the percent fines is relatively much higher.

Sands : These vary in texture from coarse to fine but exhibit no cohesion. They allow water to permeate readily through them.

Silts : These are finer than sands in texture; lighter in colour compared to clays and exhibit little cohesion. Dilatancy is a specific property of silts. When a lump of silty soil mixed with water is alternatively squeezed and tapped, a shiny surface makes its appearance (Fig. 3).

Clays : These are finer than silts and are the ultimate product of weathering and decomposition of parent rock. Clay and clayey soils exhibit stickiness, high strength when dry and show no dilatancy. Black cotton soils and other expansive types of clays exhibit swelling and shrinkage and are characterised by a typical shrinkage pattern. A paste of clay with water when rubbed in between fingers leaves a stain which is not observed for silts (Fig. 4).

FIG. 2 : VISUAL CLASSIFICATION OF SOILS AND GRAVELS (TOP-LEFT TO RIGHT) CLAY, SILT AND SAND. (BOTTOM-LEFT TO RIGHT) MOORUM WITH EXCESSIVE FINES, MOORUM AND GRAVEL

FIG. 3 : DILATANCY TEST FOR SILTY SOILS

FIG. 4 : HAND-FEEL 'STAIN' METHOD FOR TESTING CLAYEY SOILS

The field procedure for visually identifying the soils as per the Unified Soil Classification System developed in the USA and adopted in India with slight modifications, is outlined in Table 1. The various symbols in this classification system are :

G : Gravels; S : Sands; M : Silts; C : Clays; O : Organic Soils; Pt : Peat; W : Well-graded; P : Poorly Graded; L : Low Compressibility; H : High Compressibility.

The three field identification procedures for fine grained soils or fractions are described below. Before carrying out any of these tests, remove by hand the coarse particles that interfere with the tests.

(1) Dilatancy (Reaction to shaking):

After removing particles larger than 380 mm sieve size, prepare a pat of moist soil with a volume of about 8000mm^3. Add enough water if necessary to make the soil soft but not sticky.

Place the pat in the open palm of one hand and shake horizontally, striking vigorously against the other hand several times. A positive reaction consists of the appearance of water on the surface of the pat which changes to a livery consistency and becomes glossy. When the sample is squeezed between the fingers, the water and gloss disappear from the surface, the pat stiffens and finally it cracks or crumbles. The rapidity of appearance assists in identifying the character of the fines in a soil.

Very fine clean sands give the quickest and most distinct reaction whereas a plastic clay has no reaction. Inorganic silts, such as a typical rock flour, show a moderately quick reaction.

(2) Dry Strength (Crushing characteristics):

After removing particles larger than 380 mm sieve size, mould a pat of soil to the consistency of putty, adding water if necessary. Allow the pat to dry completely by oven, sun or air drying, and then test its strength by breaking and crumbling between the fingers. This strength is a measure of the character and quantity of the colloidal fraction contained in the soil. The dry strength increases with increasing plasticity.

High dry strength is characteristic for clays of the CH group. A typical inorganic silt possesses only very slight dry strength. Silty fine sands and silts have about the same slight dry strength, but can be distinguished by the feel when powdering the dried specimen. Fine sand feels gritty whereas a typical silt has the smooth feel of flour.

(3) Toughness (Consistency near plastic limit):

After removing particles larger than the 380m m sieve size, a specimen of soil about 12mm cube in size, is moulded to the consistency of putty. If too dry, water must be added and if sticky, the specimen should be spread out in a thin layer and allowed to lose some moisture by evaporation. Then the specimen is rolled out by hand on a smooth surface or between the palms into a thread about 3mm in diameter. The thread is then folded and re-rolled repeatedly. During this manipulation the moisture content is gradually reduced and the specimen stiffens, finally loses its plasticity, and crumbles when the plastic limit is reached.

After the thread crumbles, the pieces should be lumped together and a slight kneading action continued until the lump crumbles. The tougher the thread near the plastic limit and the stiffer the lump when it finally crumbles, the more potent is the colloidal clay fraction in the soil. Weakness of the thread at the plastic limit and quick loss of coherence of the lump below the plastic limit indicate either inorganic clay of low plasticity, or materials such as kaolin-type clays and organic clays which occur below the A-line.

Highly organic clays have a very weak and spongy feel at the plastic limit.

4. Laboratory Classification

The two simple tests to be carried out for laboratory classification as per Indian Standard classification system are:

(i) Sieve Analysis (Particle size distribution).

(ii) Plasticity Index (PI).

These simple tests are briefly outlined below:

(i) Sieve Analysis

The particle size distribution is by far the simplest way of broadly classifying a soil in terms of its being granular (gravelly soils), medium grained (sandy soils) and fine grained (silts and clays). The sieve analysis consists simply in taking a weighed quantity of the sample, soaking it in water overnight and washing out the finer fraction through 75 micron IS Sieve. The fraction retained is dried and then passed through a series of sieves (12 in number as specified by Indian Standards). However, for the rural road works, a set of 7 sieves (ISS 40mm, 20mm, 10mm, 4.75mm, 2.36mm, 425 micron and 75 micron) is recommended. To be able to broadly evaluate the particle size distribution of a soil even three sieves namely 2.36mm, 425 micron and 75 micron may suffice. While a mechanical shaker is generally used in well-equipped laboratories, manual shaking of sieves is considered sufficient if carried out for a period not less than three minutes.

(ii) Plasticity Index

(a) **Liquid Limit**: The test is carried out in a standard Casagrande liquid limit (LL) device in which a cup containing a grooved specimen is made to fall on a rubber plate. The number of blows to close the groove to a length of about 12.5mm is determined for different moisture contents. The liquid limit i.e., the moisture content corresponding to 25 blows is determined from a plot between the number of blows and moisture content.

Table 1

Field Identification Procedures : Unified Soil Classification System

Field Identification Procedures (Excluding particles larger than 75µm and basing fractions on estimated weights)						Group Symbols	Typical Names	Information Required for Describing Soils
Coarse-grained soils More than half of material is larger than 75 µm sieve size	(The 75 sieve size is about the smallest particle visible to naked eye)	Gravels More than half of coarse fraction is larger than 4 mm sieve size.	Clean gravels (little or no fines)		Wide range in grain size and substantial amounts of all intermediate particle sizes	*GW*	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface conditions, and hardness
					Predominantly one size or a range of sizes with some intermediate sizes missing	*GP*	Poorly graded gravels, gravel-sand mixtures, little or no fines	
			Gravels with fines (appreciable amount of fines		Non-plastic fines (for identification procedures, see ML below	*GM*	Silty gravels, poorly graded-sand-silt mixtures	
					Plastic fines (for identification procedures, see *CL* below)	*GC*	Clayey gravels, poorly graded gravel-sand-clay mixtures	For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics. Example: *Silty sand*, gravely; about 20% hard, angular gravel particles 12 mm maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; *(SM)*.
		Sands More than half of coarse fraction is smaller	Clean gravels (little or no fines)		Wide range in grain sizes and substantial amounts of all intermediate particle sizes.	*SW*	Well graded sands, gravely sands, little or no fines	
					Predominantly one size or range	*SP*	Poorly graded sands, gravely sands, little or no fines	
			Gravels with fines (appre-ciable amount		Non-plastic fines (for identification procedures, see *ML* below)	*SM*	Silty sands, poorly graded sand-silt mixtures	
					Plastic fines (for identification procedures, see CL below)	*SC*	Clayey sands, poorly graded sand-clay mixtures	
Fine-grained soils More than half of material is smaller than 75 µm sieve size.		Silts and clays liquid limit less than 50	Dry Strength (crushing characteristics)	Dilatancy (reaction to shaking)	Toughness (consistency near plastic limit)			
			None to slight	Quick to slow	None	*ML*	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity.	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses.
			Medium to high	None to very Slow	Medium	*CL*	Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays.	
			Slight to medium	Slow	Slight	*OL*	Organic silts and organic lilt-clays of low plasticity.	For undistributed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions
		Silts and clays liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	*MH*	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	
			High to very high	None	High	*CH*	Inorganic clays of high plasticity, fat clays.	Example: *Clayey silt*, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; *(ML)*
			Medium to high	None to very slow	Slight to medium	*OH*	Organic clays of medium to high plasticity.	
Highly Organic Soils			Readily identified by colour, odour, spongy feel and frequently by fibrous texture.			*Pt*	Peat and other highly organic soils	

(b) **Plastic Limit**: The moisture content at which a soil water mix, when rolled into a thread on a glass plate, starts crumbling at 3mm diameter gives the plastic limit (PL) of the soil.

The numerical difference between liquid limit and plastic limit is the plasticity index (PI). Thus, it is determined from the liquid limit and plastic limit values of soil. A rough estimate of this can also be made using Uppal's Syringe. A soil paste is made by adding water to soil such that water is above the plastic limit of soil. This paste is put into the syringe and pushed out through the holes in the cap. Depending upon the texture of the thread, the PI can be estimated as under: -

- Shiny surface and continuous thread: PI>11.
- Rough surface and broken threads PI 5 to 11.
- No thread formed PI > 5.

The Indian Soil Classification System (IS : 1498) is essentially the same as the Unified Soil Classification System except with a slight modification in the classification of fine-grained soils (Fig. 5).

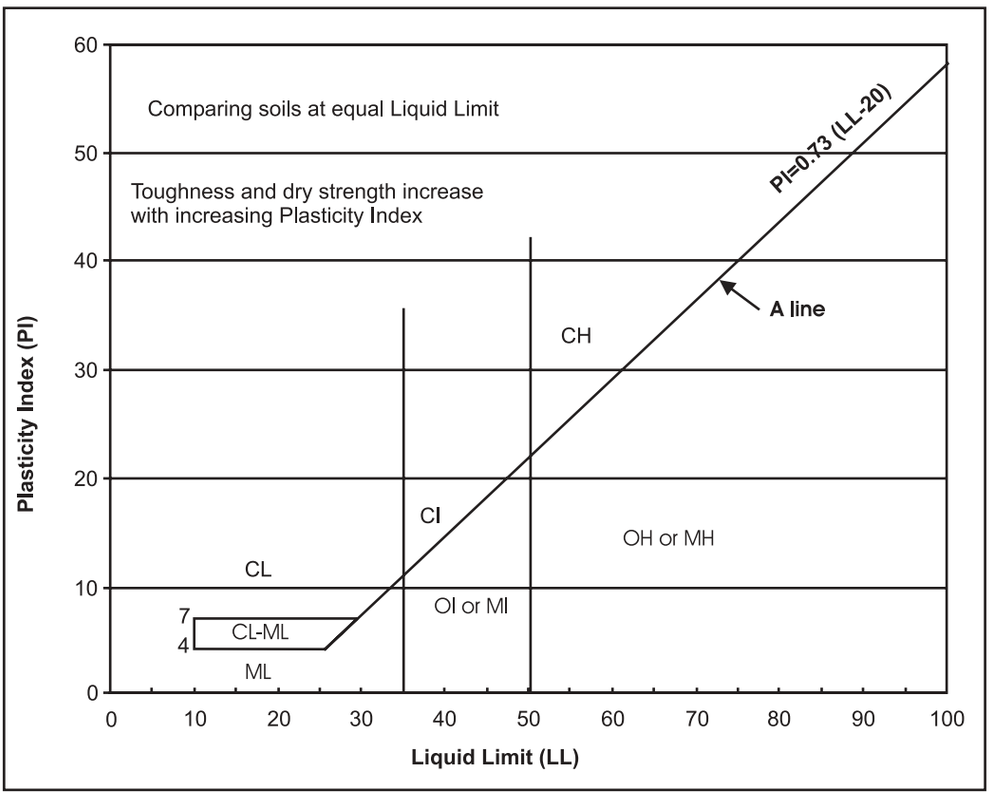


FIG. 5: PLASTICITY CHART FOR LABORATORY CLASSIFICATION OF FINE-GRAINED SOILS.

Table 2

Unified Soil Classification System

Description			Group Symbols	Laboratory Criteria			
				Fines (%)	Grading	Plasticity	Notes
Coarse grained (more than 50% larger than 63 mm BS or No. 200 US sieve size)	Gravels (more than 50% of coarse fraction of gravel size)	Well graded gravels, with little or no fines	GW	0-5	C_u>4 $I<C_C<3$		Dual symbols if 5-12% fines. Dual symbols if above A-line and 4< PI<7
		Poorly graded gravels, sandy gravels, with little or no fines	GP	0-5	Not satisfying GW requirements		
		Silty gravels, silty sandy gravels	GM	>12		Below A-line or PI<4	
		Clayey gravels, clayey sandy gravels	GC	>12		Above A-line and PI>7	
	Sands (more than 50% of coarse fraction of sand size)	Well graded sands, gravelly sands, with little or no fines	SW	0-5	C_u>6 $I<C_C<3$		
		Poorly graded sands, gravelly sands, with little or no fines	SP	0-5	Not satisfying SW requirements		
		Silty sands	SM	>12		Below A-line or PI<4	
		Clayey Sands	SC	>12		Above A-line and PI>7	

While describing a soil type, the group symbols given in Tables 1 and 2 should be used and the use of non-engineering terms like red soil, hard soil, black soil, weak soil etc. should be avoided.

The broad classification of soils (as per IS) into Gravels, Sands, Silts and Clays based on particle seizes is as under:

CLAY	SILT	SAND			GRAVEL
		Fine Sand	Medium Sand	Coarse Sand	
0.002mm (2 micron)	0.075mm (75 micron)	0.425mm (425 micron)		2.0 mm	4.75 mm

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

MATERIAL SURVEY

1. General

All-India surveys carried out for different types of soils and low grade materials in different parts of the country reveal that there is a wide variety of soil types as well as gravels, moorums and naturally occurring soft aggregates which can be used to advantage in rural road construction. The distribution of a wide variety of naturally occurring low grade materials/ soft aggregates is shown at Fig. 8. Traditionally, hard stone has been and is still being used as a road material for all categories of roads including the low-volume rural roads. In general, hard stone has all the attributes of a good construction material, both in regard to strength and durability, but its sources are fast depleting. Moreover, in many parts of the country the leads involved are so long that they make the material costs prohibitive. It is, therefore, necessary to go in for locally available low grade materials especially for rural roads where the construction costs are to be kept low so as to enable full connectivity to all rural habitations within a reasonable time frame. In the class of low grade materials are included various types of soils encountered; sands from streams/ river beds and other sources; moorums which may even be available at shallow depths below the ground level or from other quarries; gravels, well spoils, soft aggregate like laterite, kankar, dhandla, river sand-gravel mixes etc. To this list can also be added the local availability of waste materials like flyash etc.

2. Field Surveys

While locations of the PWD/Zilla Parishad approved quarries of stone metal can be obtained from the district headquarters, the quarries for locally available low grade materials like the ones mentioned in para 4.5.1 are generally not known but local enquiries from villagers etc can help a great deal in this regard. Samples of other locally available materials like lime, that could possibly be used as soil stabiliser should also be collected. It is necessary to ensure that the samples collected from quarries of low grade materials are truly representative of the material(s) being evaluated. The samples would have to be subjected to strength tests like CBR besides the classification tests and, therefore, should be about 20 kg in weight. The location and depth of the strata from where the sample has been collected must be tagged on to the sample bag. Besides the quality, it is also essential to assess the quantity of material that would be available from the quarry. In general, the locally available low grade materials can be quite variable in their engineering characteristics. This aspect, naturally has significant implications in the construction and performance of roads. The site quality control of materials can be exercised meaningfully only if sampling and testing of these locally available materials has been carefully done and the design values arrived at judiciously based on laboratory strength values.

3. Material Testing

The samples of locally available low grade materials should be subjected to the following laboratory tests:

(i) Sieve Analysis (Particle Size Distribution).

(ii) Plasticity Index.

(iii) Proctor Compaction.

(iv) CBR.

(v) Aggregate Impact Value.

(vi) Deleterious Material : In areas infested with harmful salts and containing organic matter, special tests to determine their approximate content need to be carried out, in addition to the above tests.

The laboratory tests at (i) and (ii) have been briefly outlined in Section 4.3. The remaining four are described below:

(iii) Proctor Compaction

This test is conducted to determine the achievable density in the field and the optimum moisture required for compaction. It is conducted in a standard Proctor apparatus. The soil sample (passing through 20 mm) is compacted in three layers giving 25 blows on each by a standard rammer (weight 2.5 kg, fall 30 cm) at five different moisture contents. From the plot between moisture content and dry density (Fig. 6), the optimum moisture content and maximum dry density are determined.

It may be pointed out here that for rural road works, the Standard Proctor Compaction (light compaction) test is relevant (as per IS : 2720 Part 7) and there is no need to go in for Modified AASHTO or heavy compaction test as per IS : 2720 Part 8, which is recommended for heavily trafficked/ highway works.

(iv) CBR

CBR as a parameter is extensively used for the design of flexible pavements in India. The test is carried out on a sample compacted at optimum moisture content to maximum dry density and soaked for 4 days. In case of stabilised soil specimen (with lime/cement), the specimen is cured for 7 days prior to 4 day soaking. The CBR of the specimen is computed from the load needed for 2.5 mm/ 5 mm penetration of a standard plunger determined from the graph between penetration and load. If required, the zero correction is applied for penetration while computing the load for 2.5 mm/ 5mm penetration (Fig. 7).

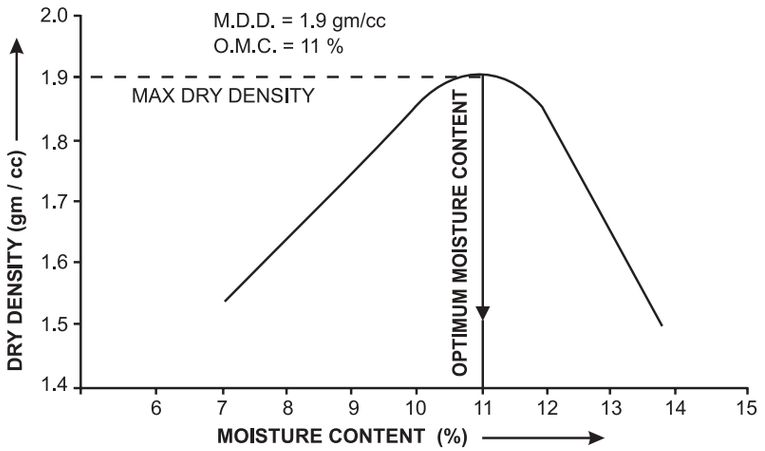


FIG. 6: MOISTURE-DENSITY RELATIONSHIP

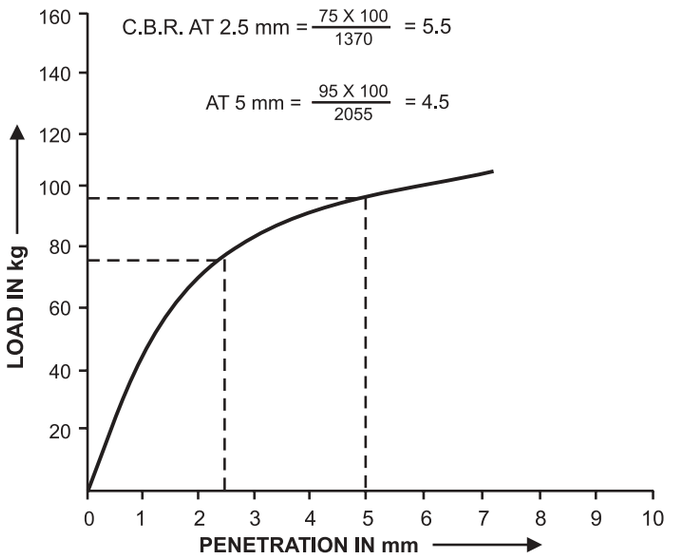


FIG. 7: TYPICAL LOAD-PENETRATION CURVE FOR A CBR TEST

(v) Aggregate Impact Value

The test is done on the coarse fraction in soil-gravel or on stone and soft aggregates. The crushing produced in an AIV test apparatus by a rammer (13.5 kg) when it falls 15 times through 375 mm on the sample (Passing 12.5 mm and retained on 10 mm ISS) is determined by sieving the sample through 2.36 mm IS Sieve. The AIV of sample is expressed as percentage of the material passing through 2.36 mm IS Sieve to the weight of sample taken. A rough estimate of AIV can also be made from the moisture absorption by aggregates in 66 hrs.

Moisture Absorption less than :	Approximate AIV Less than
1.5%	30%
3.0%	40%
6.0%	50%

(vi) Deleterious Material

The presence of organic matter and harmful salts like sulphates also need to be evaluated. Presence of organic matter can be detected by its smell and dark colour, in case of fibrous materials. The organic content can be determined by burning a weighed quantity of soil and noting the loss on ignition. The presence of sulphates can be detected by adding a few crystals of barium chloride to the filtrate of soil suspension in water. If a white precipitate is formed, this gives an indication of the presence of sulphates. From the extent of milkiness of the solution, an approximate evaluation of sulphate content can also be made.

Sodic soils can be easily detected by dipping an inexpensive pH determining strip into a solution of the soil sample in water and comparing the changed colour of the strip with a standard colour chart. If pH value is estimated to be over 8.5 from the colour chart, the soil is sodic in nature and unsuitable for use (i) as an embankment material (ii) as filler in WBM and (iii) in roadside earthen shoulder.

4. Suitability Criteria for Materials

The samples of soils/ soil-gravel/ aggregates collected during the material survey are tested in the laboratory to confirm their suitability for use in the different pavement layers. The criteria regarding the suitability of these materials for gradation, plasticity and strength requirements have been outlined in the Rural Roads Manual. However, considering the constraints in rural areas, these have been simplified and are given at Table 3.

In case the available materials meet the requirements as outlined at Table 3, these can be used as such. Otherwise, the local materials have to be processed with a view to improve their engineering properties so that these can be incorporated in the lower layers of road pavements. The various methods which can be adopted to improve the local soils and inferior aggregates are shown in Fig. 8.

Table 3

Gradation & PI Requirement for Sub-base, Base and Wearing Courses (Ref. 5)

Sl. No.	Fraction	Percent (by Weight)
1.	**Sub-base/base courses**	
(a)	Gradation requirements	
(i)	Passing 40 mm and retained 2.36 mm IS Sieve	45-65
(ii)	Passing 2.36 mm and retained 75 micron IS Sieve	30-40

(iii)	Passing 75 micron IS Sieve	5-15

(b) The Plasticity Index of the fine fraction (passing 425 micron IS Sieve) should be less than 6.

2. Wearing Course

(a)	Gradation requirements	
(i)	Passing 40 mm and retained 2.36 mm IS Sieve	30-60
(ii)	Passing 2.36 mm and retained 75 micron IS Sieve	30-50
(iii)	Passing 75 micron IS Sieve	10-25

(b) PI Requirement :

	Climate	**Liquid Limit not to exceed**	**Plasticity Index (Range)**
(i)	Moist temperature and wet tropical	35%	6-9
(ii)	Seasonal wet tropical	40%	6-15
(iii)	Arid	55%	15-30

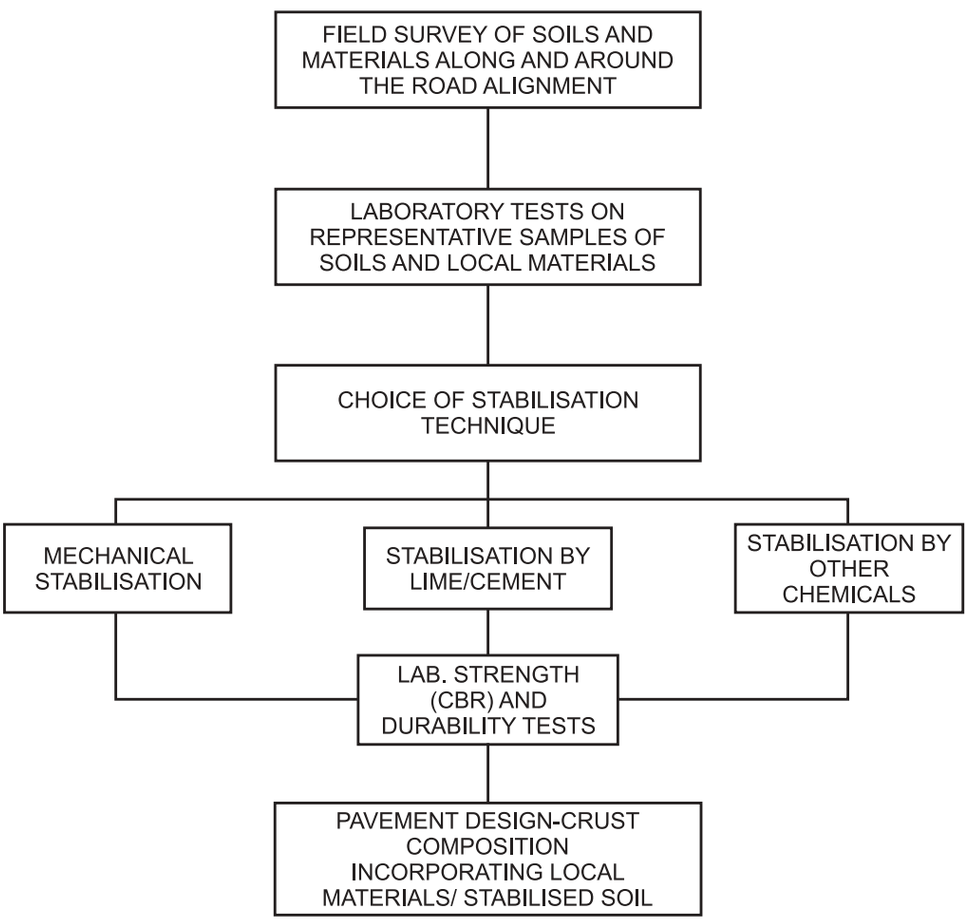
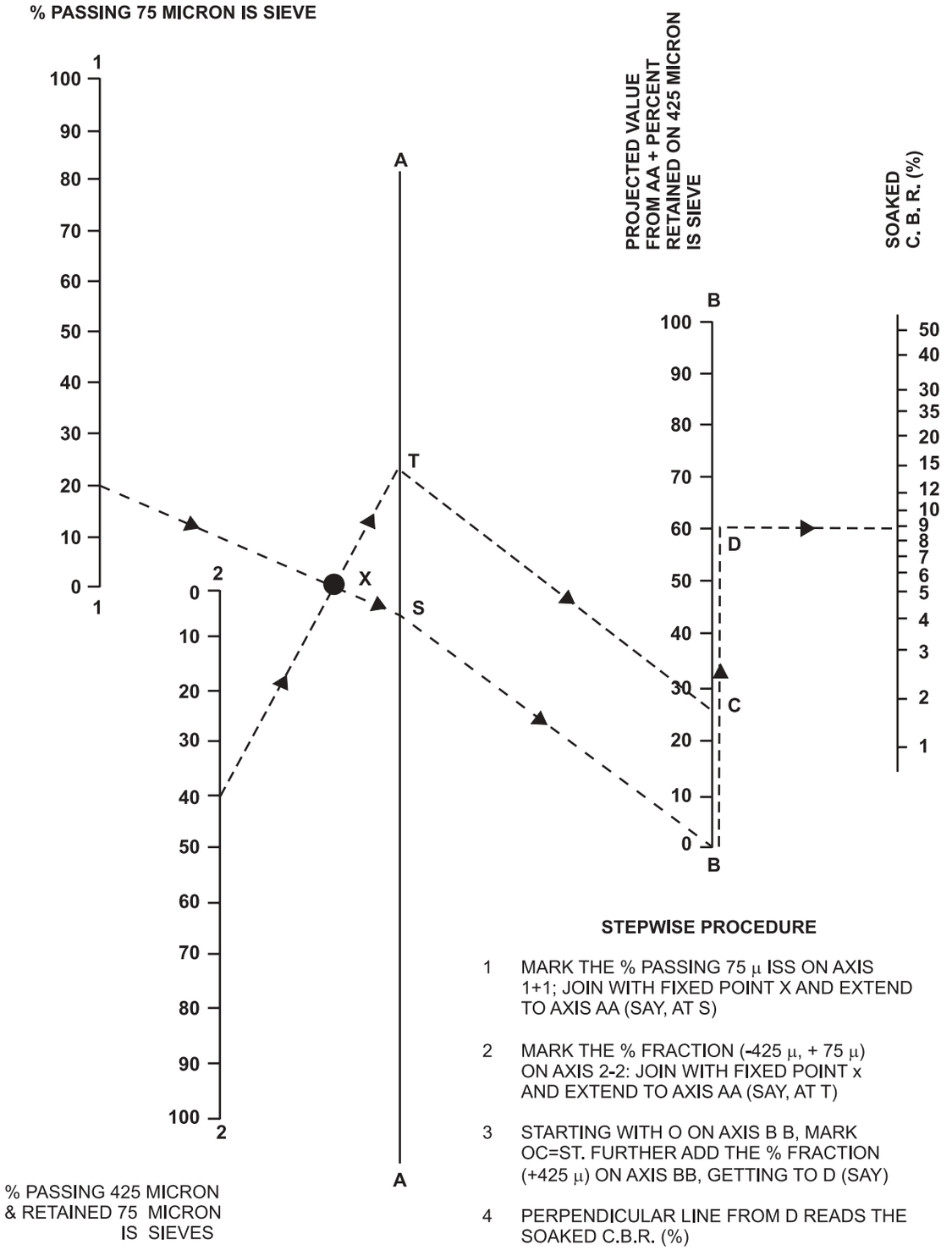


FIG. 8: SOIL STABILISATION TECHNIQUES

Annexure 5.2
(See Para 5.4)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
NOMOGRAPH FOR COMPUTING "SOAKED CBR" VALUE FROM SIEVE ANALYSIS DATA



STEPWISE PROCEDURE

1 MARK THE % PASSING 75 μ ISS ON AXIS 1+1; JOIN WITH FIXED POINT X AND EXTEND TO AXIS AA (SAY, AT S)

2 MARK THE % FRACTION (-425 μ, + 75 μ) ON AXIS 2-2: JOIN WITH FIXED POINT x AND EXTEND TO AXIS AA (SAY, AT T)

3 STARTING WITH O ON AXIS B B, MARK OC=ST. FURTHER ADD THE % FRACTION (+425 μ) ON AXIS BB, GETTING TO D (SAY)

4 PERPENDICULAR LINE FROM D READS THE SOAKED C.B.R. (%)

Annexure 5.3(a)
(See Para 5.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
FIELD DATA SHEET FOR TRAFFIC CENSUS

Name of Road :

Location on Road : Km

District :

State :

Hour	Vehicle Class									
	Animal Drawn Vehicles	**Cycles**	**Cycle Rickshaws**	**Motorised two-wheelers**	**Cars, Jeeps, Vans, Three-wheelers**	**Agricultural Tractors/ Trailers**	**Light Commercial Vehicles**	**Trucks**	**Buses**	**Remarks Season : Post Harvest Monsoon) Weather :**
From Hrs. To Hrs.										
From Hrs. To Hrs.										
From Hrs. To Hrs.										
From Hrs. To Hrs.										
Total for day										

Record traffic volume by tally marks [four vertical strokes followed by a diagonal stroke for the 5th vehicle (𝍸 𝍸 II)]

Annexure 5.3(b)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SUMMARY OF 3-DAY COUNTS

Name of Road :

Location on Road : Km

District :

State :

Day	Vehicle Class									
	Cars, Jeeps, Vans, Three-wheelers	**Motorised two-wheelers**	**Light Commercial Vehicles**	**Trucks**	**Agricultural Tractors/ Trailers**	**Buses**	**Cycles**	**Cycle Rickshaws**	**Animal Drawn Vehicles**	**Total**
Day 1 (Date)										
Day 2 (Date)										
Day 3 (Date)										
Total										
Average Daily Traffic										
PCU Factor	1.0	0.50	1.5	3.0	1.5	3.0	0.5	2.0	4.0 for Horse Drawn 6.0 for Bullock drawn	
Average Daily Traffic PCUs										

Annexure 5.4
(See Para 5.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

GUIDELINES ON USE OF LOCAL MATERIALS

1. Use of Better Granular Soil

Well-graded soils with low plasticity index values have better engineering properties and should be reserved for use as improved subgrade/ sub-base or surfacing in the case of earth roads. Such soils can be identified by their high Proctor density and low PI values.

2. Stabilisation of Local Soils

A variety of techniques are available for stabilising local soils for improving their engineering properties, but not all the techniques are applicable to all types of soils. A brief description of the stabilisation mechanism and applicability of the individual techniques are given in Table 1. This may be referred to for choosing the most appropriate technique for stabilising the soil at site. The mix proportions are generally worked out in the laboratory based on soaked CBR value.

Table 1

Mechanism and Requirements of Soil Stabilisation Techniques

Sl. No.	Technique	Mechanism	Application
1.	Mechanical stabilisation	Blending missing fractions (e.g., clay with sand and sand with clay) so as to produce a mass of maximum possible density with plasticity within limits. A smooth grading similar to that given by Fuller's grading rule* is adopted to work out the proportion of the missing fractions to be blended.	Sands, moorum/ gravel having missing fractions and clayey soils can be stabilised by this technique.
2.	Lime stabilisation	Lime in hydrated form reacts with the clay minerals in the soil to cause (i) immediate reduction in plasticity and increase in CBR because of cationic exchange, flocculation and agglomeration, which may be reversible under certain conditions, and (ii) long term chemical reaction with the clay minerals to produce cementitious products which bind the soil for increased strength and stability.	Medium and heavy clays having a PI of at least 10 and containing at least 15% of materials finer than 425 micron are suitable. However, some soils though containing clay fractions may not produce the long-term chemical reaction because of the presence of organic matter (> 2%), or soluble sulphate/carbonate (> 0.2%) etc. For lime stabilisation to be successful, it will be desirable to test the soil for lime reactivity. A soil whose 7-day unconfined compression strength increases by at least 3 kg/cm^2 with lime treatment can be considered lime reactive.
3.	Cement stabilisation	The hydrated products of cement binds the soil particles, the strength developed depending on the concentration of cement and the intimacy with which the soil particles are mixed with cement. A high cement	Generally, granular soils free of high concentration of organic matter 2% deleterious salts (sulphate and carbonate <0.2%) are suitable. A useful rule for soil selection is that the plasticity modulus (product

Sl. No.	Technique	Mechanism	Application
		content of the order of 7-10% can produce a hard mass having a 7-day compressive strength of 20 kg/cm^2 or more, and this usually goes by the term soil-cement. However, a smaller proportion of 2-3% cement can improve the CBR value to more than 25, and the material going by the term "cement-modified soil" can be advantageously used as sub-base/base for rural roads.	of PI and fraction passing 425 micron sieve) should be less than 250 and that the uniformity coefficient should be greater than 5.
4.	Lime-flyash stabilisation	Lime chemically reacts with the silica and aluminium in flyash to form cementitious compounds, which bind the soil.	Soils of medium plasticity (PI 5-20) and clayey soils not reactive to lime can be stabilised with lime and flyash.

* Fuller's grading rule is given by :

$$\text{Percent passing sieve} = 100 \times \left[\frac{\text{aperture size of sieve}}{\text{size of the largest particle}}\right]^{1/2}$$

3. Use of Naturally Occurring Low-grade Marginal Materials

Low grade marginal materials like moorum, kankar, dhandla, laterite etc where available within economic leads, should be made use of in pavement construction to the maximum extent feasible. The material may occur in a graded form or as discrete blocks or admixtured with soil. Water Bound Macadam (WBM) is one of the most common specifications being adopted for construction of sub-base, base and surfacing courses. Broken stone, crushed slag, overburnt brick metal, laterite or kankar of acceptable quality can be used as the coarse aggregate for WBM. The manner of using these is indicated in Table 2.

Table 2

Manner of Using Soft Aggregates in Pavement Construction

Sl. No.	State of Occurrence of Material	Manner of using in pavement Construction	Test/ Quality Requirements
1.	In block or large discrete particles	As water bound macadam without screenings/ filler in accordance with IRC : 19, after breaking the material into required sizes.	Wet aggregate impact value (IS : 5640) not to exceed 50, 40 and 30 when used in sub-base, base and surfacing respectively.
2.	Graded form without appreciable amount of soil	Directly as a granular layer for sub-base/ base or surfacing.	PI should be 4-9 when used as surfacing and should not exceed 6 when used in lower courses. Evaluated for strength by soaked CBR.
3.	As discrete particles mixed with appreciable amount of soil such as soil-gravel mixtures.	Directly as soil-gravel mix for sub-base, base or surfacing.	The material should be well graded and the PI restricted as for Sl. No. 2. Evaluated by soaked CBR.
Notes on Improving the engineering properties: (i) Improving gradation – Sieving out sizes not required and blending with missing fractions. (ii) Reducing plasticity – Stabilisation with lime (iii) Improving strength – Materials with appreciable soil fraction can be stabilised with lime (where PI is high), lime-flyash or cement.			

4. Use of Bricks and Overburnt Brick Metal

In alluvial plains where hard stone aggregates are normally not available within economical leads, the general specification adopted for sub-base and base courses is to provide brick soling. Either flat bricks or bricks on edge or broken brick ballast can be used depending on the thickness requirements. The bricks should be of good quality and well burnt. Before laying flat bricks or brick-on-edge, it is desirable to provide a cushion of sand above the earth subgrade.

5. Other Waste Materials

Many other waste materials like quarry waste, marble slurry dust, other metallic slags are available in many parts of the country. Laboratory and field studies conducted on some of these materials have indicated that such materials can be utilised for construction of lower layers of pavement and/ or embankment. However, before embarking on use of such materials, detailed characterisation and design of mix through a reputed laboratory would be needed.

Annexure 5.5
(See Para 5.9)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

GUIDELINES FOR DRAINAGE OF RURAL ROADS

QUALITY OF DRAINAGE

Like any other design parameter, it is necessary to define the level of drainage to be provided which will eventually reflect in the time taken for the water to be removed from the pavement structure. AASHTO definition of the quality of drainage is given in Table 1.

Table 1

Quality of Drainage

Quality of Drainage	Water Removed Within
Excellent	2 hours
Good	1 day
Fair	1 week
Poor	1 month
Very Poor	Water will not drain

Even though low volume rural roads are essentially low-cost roads, the funds invested on aiming at “Good” quality of drainage will eventually pay handsome dividends both by way of more economical pavement designs and more importantly, by way of significantly reduced maintenance costs. Only in certain conditions, where the cost of providing “good” drainage becomes prohibitive, could the “Fair” quality of drainage be acceptable.

Principles of Good Drainage

Some of the basic principles of drainage design are briefly outlined below:

- The surface runoff over the pavement surface and the shoulders should be drained away as quickly as possible, preventing the water from finding entry into the pavement layers from the top and into the subgrade from the top and the sides.
- Precipitation over the open land adjoining the road should be led away from the pavement structure through natural drainage channels or artificial drains. Suitable cross-drainage channels should be provided to lead the water across the road embankment which may be cutting across to the natural drainage courses.
- Consideration should be given to deal with the precipitation on the embankment and cut slopes so that erosion is not caused.
- Seepage and subsurface water is detrimental to the stability of cut slopes and bearing capacity of subgrades. An effective system of subsurface drainage is a guarantee against such failures.
- Landslide-prone zones deserve special investigations for improving drainage.
- Relatively poor embankment soils can perform satisfactorily if drainage is considered in the design.
- Water-logged and flood-prone zones demand detailed consideration for improving the overall drainage pattern of the area through which the road is aligned.

Provision of Surface Drainage

For an effective surface drainage system, it must be ensured that the following measures are taken on all PMGSY roads:

(a) Cross-slope or camber on the carriageway must be ensured by means of a Camber Board (Fig. 1) at all times to conform to the standards laid down in the Rural Roads Manual. The cross-slope of the shoulder should be 1% steeper than the cross-slope of the carriageway, subject to a minimum of 4%.

(b) Longitudinal drainage should also be ensured, despite the provision of adequate cross-slopes, for better internal drainage of pavement layers, especially granular materials and in cut sections. Similarly along vertical curves, the drainage considerations are of great importance and in some cases, the length of the vertical curve may have to be adjusted to satisfy drainage requirements. For most conditions, a minimum 0.3% longitudinal gradient is considered adequate.

(c) It is absolutely essential to provide roadside drains/ ditches to collect the surface water from the roadway (and lead it to an identified outlet) and also to drain the base of the roadway to prevent saturation and loss of support for traffic.

Roadside drains/ ditches should be constructed and maintained in accordance with the following :

- provide enough area to accommodate storm flow and depth enough to drain the base course.
- protect the surface of ditches from erosion with turf cover or other suitable lining.
- keep velocities low enough to prevent erosion but great enough to prevent deposition or silting.
- maintain a continuous and unobstructed waterway.
- provide stable outlets to natural channels or drainage ditches.

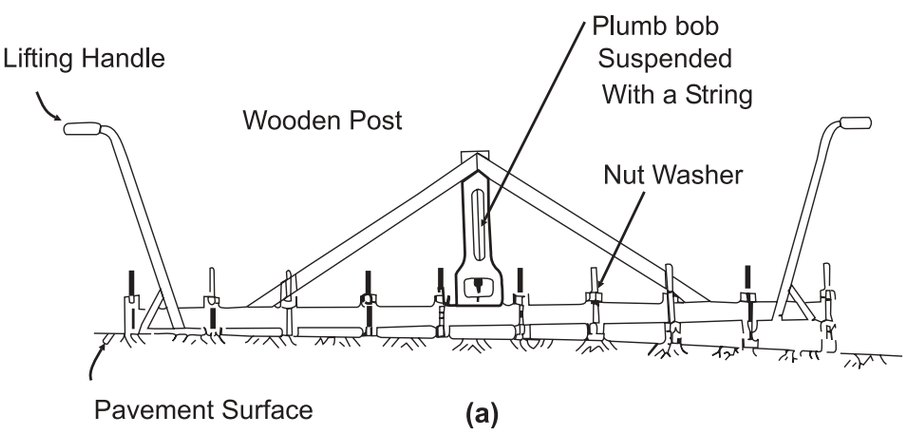
The design of the roadside drains/ ditches can be done in the following step-by-step manner (the needed formulae, design tables and charts etc are available in the Rural Roads Manual) (Ref. 3) :

(i) From the known soil type, arrive at the value of Manning's Rugosity coefficient, side slopes and the maximum permissible velocity.

(ii) Determine the slope from the topography.

(iii) For the given discharge, calculate the hydraulic mean depth from Manning's formula.

(iv) Find out the cross-sectional area from the given discharge and the maximum permissible velocity.



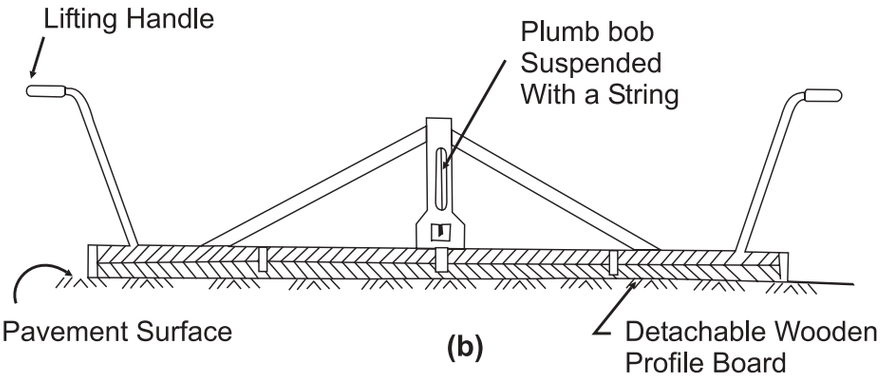


FIG. 1 : (a) and (b) TWO DESIGNS OF CAMBER BOARD

(v) From the results of steps (iii) and (iv), solve the simultaneous equations to obtain the bottom width and depth.

(vi) Calculate the critical depth and determine whether the flow is tranquil or turbulent. If it is tranquil, add a freeboard to the depth and finalise the cross-section. If the flow is turbulent, it may be necessary to line the channel or decrease the longitudinal slope.

In the absence of any data, the salient design features are given in the Rural Roads Manual, reproduced below

Location : 300 mm deeper than the bottom of road crust

Minimum width at bottom	:	450 mm
Minimum longitudinal grade	:	0.5 percent
Discharge	:	0.50 cum per sec.
Shape	:	Triangular, Rectangular and Trapezoidal
Side slope	:	Generally not exceeding 1 in 4

(d) Lining : Grass lining is more economical than other linings to establish and with proper maintenance, will indefinitely provide adequate protection against erosion for most of the site situations. A key factor to the success of grass lining is that it must form a firm, dense turf. For a rapid establishment of vegetal lining in ditches, the same principles must be followed as adopted for providing vegetal protection cover on slopes. The roadside drain/ ditch can also be lined with sod freshly cut, to a depth of about 20 mm from a well established dense turf. Sod strips should be placed across the ditch rather than lengthwise. The joints should be staggered and strips pressed firmly against one another. After the sod is in place, it is tamped or rolled to produce a smooth continuous surface. It should be watered for several weeks after placing, as conditions may warrant.

(e) Outlets : At points of outlet to natural waterways or drainage channels, ditch erosion can occur unless appropriate steps are taken to avoid it. It is necessary, therefore, to provide a well-protected sluice or chute to carry water from the ditch level to the stream or to build an outlet structure. A sluice is generally more suitable and economical to construct than an outlet structure. The grade should be as flat as possible (less than 10 percent). Generally, there is substantial drop from the ditch to collecting channel and it is necessary to divert the sluice sufficiently away from the road as it drops to the stream to meet the grade requirement.

From one side of the road where there is no natural outlet, cross-overs of concrete or metal pipe may be installed to drain water to the other side with a natural outlet. It must be ensured at all times that the outlet while discharging water into the natural stream is always kept higher than the free water level in the natural water course or, in other words, the outlet must never be submerged.

Slope Protection Against Erosion

The following principles need to be followed for providing slope protection against surface erosion.

- Keep slopes flat and edges well rounded to reduce erosion potential to a minimum.
- Establish a healthy, vegetal cover as quickly as possible.
- Intercept water from higher ground before it reaches slopes susceptible to erosion.
- Provide safe outlets for water collected in intercepting drains and gutters.
- Protect slopes from freely flowing underground water.
- Take special precautions around structures which protrude above slope surfaces.

Interceptor ditches (drains) are constructed in hill areas to protect the road bench and hill side slope from erosion due to heavy rainfall and run off. These are very effective in the areas of high intensity of rainfall and where slopes do not have any vegetative cover. These are the structures designed to intercept and carry surface run off away from erodible areas and slopes with reduced velocity resulting in potential of surface erosion. The rain water from these interceptor drains is then brought down in manageable quantities through chutes without damage. The Chutes on stable supports and may be located at 10 to 15 m intervals depending upon intensity of rainfall and length of the hill slope. Stepped outfall which is a simple energy dissipation may be used in place of Chutes if site condition so warrant. The discharge should be led to the nearest natural channel. The layout and siting of ditches shall be in accordance with guidelines on Road Drainage IRC: SP – 42.

Intercepting/Catch-water Drain on a Hill slope is shown in Fig. 2

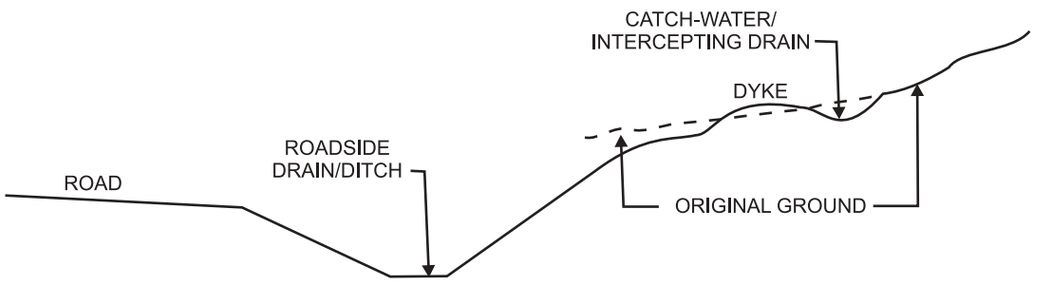


FIG. 2: INTERCEPTING/ CATCH-WATER DRAIN ON A HILL SLOPE

Subsurface Drains

Sub surface water in the granular layers or in the subgrade of a pavement may harm the road in various ways such as :

- By way of reduction of subgrade strength which in turn, affects the performance of top granular layers also.
- Heavy wheel loads may create pulsating water pressure resulting in internal erosion and ejection of materials through cracks and joints. This, coupled with movement of subsoil water, changes the arrangement of fine to coarse material and aggregates in the structure resulting in weakened granular bases, cement treated bases and stabilized layers.
- Absorption of water in the filler material, which may not be fully non-plastic, may seriously undermine the load support characteristics of the layer.
- Free water in bituminous pavements results in stripping of the binder leading to faster cracking and deterioration.

Condition of subsurface water accumulation arises due to one or more of the following:

- Top, i.e., surface infiltration of precipitation through paved or unpaved areas, shoulders, higher adjoining grounds/hills seeps down. Collection of water in pot holes, undulations, cracks, defects, joints also seeps down.
- Lateral seepage through shoulders, adjoining hill slopes etc.
- Free water from a high water table or capillary action from a water table.

Best way of drainage of pavement course is to provide and extend a specially designed subbase layer, called drainage layer, upto the embankment slope face. The drainage layer also helps in draining away the water from a high water table and also acts as a capillary cut off and thus prevents damage to subgrade and subbase layers. In addition, proper cross fall to the drainage layer is required to be provided to guard against sluggish flow.

In cases where it is not possible to take the drainage layer upto the embankment slope face provision of subbase drainage is achieved through sub surface drain pipes encased in drainage media. Guidance for design of subsurface drains may be taken from Para 8 (Sub Surface Drainage) of IRC SP:50-1999-Guidelines on Urban Drainage. Sub surface drains are also required where quantity of subsurface water is very high which can not be drained off fully using economical thickness of drainage layer.

A typical subsurface drain intercepting free water in a slope before it reaches to a point as would render the slope unstable, is shown in Fig. 3.

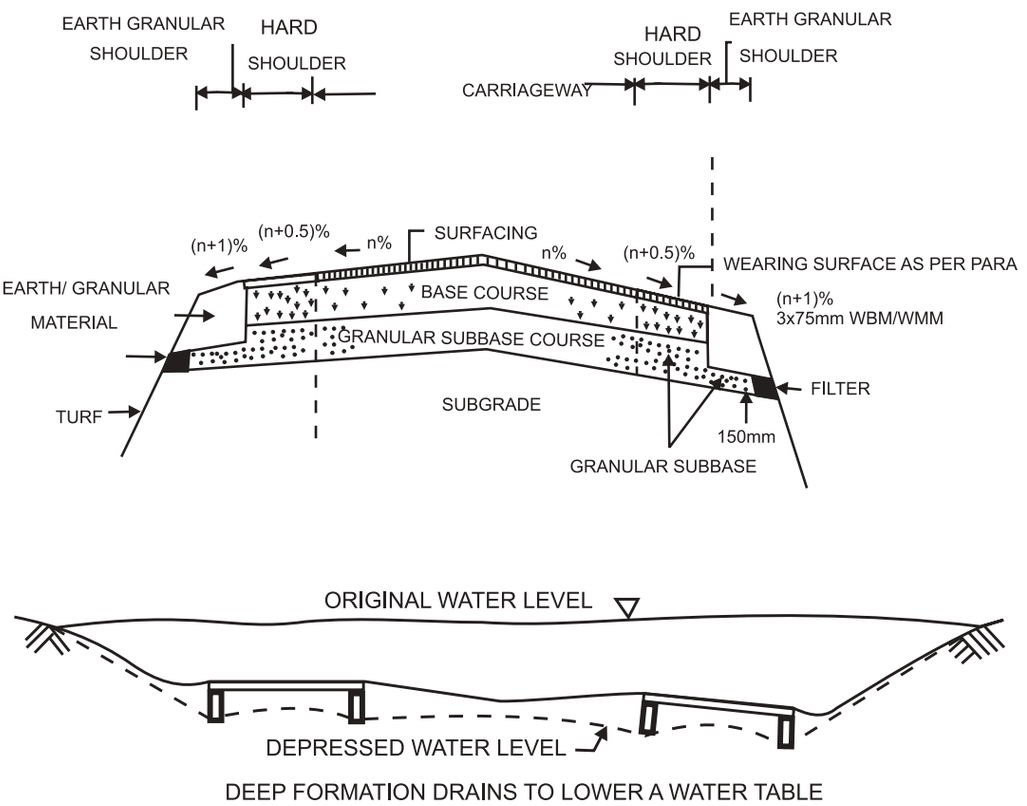


FIG. 3: DRAINAGE LAYER AND TYPICAL SUBSURFACE DRAIN

Annexure 5.6
See Para (5.11.2)

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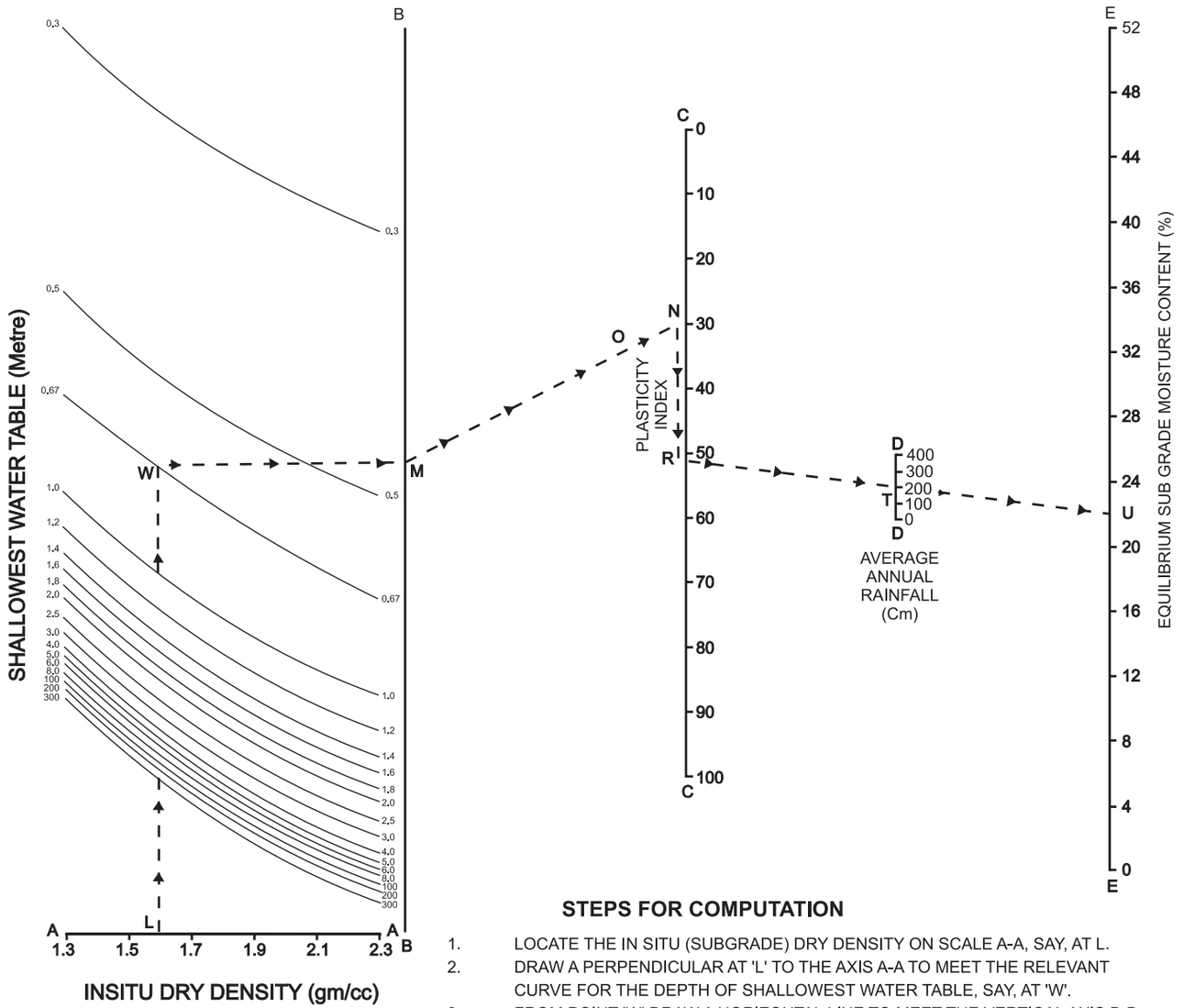
NOMOGRAPH FOR EQUILIBRIUM SUBGRADE MOISTURE CONTENT



STEPS FOR COMPUTATION

1. LOCATE THE IN SITU (SUBGRADE) DRY DENSITY ON SCALE A-A, SAY, AT L.
2. DRAW A PERPENDICULAR AT 'L' TO THE AXIS A-A TO MEET THE RELEVANT CURVE FOR THE DEPTH OF SHALLOWEST WATER TABLE, SAY, AT 'W'.
3. FROM POINT 'W' DRAW A HORIZONTAL LINE TO MEET THE VERTICAL AXIS B-B, SAY, AT 'M'.
4. JOINT POINT 'M' TO THE FIXED POINT 'O' AND EXTEND TO MEET THE VERTICAL AXIS C-C, SAY, AT 'N'.
5. ALONG THE VERTICAL AXIS C-C, ADD THE PLASTICITY INDEX OF THE SOIL FROM 'N', SAY, UPTO 'R' (WHERE, NR=PLASTICITY INDEX).
6. JOIN POINT 'R' WITH THE AVERAGE ANNUAL RAINFALL AXIS D-D, SAY, AT 'T' AND EXTEND TO MEET THE AXIS E-E AT THE POINT, SAY, 'U' WHICH FINALLY READS THE EQUILIBRIUM SUBGRADE MOISTURE CONTENT (%).

CHAPTER 6

PROJECT PREPARATION

6.1 STEPS INVOLVED

The various steps involved and the agency responsible for the Project Preparation are given below:

Sl. No.	Activity	Agency Responsible
(i)	Estimate Length of Roads for New connectivity and/or Upgradation	SRRDA
(ii)	Distribution of State's Allocation among Districts	State Nodal Department
(iii)	Selection of list of proposals in each district	District Panchayats, with assistance of PIU
(iv)	Vetting of list of proposals for each year & Administrative approval	State-level Standing Committee with assistance of SRRDA
(v)	Preparation of DPRs	PIU
(vi)	Scrutiny of DPRs	PIU/STA/PTA
(vii)	Technical Sanction	Nodal Department/SRRDA

6.2 DETAILED PROJECT REPORT (DPR)

Each Rural Road Project (whether a new link or upgradation of an existing road) should have a separate Detailed Project Report (DPR).

The DPR should be based on detailed survey and investigations, design and technology choice and should be of such detail that the quantities and costs are accurate, and no cost over-run takes place due to changes in scope of work or quantities at the time or execution. Guidance may be taken from IRC: SP: 19 for preparing the DPR.

Before the commencement of the preparation of the DPRs, a joint meeting of all concerned Engineers of PIUs and STA(s)/ PTA shall be convened by the SQC under the Chairmanship of the Chief Engineer (PMGSY) to discuss the issues and the data requirements for the preparation of DPR. At this stage STA/ PTA shall take initiative in guiding Executing Agencies for adopting designs with New Materials where it is possible. If needed, they will associate in the investigations of special nature. The Engineers also will be appraised of the need for appropriate Designs with respect to Geometrics, Pavement Crust, Surface Drainage, CD Works as well as the measures for Environmental Conservation.

The steps involved in the preparation are as under:

1. Selection of alignment : The suitability of the existing track as the final alignment is examined, and need for avoiding sharp kinks and dwellings is explored.
2. Topographical survey : The topographical survey is carried out with a plane table/ compass/ theodolite, designing the horizontal curves. A line of levels is run along the centre line and cross-sections are taken.
3. Soil survey : Samples of local soils are collected and tests like grain-size analysis, moisture-density relationships and CBR are carried out.

4.	Material survey	:	The source of materials for forming the embankment, pavement layers and cross-drainage structures are identified and their leads established.
5.	Hydrological survey	:	The sites for bridges are selected and hydrological survey to determine the discharge and HFL is carried out.
6.	Traffic Estimation	:	On existing roads, traffic survey is done. On new roads, the traffic likely to ply is estimated. The growth rate is determined.
7.	Pavement Design	:	Considering the soil strength, traffic and design life, pavement thickness is determined. Its composition is selected after exploring the ways to maximise the use of local materials.
8.	Drainage Plan	:	A drainage plan is made for the road giving a scheme for the effective drainage of water into natural channels, supported by levels.
9.	Design of cross-drainage works	:	The type of culverts, bridges and causeways is selected and design of the various elements like foundations, substructure and superstructure is done.
10.	Preparation of Land Plans	:	Plans showing the land holdings and the selected alignment are made to a scale of 1:8000 to 1:2000, depending upon the availability of maps. The existing village plans available with the revenue authorities are generally used.
11.	Preparation of road drawings	:	Alignment Plans, Longitudinal Sections and Cross-sections are prepared.
12.	Preparation of drawings of C.D works	:	Drawings of culverts, causeways and bridges are prepared.
13.	Selection of specifications	:	The specifications for various items of work are selected, keeping in view need to adopt intermediate technology.
14.	Estimation of quantities of items of work	:	Detailed quantities of each item of work are worked out.
15.	Analysis of Rates	:	The rates for each item of work are analysed.
16.	Estimate	:	The estimated cost is arrived.
17.	Preparation of DPR documents	:	The DPR documents are prepared.

The Junior Engineer shall prepare the DPR as per the provisions of the relevant IRC Codes of Practice and bring out the document along with all data supported by necessary investigations and the maps/ drawings. It is emphasized, in this context, that the Senior Engineers of the Department shall make a reconnaissance of the proposed link, prior to the investigation and preparation of DPR. Even when the preparation of DPRs is outsourced, the Senior Engineers of the Executing Agency will do the reconnaissance.

Having prepared the DPR the Engineer concerned shall cross check that the data used in the Designs is correct and the Estimations are accordingly made.

The DPR shall be submitted in two volumes:

Volume I	:	Report and Estimate in A4 size.
Volume II	:	Drawings in A3 Size.

Volume I (Report and Estimate) shall have the following contents:

Chapter No.	Title	Coverage
1.	Introduction	Name of work, its status vis-à-vis Master Plan, Core Network, priority, terrain, geography, climatic conditions, habitations served
2.	Alignment	Obligatory points, existing tracks
3.	Land Acquisition	Present and proposed right-of-way, Need for new land, Status of Land Acquisition
4.	Geometric Design Standards	Roadway width, carriageway width, shoulders, design speed, horizontal curves, vertical gradient, cross slopes etc.
5.	Topographical Surveys	Surveys carried out
6.	Soil and Materials Survey	Borrow Area, Quarry Charts, availability of local materials, test results
7.	Traffic Survey	Different types of rural vehicles plying per day.
8.	Pavement Design and Surfacing	Type of pavement, thickness design, use of local materials, type of surfacing adopted
9.	Hydrological Survey	Data required for hydraulic design of cross-drainage works.
10.	Design of Cross-Drainage Structures and Integration of Drainage System	Types of culverts, submersible bridges, paved dips, High Level Bridges, and justification for selection.
11.	Protective Works	Retaining walls, breast walls, check walls
12.	Specifications	Choice of technology, specifications adopted
13.	Environmental Issues and Mitigation Measures	Re-instatement of borrow areas, erosion control etc.
14.	Analysis of Rates	Rates of different items of rural road pavement construction.
15.	Estimate	Provision for contingencies, Quality Control, Supervision
16.	Construction Programme	Bar chart showing activities and time frame
17.	Undertaking for Future Maintenance	State's commitment of funds needed for maintenance and adoption of maintenance management system.

A Detailed Project Report (DPR) is to be prepared for each proposal after collecting necessary base data. The DPR essentially should contain the following:

- Population of the habitation(s) connected.
- Population (Direct + Indirect) served by the proposed road.
- A drawing (Not to scale) showing the nature of connection and the habitation(s) connected/ served by the proposed road.
- Type and condition of the existing road/track.
- Road Land Width (RLW) available both in built up area as well as open area.
- Data from Engineering Surveys such as alignment, Longitudinal Section (LS) and Cross Section (CS).
- Processed data of LS & CS.
- Geometric design particulars.

- Soil Investigation results for the sub grade such as Gradation, OMC, CBR etc.
- Hydraulic data for the design of Cross Drainage (CD) works.
- Base year Traffic data of Motorised and Non-motorised vehicles.
- Growth rate adopted and projected traffic for the horizon year based on the design life.
- Layer wise design of the pavement along with a sketch of dimensioned cross section indicating the Pavement Layers, Carriageway (CW), Roadway (RW) and Road Land Width (RLW).
- Design details of CD works/ Protection works and associated working drawings.
- Estimation of BOQs.
- Estimation of cost as per standard data analysis based on SDB and State Schedule of Rates (SSR).
- Provision for Logo and other road furniture.
- Total cost of the proposed road and cost/ km for the same.

It is to be ensured that the data is complete in all respects in Formats F1 to F9 which forms an integral part of the DPR and the design of Geometrics, Pavement and CD works should be strictly in accordance with the provisions of the Rural Roads Manual (RRM) (IRC : SP 20 : 2002).

6.3 DRAWINGS

The following drawings should accompany the DPR as Volume II:

1. Key Map, showing the State in relation to India, District in relation to State, and a district map showing all the Blocks, with the names of each Block marked.
2. A Block road map showing the Master Plan and the Core network and the proposed road.
3. An Index Map of the road showing the full road to a suitable scale, topographical features like rivers, canals, streams, railway lines, villages, Market Centres, other roads and Legend.
4. Plan and Longitudinal Sections of the road, showing 1 km in each sheet.
5. Typical cross-sections.
6. Detailed cross-sections.
7. Drawings of culverts, submersible bridges, paved dips and High Level Bridges, giving General Arrangement Drawings (GAD), structural details.
8. Drawings of protective works like retaining walls, breast walls, check walls, drains.
9. Miscellaneous Drawings like kilometre stones, Traffic signs.

6.4 CHOICE OF TECHNOLOGY

Since there is readily available labour in most rural areas of the country, and Rural Road construction and maintenance can be efficiently implemented by labour-oriented or appropriate technology, the DPR should be prepared keeping this important consideration in view. Simple agricultural tractor-based equipment is very easily manufactured and serviced in the rural areas, and can produce roads of acceptable quality for the PMGSY. The use of modern highway construction equipment like large capacity Hot Mix Plants, Paver Finishers, Wet Mix Macadam Plants, Vibratory Rollers, Earthmoving and excavating equipment may not be insisted upon where it is not cost and/or time-effective.

6.5 SPECIFICATIONS

The MoRTH Specifications for Road and Bridge Works are intended for highway facilities like National Highways and State Highways. These are not in conformity with specification prescribed in RRM. Therefore, a separate book of Rural Road Specifications has been drawn up by the IRC. The specifications in the DPR for PMGSY

road works will be based on the specifications contained in the above document brought out by IRC as 'Specifications for Rural Roads' for MoRD in 2004 for adoption to all Rural Roads.

6.6 STANDARD NOMENCLATURE OF ITEMS OF WORK

The items of work involved in Rural Road works are not large in number and therefore, it would be advantageous if the nomenclature of these items is standardised. Adoption of information data analysis for the standardised times and rate analysis will also facilitate comparison of rates across the country. Accordingly the estimates and BOQ should be based on the standard items, and the Standard Rate analysis for Rural Roads published by the IRC as 'Standard Data Book: Analysis of Rates for Rural Roads – 2004'.

6.7 ANALYSIS OF RATES

While preparing schedule of Rates using MoRD, Standard Data Book (SDB) for Analysis of Rates for Rural Roads the following principles should be kept in view:

- The Schedule of Rates (SOR) shall be prepared by the competent authority of the State Government as per the prevalent practice of the State either at State level, Revenue Division or Circle level or District level as the case may be. States may, at their option switch over to district-wise Schedule of Rates with the help of the software made available.
- The nomenclature of all the items of works will be strictly as given in "Ministry of Rural Development - Standard Data Book for Analysis of Rates for Rural Roads" September 2004 (SDB).
- The coefficients given in the Standard Data Book Analysis shall be used together with the adopted basic rates for material, labour and machinery to compute the rate of the complete items of work as per Schedule of Rates.
- Complete items of work include cost of labour, material, machinery and transportation/ carriage. General Conditions in the Standard Data Book provide that complete item of work includes the rate of material at source and also the carriage to site of work including loading, unloading and stacking. Various States have different practices. In some States the component of loading, carriage, unloading and stacking are added separately to the basic rate at source, while others follow the all inclusive rate particularly for items like select soil, coarse and fine aggregates, bricks, stone etc. In order that the cost of each component is easily distinguishable and verifiable that each element has been properly accounted for, it is recommended that cost of material at source and the carriage element using analysis given in Chapter 1 of SDB are shown separately in the analysis of rates.
- If any item is used which is not covered in the SDB, the analysis will be approved by the competent authority under intimation to the NRRDA and STAs in the State.
- The Schedule of Rates may be updated annually and updated Schedule used at the time of estimation/ technical sanction for the annual proposals under PMGSY. A copy of the Schedule of Rates may invariably be endorsed to the STAs.

6.8 ESTIMATES

The estimates shall reflect the true scope, quantum and cost of works, based on detailed surveys and investigations. The following points may be kept in view while framing the estimates:

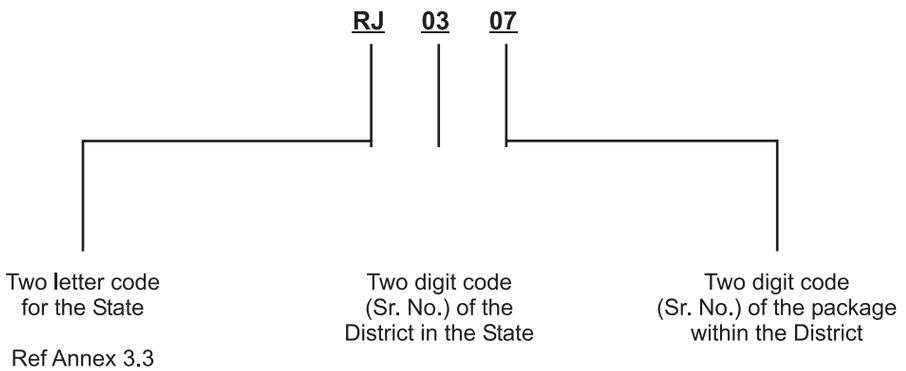
- The borrow areas must be located accurately. It is not advisable to borrow earth from the road land. Temporary earth from adjacent fields may be borrowed with the consent of the farmers. Otherwise, fallow land, and non-agricultural land, near to the project may be identified. The lead and lift involved may be accurately assessed and accounted for. The haulage method should also be identified.
- The sources of gravel, sand, stone aggregates, bricks and marginal materials should be accurately identified, and the availability of the required quantity and quality of materials established. The leads involved, and the condition of roads leading to the sources shall be determined.

- The rates shall be based on the State's updated Schedule of Rates based on Standard Data Book: Analysis of Rates for Rural Roads 2004 (See para 6.8).
- No provision for escalation shall be allowed.
- For externally funded projects, contingencies supervision charges may be allowed as agreed upon.

Several roads in a Block or in adjacent Blocks can be combined into packages of a value of Rs 1-5 crores. The abstract of the cost shall be given in Forms F-1, F-2A and F-2B (Annexure 7.1).

The total proposal for the State shall be submitted in District wise volumes to the NRRDA.

A package will be identified by a unique number given to it. The package number shall be designated as RJ 03 07, as an example, shown below:



6.9 ENVIRONMENTAL MANAGEMENT

6.9.1 Introduction

It is very important that the impact of road schemes on the environment be considered at the planning and design stage itself. It is also necessary that adequate safeguards are taken to prevent environmental degradation during the construction phase.

6.9.2 Selection of Alignment

Most of the Rural Roads are aligned along tracks or footpaths, which are already in existence. Utilising the existing facility to the maximum possible extent will minimise the hardships caused by land acquisition and also minimise incremental environmental impact. Ecologically sensitive areas like national parks, wildlife and bird sanctuaries, and reserve forests should be avoided. In general, drainage and hydrology should be given due consideration. An alignment, which balances the cuts and fills is not only economical, but also avoids the problems of disposal of excess material from cuts and locating fresh borrow areas. The balancing of cuts and fills should, ofcourse, not sacrifice geometric standards.

6.9.3 Borrow Areas

It is observed that in most of the Rural Roads being constructed now, the borrow areas are located just by the side of the road embankment. This may be economical to the contractor, but it is an environmental hazard, because of the following:

- The location of deep borrow pits at the toe of the embankment undermines the stability of the embankment.
- The borrow pits are cut at varying depths, with the result that water stagnates and is not drained effectively. The stagnant water breeds mosquitoes and is a health hazard.
- It is accident prone.

As such, borrow pits should not be dug close to the road embankment. Earth may be taken from the adjoining

fields by obtaining consent of the farmers. Earth may also be borrowed from areas not cultivated, though this may involve some lead. The tender documents should clearly indicate the borrow areas identified, and the tender items must specify the lead and lift involved, so that the contractor knows the scope of the work and quotes accordingly. The borrow areas must be either filled up or landscaped with vegetation such that they do not present ugly scars.

6.9.4 Turfing

In most of the Rural Roads, erosion of the slopes of the embankments, rain cuts and erosion of the earth in the shoulder are commonly observed defects. The erosion of the slopes causes the loss of the roadway width, besides leading to sedimentation of the adjoining water bodies and natural drainage channels. This must be arrested by turfing the embankment slopes and earthen shoulders. Provision must be made in the estimates for this item, wherever found essential.

6.9.5 Road Drainage

At the edges of the road land, shallow roadside drains should be provided to drain away the water from the road. These drains must have a designed longitudinal gradient, so that the water is led to a natural drainage channel. Where two roads intersect, there should be culverts to continue the drainage if the slope of the terrain demands it. If the levels permit, and the intersection is on higher ground, the side drains may have longitudinal slopes away from the high ground.

To prevent erosion of the side drains, they must have sufficient cross-section so as to promote a non-silting and non-scouring velocity. It is always preferable to turf the sides of the drain to prevent erosion, which can lead to sedimentation and reduction in carrying capacity.

Inadequate waterway across the road can cause flooding of the land upstream; such situations must be avoided.

The road construction should not adversely impact on fisheries, pond, aquatic ecology and other beneficial uses of water by the community.

6.9.6 Roadside Plantations

To improve the landscape, suitable species of trees and shrubs should be planted along the road, away from the road embankment. They should preferably be at the land boundary, so that the future encroachment of road land is avoided. The community must be encouraged to take up tree plantation activities and look after them. The choice of species should be made in consultation with the local community.

6.9.7 Roads Through Villages

When roads pass through villages, care shall be taken to ensure that there are side drains on either side to drain away the water from the road and the discharge from the abutting houses. The road level shall be sufficiently above to ensure that the road itself does not act as a drain. Provision of a concrete pavement provides a dust-proof and low maintenance road, which suffers less damage during occasional overtopping.

6.9.8 Use of Cut-Back

It is the normal tendency on the part of the contractors and the engineers to dilute the bitumen by adding diluents like kerosene. The kerosene and other diluents will ultimately find their way to water-bodies and contaminate them. The use of cut-backs should be prohibited. If liquid bitumen is needed for spraying and premix work, an emulsion should be preferred. Cut-backs shall be permitted only in extremely cold temperatures.

6.9.9 Conservation of Stone Materials

Though stone sources are abundant in India, the use of stone should be restricted to the barest minimum. Wherever possible, low cost marginal materials like soil, gravel, moorum and kankar should be used, if necessary by processing them by stabilisation.

6.9.10 Use of Flyash

In areas near to thermal power plants, flyash is available in plenty, almost at a throw-away price. Flyash should be used in rural road construction (also refer Annexure 5.4):

- as an embankment fill material (for high embankments above 3m height, and with a minimum cover of ordinary soil 1000 mm thick on sides and 500mm below the bottom layer of the pavement).
  - as a partial replacement for cement in cement concrete pavements.
  - as a stabilising agent in conjunction with lime, for soil stabilisation and lime-flyash-concrete.

Since the use of fly-ash wherever possible within a radius of 100 Km of thermal plants is mandatory, the PIU shall ensure that the possibility of its use is fully investigated.

6.9.11 Historical/ Cultural/ Religious Monuments

The road alignment should not cause impact on or damages to historical, cultural and religious monuments.

6.9.12 Environmental Measures in Hill Roads

The construction of roads in hilly region disturbs the ecosystem in many ways. The main ecological problems associated with hill road construction are:

- Geological disturbances and stability of slopes is a major concern in hill roads. During DPR preparation proper geological investigation need to be carried out. The rock profile and geologically critical sections in many States have been mapped based on satellite imaginary and should be made use of for carrying our detailed investigations. Slope stability analysis for retaining wall/breast walls of height greater than 5m shall be carried out as per IRC:SP-48 and incorporated in DPR.

  In addition to stability analysis the alignment should be such that steep as well as heavy cuts are avoided. Rock fall can be controlled through use of geogrids or rock bolts.

- Soil erosion is a consequence of high runoff on hill slopes. Construction of interceptor ditches/catch water drains to protect the road formation and hill side slope are effective in areas of high intensity rainfall and where slopes are exposed.
  - On side slopes in hill, immediately after cutting is complete and debris is removed, fast growing species of grass should be planted. This would prevent high velocities of runoff. Sodding and turfing, vegetation or pitching, asphalt mulch treatment, use of jute or coir netting are some of the measures of preventing erosion on hill slopes.
  - Sheet and gully erosion on gentler slopes can be prevented effectively through construction of check dams (maximum height 0.6m). These can be constructed using locally available material such as riprap, logs, sandbags and or straw bales. If the length of hill slopes is long multiple check dams can be provided.

- Loss of tree cover

Any felling of trees during the construction of hill roads should be minimised. If some trees are unavoidably cut, additional compensatory tree plantation is required to be carried out as per Forest Department instructions.

- Aesthetics degradation.

When hill faces with vegetation cover are cut, the cut faces present a scar on the general landscape. Visual appearance should be restored through fresh vegetation cover, which may be hastened through asphalt mulch technique or jute/coir/geofabric / geogrid matting.

- Waste Management.

Waste and debris generated through construction activities can be reused and if cannot, it needs to disposed off in a manner that they do not damage water bodies and cause siltation to ponds and channels. In this respect, tipping of wastes into stream channels, water bodies, forests and vegetated slopes should be avoided. Some of the measures of waste disposal are:-

- Construction of gabion walls – these are constructed on valley side at ridge locations to form a trough for waste disposal. These walls can withstand large deformation without cracking and are flexible.

Further due to open nature of the structures they allow free drainage of water. After filling up of the disposal site, it shall be grassed and suitably vegetated to prevent erosion of the disposed soil.

- Silt fencing – it is a sediment barrier provided to prevent sediment carried by sheet flow from leaving the site and entering to natural drainage or any other water body located near the construction site.
- Bally benching – These are provided in order to arrest the shallow movement of top mantle slide mass at the construction location.
- If the wastes generated during construction cannot be reused, the following precautions should be adopted
  - ❖ In case of bituminous wastes, dumping will be carried out over a 60mm thick layer of rammed clay so as to eliminate any chances of leaching.
  - ❖ In case of filling of low lying areas with wastes, it needs to be ensured that the level is matched with the surrounding areas. In this case, care should be taken that these low laying areas are not used for rain water storage.

- Quarry Area.

The excavating of material from quarry area should be done with minimum adverse impacts on environment. It should be ensured that adequate drainage system has been provided to prevent the flooding of the excavated area. At the stock piling locations, sediment barriers (brush barriers) shall be constructed to prevent the erosion of excavated material during runoff.

- Water for Construction.

In water scarce regions and in winter season when water availability is not sufficient, the various construction activities need to be rescheduled to reduce the drawl of water from community sources. Various modern techniques like Water harvesting/Ground water recharging are needed to be explored to avoid water extraction from the community sources.

6.9.13 Measures Needed in Desert Roads

The construction of roads in arid region disturbs the ecosystem in many ways. The main ecological problems associated with desert road construction are:

- In case of roads in arid areas, the embankment made up of silty and cohesion less sandy soils are subjected to erosion due to high wind velocities. Also, when the slopes are steep (more than 20 degrees), the erosion of embankment is more predominant. As a result there is reduction in road formation width (erosion of shoulders/berms). Moreover, the sand gets deposited over or near the road surface, which is not desirable. In order to avoid the deposit of sand, hardy variety of shrubs and plants are planted at appropriate distance from the formation. There should be a clear gap between the roadway and shrubs to allow the wind to pick up its velocity and carry along with it any sand that is deposited.
- Desert roads passing through shifting sand dunes require special design considerations. Some of the proven techniques are:
  - Avoidance of partial cut and partial fill sections:- Partial cut and partial fill sections should be avoided as they will provide loose sand to be carried away by high wind velocities which in turn will be deposited over the road and nearby areas.
  - Avoidance of high embankments:- High embankment should be avoided in desert areas as they are subjected to more erosion in the absence of vegetative cover.
- Top soils with humus, wherever encountered while opening up the site for construction, shall be stripped, stockpiled and used for restoration of borrow areas to maintain its fertility.

- Water for construction-

In water scarce regions construction activities need to be rescheduled to reduce drawl of water from community sources to a minimum. Assessment of water requirement for each stage should be made. Earthwork for embankment can be carried out just before monsoon so that subsequent works of granular sub-base and WBM can be carried out during monsoon when water is readily available.

  - Water harvesting structure (water tanks for collection of rain/stream water) may be constructed where feasible to provide water for construction.

6.9.14 Environmental Considerations during Maintenance

The following guidelines may be noted:

- For making up the eroded slopes and shoulders, earth should not be borrowed from roadside land. This leads to formation of deep side channels, endangering the stability of the road embankment and creating pools of stagnant water where mosquitoes breeding can take place. Earth should be borrowed from nearby fields after obtaining consent of the farmers.
- The turf on embankment slopes, shoulders and drainage ditches must be trimmed periodically.
- The culverts and bridges, and the channels around them, should be desilted periodically so that water flows away quickly without stagnation.

6.10 ECONOMIC ANALYSIS

While providing new links to unconnected habitations is a social responsibility, the investments on upgradation of existing roads should result in economic benefits. Proposals for upgradation should be subjected to economic analysis. The specifications for upgradation and maintenance interventions should be so selected that the IRR is at least 12 percent. The benefits that may be considered for the analysis may include (i) agricultural producer surplus (ii) savings in vehicle operating costs and (iii) savings in travel time of passengers.

6.11 USE OF CONSULTANTS FOR PREPARATION OF DPR

The task of survey, investigations, design and preparation of DPRs is laborious and requires skill and experience. Since PMGSY is a time-bound programme, State Governments need to build up capacity to prepare DPRs of acceptable quality. For this purpose, they may outsource this service where adequate in-house capacity is not available, to Consultants with adequate expertise and capacity. This may be done after inviting expression of interest and short-listing prospective consultants meeting the requirements including previous experience of preparing DPRs of road works equal to at least 50% of the value of the proposed DPRs.

The work of design Consultants should be periodically evaluated by assessing:

(i) Whether any serious excess has occurred between the estimated and as executed quantities.

(ii) Whether any design deficiency has come to the notice of the Department in the execution of the work.

The Consultants whose work has not been wholly satisfactory should not be awarded further consultancies.

CHAPTER 7

SCRUTINY OF DETAILED PROJECT REPORTS

DPRs for Rural Roads are usually prepared by JE/AE level staff. Though Rural Roads are generally small low volume roads, the technical inputs required may actually be quite high because of the need to cater to the sensitivities of the local community directly affected by the road. As such, scrutiny of DPRs by senior officers is essential to ensure that the road is not only technically well engineered, but also well integrated with community requirements. This requires intervention at Executive Engineer and Superintending Engineer levels on key parameters based on local knowledge and long field experience.

7.1 STEPS INVOLVED

The following steps are involved in the scrutiny of the DPRs :

1.	Completion of Forms F1-F9 by PIUs and submission to the SE
2.	Scrutiny of DPRs by SEs
3.	Scrutiny of DPRs by STAs
4.	Preparation of Summary of Proposals by SRRDA.
5.	Submission of Proposals to NRRDA and test scrutiny of 15% cases by NRRDA.

7.2 PREPARATION OF DPRS SUMMARY BY PIUS

7.2.1 Once the DPRs have been prepared for each road work, the details have to be filled in Forms F1-F9. These Forms (except F-3& F-5) are enclosed in Annexure 7.1

The information in the Forms are as under:

F1 : Package-wise Summary Sheet.

F2 A : Road-wise Summary of Cost of Pavement.

F2 B : Road-wise Summary of Cost of CD Works.

F3 : Typical cross-section of Road for New Construction.

F4 : Details of Existing Roads Proposed for Upgradation.

F4A : Association of Routes.

F5 : Typical cross-sections of Road for Upgradation.

F6 : Detailed Estimate for Pavement.

F7 : Detailed Estimate for CD Works.

F8 : Rate Analysis.

F9 -A : Summary of on-site verification of DPRs by Executive Engineer.

F9-B : List of DPRs verified on ground.

7.2.2 The PIU shall enter the details of each DPR in the proposals on-line in the *www.omms.nic.in* website under “Proposals Mode” giving road-wise details of the length, cost and habitations connected etc. Scrutiny of the proposals will not be done by the STAs, if the details are not available on the website.

7.2.3 The responsibility for proper preparation of the DPRs rests with the Executing Agency and in particular, the PIU. It is essential therefore that the DPRs be thoroughly checked at various levels.

7.3 SCRUTINY AT DPIU LEVEL

- The Assistant Engineer (Deputy Executive Engineer)will check and certify at least 30% of the DPRs at site in respect of accuracy of data and ground realities as well as correctness of the design and estimation. 'Design' covers Geometric Design, Structural Design (Pavement Crust), CD Works and Protection Works. In this process, he has to identify the issues where deficiencies are found and get them corrected uniformly in all the proposals.
- The Executive Engineer shall check and certify at least another 20% of the DPRs at site in order to make sure that the investigations are adequate and design and estimation is as per the requirements. If any deficiencies are found, he will point out the same and get the DPRs corrected accordingly.
- The DPRs should be personally checked and signed by the Head of the DPIU and scrutinised by the SE(Also see para 7.3.3).In case of CD Works with length exceeding 15 m, the SE will visit the site. DPRs which have been checked on site by SE shall be so certified.
- The AE/EE shall record a certificate in form F9-B to the effect that they have checked the required percentage of DPRs at site and are satisfied with the content and quality, before sending the DPR to the STA (s). The certificate will be sent alongwith the DPRs.

7.3.1 The primary responsibility for the accuracy of the provisions in the DPR shall rest with the Executive Engineer. The Executive Engineer shall check at least 20% of the DPRs on site**.** He shall personally himself satisfy that:

- the proposed road links form part of the Core Network and the priority criteria laid down by MORD from time to time.
- adequate road land is available.
- all surveys and investigations have been done with due diligence.
- the Transect Walk has been conducted by Junior Engineer/Assistant Engineer and issues arising have been resolved.
- leads of materials have been assessed correctly.
- rates of work items are reasonable.
- all designs have been done correctly.
- the overall cost of the project is reasonable; and
- safety requirements have been incorporated.

7.3.2 The estimates for each work under the PMGSY shall be made in two parts, viz,

- first part comprising of the estimate for the construction of the road, and
- the second part comprising of the estimate of year-wise routine maintenance for 5 years with details of BOQ items to be included.

7.3.3 Scrutiny by SEs

The Superintending Engineers (SEs) are required to conduct a scrutiny of the proposals prepared by the PIUs, in regard to conformance to guidelines, design standards, specifications, safety requirements, cost etc. The SEs are expected to examine the proposals personally, on a random basis and do a detailed check of at least 10 percent of the proposals.

Cross-drainage structures having a length of 15m or more should be inspected at site by the SEs or higher officers, who shall confirm the need for the structures and approve the design.

7.4 SCRUTINY BY STAs

Ministry of Rural Development has identified in consultation with each State Government, reputed Technical Institutions to scrutinise the project proposals prepared by the State Governments, provide requisite technical support to the State Governments, and undertake Quality Control tests upon specific request. These are being referred to as the State Technical Agencies (STA). The coordination of jurisdiction of the STAs would be performed by the NRRDA, who may add to or delete from the list of institutions, as well as to entrust specific tasks from time to time. The Ministry of Rural Development/ NRRDA may from time to time identify additional technically qualified agencies to provide these services to the State Governments and to perform such other functions as may be necessary in the interest of the Scheme.

The PIU will forward the proposals alongwith the Detailed Project Reports to the State Technical Agencies for scrutiny of the design and estimates. The Proformae F-1 to F-9 will form part of the DPR. These will be forwarded at the level of the Superintending Engineer or the supervising officer of the PIU along with road-wise checklist in the Proforma 'C' of Annexure 7.2. A summary of the road works will be prepared in Proformae 'B' (Annexure 7.2).

The DPRs are to be scrutinised by the State Technical Agency (STA) in the light of the PMGSY Guidelines, IRC Specifications as contained in the Rural Roads Manual IRC SP 20: 2002 the specification for Rural Roads and the applicable Schedule of Rates based on the analysis of Rates for Rural Roads.

Before commencing with the scrutiny of DPRs the STA will check that certificate in Form 9-B has been recorded and informed to tally with the certificates on the DPRs.The STA will then log into the OMMS with their password and check that the proposals for which the DPRs have been sent have been entered in the 'Proposals Module'. Only such DPRs will be checked whose data has been entered.

The STA will check all the DPRs for their correctness. If minor shortcomings are noticed, they will be brought to the notice of Engineers of the Executing Agency to get them corrected on the spot. However, if major mistakes/ errors are noticed in a DPR, it will be returned with a signed endorsement giving the nature of the change required. Further investigations, if required, will be suggested to the Executing Agencies in order to rectify deficiencies. Difference of opinion on any issue are to be sorted out among STA, PIU and Senior Engineers. Such discussions will be coordinated by the SQC. If a consensus is not possible, the matter will be referred to NRRDA through the Chief Engineer for necessary clarification/ decision.

The STAs may, while scrutinising the DPRs

- Ensure that the proposals are for new connectivity as long as unconnected eligible habitations remain. Upgradation is to be considered only after all unconnected habitations 500/250 (as applicable) are connected in the District and a certificate is given by the PIU to this effect.
- Check that the proposals are part of the Core Network.
- Verify that Associated through Routes if taken are appropriate for upgradation/renewal as per PCI and age and all subsidiary links as per CNCPL have been taken.
- Check that Land Availability Certificate and Transect Walk proceedings are attached.
- Check that the pavement design is as per the provisions in Rural Roads Manual (RRM) IRC SP: 20: 2002 for all the layers. In particular, they will examine the data of the traffic and ensure that all cases of traffic exceeding 45 CVPD are adequately justified. They will also analyse the CBR values. In all cases where CBR is below 3, it shall be ensured that soil stabilization measures are included. Link Roads to habitations with population below 1000 should be designed as unsealed roads of appropriate design in view of the likelihood of traffic being below 15 CVPD. Where the target habitation is below population 500, the carriageway width may be kept as 3.0 m instead of 3.75 m.
- Check whether the soil tests have been carried out and traffic has been estimated properly.
- Investigate economies in use of materials, including soil stabilization and use of alternative/ local material.
- Check the geometric design parameters and make sure that they are as per RRM/Guidelines.
- Ensure that a proper drainage plan has been worked out.

- Verify that the method of flood and waterway computations is satisfactory and check the design of CD works for suitability as per the guidelines and given site conditions.
- Check whether the CD works require additional protection works based on the site conditions.
- Check the items and estimation of BOQs and the cost as per Standard Rate Analysis and SSR.
- Verify whether suitable and adequate provisions are made for PMGSY logo, signs, Km & Hm stones and guard stones as required.
- Check that lump sum provision for each year of the 5 years of routine maintenance has been adequately provided in the BoQ, as per NRRDA guidelines.
- Visit the site if so requested by the PIU for advice, or where it is felt that the design needs site inspection.
- Point out the short-comings and offer suggestions for their rectification (major defects shall be intimated in writing).

At the end of the scrutiny, the STA will complete and countersign the checklist filled and signed by PIU Engineers in Proforma C and certify to the effect that the Design and Estimation are as per the data and SSR provided by the PIU and may be cleared. The check list in Proforma C signed by the Engineers and STA shall be in quadruplicate. Two copies will be sent to SRRDA, one will remain with STA and the fourth will be retained with the PIU along with DPR. A consolidated summary report will be sent on format given in Annexure 7.3 by the STA to the NRRDA and to the Executing Agency.

The State Technical Agencies, after completion of the scrutiny of all DPRs of the Executing Agency shall also send a detailed note on the experiences on the scrutiny of the project proposals and communicate to the Executing Agency as well as NRRDA. The Executing Agency shall study the observations of the STA, ensure necessary corrections in the current proposals, and use them for future guidance of PIUs.

7.5 COMPILATION BY PIUs

The scrutinized copy of the DPR will be retained with the PIU. The DPR corrected on the basis of scrutiny by STA shall be forwarded to the SRRDA along with Forms F1 to F9 (duly updated) and MP-I and MP-II containing details of proposals made by MPs and proposals accepted/ not accepted along with specific reasons.

7.6 UPLOADING OF TENDER DOCUMENTS

After compilation of DPRs by PIU, the PIU will prepare the bidding document for every package as detailed in Para 8.6. The above details will be filled up into the Draft Tender Document module of OMMS and draft bidding document will be generated. As soon as the Ministry of Rural Development clearance is received and technical sanction is accorded by the competent authority, the necessary input regarding dates and modifications in respect of other items will be carried out by the PIU in the draft bidding document and the final bidding document will be published on the website.

7.7 SUMMARY OF PROPOSALS

The SRRDA will consolidate the proposals from each PIU, after verifying that they have been duly scrutinised by the respective STAs and Tender Documents have been uploaded in the Project module. They will then prepare the State Abstract and send all the Project proposals to the NRRDA alongwith the Proformae MP-I and MP-II of each District, the compiled MP-III for the State as well as the proformae prescribed by NRRDA as brief for the Empowered Committee.

Proformae A and B (Annexure 7.2) give the forms for summarising the district-wise proposals and package-wise proposals. Form A will be signed by the State Secretary of the Nodal Department on the basis of Form B of all the districts.

7.8 SUBMISSION OF PROPOSALS TO NRRDA

The clearance for the estimates for construction of road and related works shall be provided by the MoRD, but the clearance for the estimate for routine maintenance shall be provided by the State Government. The provision for the funds related to maintenance shall be done by the State Government. Before submitting the proposals

for the construction of roads and related works for clearance to the Empowered Committee, the State Government shall give administrative approval to the estimate for routine maintenance if already not done as described in para 4.2.7, and furnish a certificate to the effect that provision of funds for maintenance of PMGSY roads will be made annually in the State Budget. Each year's proposals will be cleared by the MoRD only if adequate provision has been made for the maintenance of PMGSY roads already constructed.

All the summaries (Forms A and B) and Checklists (Form C, Annexure-7.2) are to be bound together for each State and are to be submitted to the NRRDA.

7.9 APPROVAL OF PROPOSALS

The NRRDA will scrutinize 15% of DPRs on a representative basis as well as all proposals falling on C-curve, listing the scrutinized DPRs and shall record a technical note on that basis. The NRRDa will also check that the Tender Document have been uploaded in the Project module. Thereafter, NRRDA will process the proposals and submit them to the Empowered Committee for clearance as given in Chapter 4.

7.10 ADMINISTRATIVE APPROVAL AND TECHNICAL SANCTION

The Administrative Approval and Technical Sanction to the works cleared by the MoRD shall be accorded by the competent authority as per the State's rules.

7.11 SCHEDULE OF ACTIVITIES

Table 7.1 gives the illustrative schedule of activities and the time allotted.

Table 7.1

Schedule of Activities in Connection with Proposals

Sl. No.	Activity	Start	Finish	No. of Days
1	Distribution of amount district-wise	30th June		
2	Preparation of list of proposals at district level by the District Panchayat (including obtaining suggestions from MPs etc).	1st July	15th Aug.	45 days
3	Clearance by State level Standing Committee of district proposals (clearance may be State or Agency wise).	1st Aug.	31st Aug	30 days
4	Preparation of DPRs by PIU's (preparation may be phased out as per clearance).	15th Aug	30th Sept	45 days
5	Scrutiny of DPRs by STAs (scrutiny may be phased out in consultation with STAs so that batches of DPRs are sent to STAs for scrutiny and clearance within 1 month period).	30th Aug	30th Oct	60 days
6	Forwarding of proposals to NRRDA (Consolidated for entire State)	1st Nov		
7	Clearance by Empowered Committee	5th Nov	15th Nov	10 days
8	Administrative Approval and Technical Sanction	15th Nov	22nd Nov	7 days
9	Tendering	15th Nov	30th Nov	15 days
10	Contracting		By 15th Feb.	

For Hill Roads, the above activities (Items 1-5) may be rescheduled to give adequate time for survey, investigations and project preparation, but adhering to the overall dates for scrutiny of DPR. The Schedule suggested above is illustrative and the States may workout similar schedules maximizing the duration of working period in the respective State.

ANNEXURE-7.1
FORMAT F-1
(See Para 7.2)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
SUMMARY SHEET

Name of the Block	Code	Total No. of Habitations	Unconnected habitations					
			>1000	500-999	250-499		<250	Total Eligible Habitations
					Total	Eligible		

Type of Proposal	No. of Roads	Total Length of Roads (km)	No. of New CD Structures	Estimated Cost (Rs Lakhs)			No. of Unconnected Habitations connected / Connected habitations benefited
				Pavement from Format-F5	CD Structure from Format-F6	Total [(5)+(6)]	
1	2	3	4	5	6	7	8
New Connectivity							
Associated Through Route							
Upgradation							
Other Upgradation							
Total							

FORMAT F-2A

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
ROADS PROPOSED IN PMGSY FOR RURAL CONNECTIVITY (PAVEMENTS LAYERS)

District ____________ **Block** ____________

Sl.No.	Name of Block	Name of Habitations Connected / Benifited		New construction (N)/ Associated Through Route (A)/ upgradation (U)			Facility accessed	Road Length (Km)	Existing Surface Type	Details of Thickness & Cost for Pavement Layers (Rs. In Lacs)										Surfacing Dressing			
		Form	To	N	A	U				Details	Clearing Grubbing	Earth-work	Subgrade Preparation G.S.B.I	Sub-Base G.S.B. G.R II	WBM G2	WBM G3	B.O.E EDGING	K.C. DR-AIN/ CUT-STONES	PRIMER & TACK COAT	P.C.	Seal Coat	Road Furniture	Total Cost for Pavement Rs. lakhs
1	2	3	4	5	5A	5B	6	7	8														
										Thickness (mm)													
										Cost (Rs) in Lacs													
										Thickness (mm)													
										Cost (Rs) in Lacs													
										Thickness (mm)													
										Cost (Rs) in Lacs													
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										Cost (Rs) in Lacs													
										Thickness (mm)													
										Cost (Rs) in Lacs													
										Cost (Rs) in Lacs													

FORMAT F-2B

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
ROADS PROPOSED IN PMGSY FOR RURAL CONNECTIVITY (CROSS DRAINAGE STRUCTURES)

District _____ **Package No.** _____

Sl.No.	Name of Block	Block Code	Name of Road	Habitations Connected / Benifited	Population	Road Length (Km)	Existing CD Structure by Type						Details of Proposed CD Structure by Type								
							Hume Pipe Culvert		Box/ Arch. Culvert		Minor Bridge		of	Hume Pipe Culvert		Box/ Arch. Culvert		Minor Bridge		Total Cost of Proposed CD Structures	Total Cost of Pavement from Format F-5	Total Cost of ROAD [(18+19)]
							No.	Dia	No.	Length	No	Length		No.	Dia	No.	Length	No	Length			
1			2	3		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1													Cost (Rs)									
2													Cost (Rs)									
3													Cost (Rs)									
4													Cost (Rs)									
5													Cost (Rs)									
6													Cost (Rs)									
7													Cost (Rs)									
8													Cost (Rs)									
9													Cost (Rs)									
10													Cost (Rs)									
Total													Cost (Rs)									

Junior Engineer **Assistant Engineer** **Executive Engineer**

FORMAT F-4

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
DETAILS OF EXISTING ROADS (FOR UPGRADATION)

PACKAGE NO._____
DISTRICT: _____

BLOCK(S):_____

Sl.No.	Name of the Road	Road Length (in km)	Road connecting to *	Facilities accessed (Use A/B/C/D)**	Traffic per day***		Existing Road Details								
					Total Motorised	Total LCV/Truck/Bus Agricultural Tractor/Trailer	Land Width (m)	Road Width (m)	Embankment		WBM Layer		Bituminous Layer		
									Height (m)	Width (m)	Width (m)	Thickness (mm)	Type****	Width (m)	Thickness (mm)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

*Road Connecting to NH/SH/MDR/ODR/VR
**Use A = Market, B = Education facilities, C = Health Centre and D = Combination of previous
***Where actual figure is not available, Estimated figure may be included
****Type BM/MSS/DMC

Format F- 4A

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Association of Routes

Package No.	Primary Network		Associated Through Route (ATR)	PCI	Age	Whether proposed for Upgradation (U) or Renewal(R)	Other Non-conformance subsidiary to the ATR	Whether includes in package Y/N	Habitation served with Population
	No.	Habitation served (with popn.)							

FORMAT F-6

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
COST ESTIMATE FOR ROADS CONSTRUCTION

Package No. _____
District: _____

Road From: _____
Length of the Road (km):

Block: _____

Sl. No.	Description of Item	No.	L (m)	B (m)	D/H (m)	Quantity	Unit	Rate (Rs)	Amount (Rs)
1	2	3	4	5	6	7	8	9	10

FORMAT F-7

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
COST ESTIMATE FOR ROADS CONSTRUCTION OF CROSS DRAINAGE WORKS

Package No._____
District: _____

Road From: _____
Type of cross Drainage Works : _____

Block: _____

Sl. No.	Description of Item	No.	L (m)	B (m)	D (m)	Quantity	Unit	Rate (Rs)	Amount (Rs)
1	2	3	4	5	6	7	8	9	10

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
RATE ANALYSIS

FORMAT F-8

State: **District:** **Package No.:**

Road from _____ to _____

Material	Source	Lead(in Km)
Stone		
Bituminous		
Cement		
Hume Pipes		
Any Other		

Analysis Of Rates:

Sl. No.	Sl No. as per MoRD SDB for Rural Roads	Description	Units	Qty.	Rate (Rs)	Amount (Rs)
	A. Construction Activities					
				Total		
	B. Maintenance Activities(Year wise)					
				Total		

Note:

1. Rate Analysis shall cover all the items such as Site Clearance, Earth Work, Drainage, Granular Sub Base, & Surface Course, CD works, Traffic Signs, PMGSY Board & Logo& Maintenance activities
2. Where local material is used at site and the specifications & rate analysis are not found in BOS &SDB, for Rural Roads ,the analysis &nomenclature of the item can be suitably used based on other standards such as PWD Schedule or Rate or assessment based on field observation.
3. Completed items rates including lead for carriage of materials should be shown

FORMAT F-9A

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

CERTIFICATE OF GROUND VERIFICATION FROM EXECUTIVE ENGINEER / HEAD PIU

1. a) Certified that the Land width for the Road is available and that no additional land is required; or

   b) Certified that land width for the Road is likely to be available as certified by the Panchayats.

2. a) Certified that no forest land is involved along the entire road way; or

   b) Certified that the case for permission under Forest conservation Act has been moved to the Forest Department on (Date).

3. Certified that the DPR has been checked at site by

AE EE SE

On date ……..

(DPR wise summary in Format F9-B)

Executive Engineer,

Head of PIU.

FORMAT F-9B

LIST OF DPRS VERIFIED ON GROUND:

#	DPRs seen on ground by	DPR Nos	% of total number
1	AE		
2	EE		
3	SE		

Head of PIU

Annexure-7.2
(See Para 7.4 & 7.6)

PROFORMA-A

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

DISTRICT WISE SUMMARY OF THE PROPOSALS FOR THE YEAR_____

Sl.No.	District	Package No.	No. of Habitations covered	Length Km	Value Rs (Lakh)		AV. Cost/ Km Rs (Lakh)	
					Const.	Maint.	Const.	Maint.
1		1 2 3 4						
	Total							
2		2 2 3 4						
	Total							
3 4 5 etc.								
State Summary	No. of Dists.	Total Packages	Habitations Covered	Length Km	Value Rs (Lakh)		AV. Cost/ Km Rs (Lakh)	

Signature :
Name :
State Secretary :

PROFORMA-B

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
PACKAGE SUMMARY

Package Number :
District :
State :

Sl. No.	Name of Block	Name of the Road		Type of Proposal	Proposed length	Cost of Pavement	No. of CD works	Cost of CD Works	Total estimated Cost		Average Cost per Km	
		From	To	*N/U	Km	Rs.	Nos	Rs.	Rs.		Rs.	
									Const.	Maint.	Const.	Maint.
Total Estimated cost of the Package: Rs. Lakh												

* N-New Connectivity U-Up gradation

Prepared By: Signature:
Name:
Designation:

Checked By: Signature:
Name:

Scrutinized By: Signature:
Name:

Technical Scrutiny done By: Signature:
Name:

Coordinator STA: Signature:
Name:

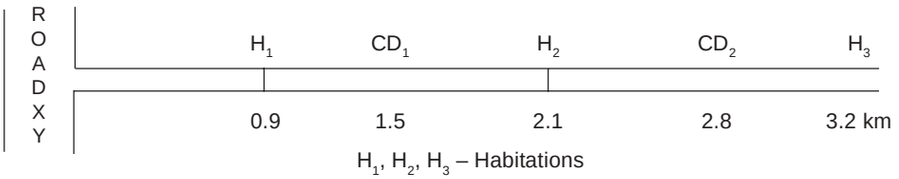
PROFORMA-C

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
CHECK LIST FOR P.I.U & S.T.A
(FOR INDIVIDUAL ROAD WORKS)

To be filled by PIU

1.	**Location:-** State:-		District:-		Block:-		
2.	**Package No.:-**						
3.	**Name of the Road:**	From:		To:			
4.	**Length (Km)**	Total Km	In Built up area: Km		In Open Area: Km		
5.	**Estimated Cost Rs:**	Lakhs	Cost Per Km Rs.		Lakhs		
6.	**Type of Proposal:**	New connectivity/ Up gradation					
■	**If the proposed road is a New connectivity**						
-	Is the road a part of core network				YES/NO		
-	Name of the unconnected Habitation (s) (to be crosschecked with CN-6)						
-	Does the Proposed Road lead up to the Habitation for which it is Supposed to provide connectivity (In other words are you sure that the road is not being made partially?)				YES/NO		
-	Does the Proposed Road connect the unconnected Habitation to				(a)	(b)	
	(a) Another Habitation having All-weather road.						
	(b) Directly to an all weather road. If (b), indicate the nature of road to which the proposed road leads.				RR	MDR	SH / NH
■	**If the proposal is for upgradation**						
	- Is the road a part of the core network				YES/NO		
	- Is it associated Through Route or not				YES/NO		
(In case if it is not associated TR) Whether PCI, has been done					YES/NO		
Age of Road given					YES/NO		
- Is it certified that there are no other Unconnected Habitation in the district.					YES/NO		
- Population sub served by the proposed road							
7.	**a) Whether the Proposed Road** has the desired carriageway width, Roadway width and Road Land Width (RLW).				YES/NO		
	b) Indicate the actual widths of the following for the Proposed road.				In the Built Up Area (m)	In the open Area (m)	
	a) Carriageway						
	b) Roadway						
	c) Road Land Width						

INDEX MAP (Not to scale)



H_1, H_2, H_3 – Habitations

CD_1, CD_2 – Cross Drainage Works

8. Base year traffic volume

								Total	
Bus/Truck	LCV/ Mini Bus	Cars/ Vans/ Jeeps	Three wheelers	Two wheelers	Cycle Rickshaw	Cycles	Bullock Carts	Motorized	Non-motorized

9. Growth rate adopted (%): **Projected Traffic:** **CVPD**

10. Sub grade CBR

Chainage				
Design CBR (%)				

11. Cost Details

A. Clearing and Grubbing Cost in Rs.

B. Pavement Components

For Black Top			**For Unsealed**		
Item	**Thickness**	**Cost (Rs.)**	**Item**	**Thickness (mm)**	**Cost (Rs.)**
Earth work			Earth Work		
Subgrade Preparation (GSB)			Subgrade Preparation		
WBM-1			Wearing Surface		
WBM-2					
WBM-3					

C. Bituminous Layers

Prime Coat		
BM/ BBM		
Tack Coat		
MSS		
PMC with Seal Coat		

D. CD Works	No. of Existing CD Works:		
	Do they require any improvement	YES/ NO	
	If Yes, cost of improvement	Rs.	
	No. of proposed CD Works		
	Cost of Proposed CD Works		
E. Protection Works	Length:	Cost:	
F. Side Drains (if provided)	Length:	Cost:	
G. Road Logo, other Road Furniture		Cost:	
H. Five Year Routine Maintenance	Yr 1	Cost	% of Const. Cost
	Yr 2		
	Yr 3		
	Yr 4		
	Yr 5		

12. Whether the road has Geometrics as per Rural Roads Manual (RRM)	YES/ NO
13. Whether CD works/ Protection works are provided as per RRM	YES/ NO
14. Whether the Cost estimates are as per standard data analysis and S.S.R	YES/ NO

Certified that information provided is true

Prepared By: A.E.	**Checked By: E.E.**	**Scrutinized By: S.E.**

To be filled by S.T.A

Name of the STA:

15. If the proposal is for new connectivity

- Have you satisfied yourself that the proposed Road is a part of the Core Network. Yes/ No
- Is the unconnected habitation(s) part of list of unconnected Habitations as per CN-6. Yes/ No
- Does the Proposal ensure full connectivity. Yes/ No

16. Are you satisfied with the following

- Engineering Surveys. Yes/ No
- Soil/ Material Investigation Yes/ No

- Traffic Surveys/ Estimation Yes/ No
- Hydraulic Studies Yes/ No

17. Is the design of the following elements as per Rural Roads Manual:

- Alignment & Geometric Yes/ No
- Pavement Design Yes/ No
- CD works and protection Measures Yes/ No
- Side drains Yes/ No
- Drainage Layer Yes/ No

18. Does the Estimation conform to Standard rate analysis and SSR Yes/ No

19. Does the Proposal have provision for

- PMGSY Logo Sign Boards Yes/ No
- Km/ Hm Stones Yes/ No
- Guard Stones (where necessary) Yes/ No
- Traffic Sign Boards (as necessary) Yes/ No
- 5 year routine maintenance, estimated on lump-sum basis

20. Specific remarks, if any, by STA

Certified that the Design and Estimation for the Proposed Roads works are based on the data and SSR provided by Engineers. The Proposal may be cleared.

Technical Scrutiny:	**Coordinator:**
Done by	**S.T.A**
Signature	**Signature**
Name	**Name**

Annexure 7.3

(See Para 7.4)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Format for Consolidated Report of the STA

On the Project Proposals under PMGSY.

1. State: Phase: Year:
2. Names of the Members of the STA involved in the Technical Scrutiny.
3. Whether Pre-DPR meeting was held with SRRDA and DPIUs.
4. Summary of the Project Proposals scrutinized indicating district wise and road wise details of length and cost. The summary includes the No. of Packages and total value.
5. Whether schedule for scrutiny was fixed in advance (give details) and difficulty in adhering to schedule.
6. Actual scrutiny process and time taken for scrutiny (Please indicate the dates).
7. Interaction of the Engineers of the Executing Agencies with the STAs.
8. Major deficiencies observed during scrutiny with details.
9. Reliability of data obtained through investigations and used in the design/ estimation.
10. Compliance of the provisions/ instructions given in the guidelines/ circulars/ operations manual/ IRC codes etc. in the preparation of DPRs including Environmental/RR/ Road safety aspects etc.
11. Levels of response from the Senior Engineers of the Executing Agencies for the suggestions given by the STAs for revision/ modifications in the DPRs.
12. If DPRs outsourced, perceived level of competence of outsourced consultants and suggestions.
13. Overall comments and impressions of the STAs, if any, on the process of the preparation of DPRs and their technical scrutiny.

Signature and

Name of the Coordinator STA

CHAPTER 8

PROCUREMENT

8.1 STANDARD BIDDING PROCESS

8.1.1 After the project proposals have been cleared and Technical Sanction has been accorded, the Executing Agency will invite tenders. The well-established procedure for tendering, through competitive bidding, will be followed for all works under the Programme.

As provided in the guidelines of the programme, the Executing Agencies will follow the Standard Bidding Document (SBD) for Construction and Maintenance of Roads under Pradhan Mantri Gram Sadak Yojana prescribed by the NRRDA. The SBD is available on PMGSY and OMMS websites. The SBD will be made State specific based on 36 parametric values to be provided at State level. The response on these parameters will first be cleared by NRRDA and then applied to the SBD. The instructions and 36 point checklist for preparing the State-specific Bidding documents for PMGSY Works are given in Annexure 8.1. Change in any provisions of the bidding document except those provisions which have been indicated in the list of 36 parameters by the State Government is not permissible. In case it is proposed to change the response to any of the 36 parameters after clearance of NRRDA, prior concurrence of NRRDA will need to be obtained.

8.1.2 All the States shall follow the State specific Standard Bidding Document, prescribed by the NRRDA, for all the tenders. The Standard Bidding Document, inter alia, provides for:

- A two envelope tendering process consisting of the Technical Bid and Financial Bid (except in the case of some World Bank works). The Technical bids to be opened first and evaluated and the financial bids of only those bidders to be opened whose technical bids are found responsive after evaluation.
- Time frame for various activities in the tendering process.
- Clear qualifications for the contractor to qualify for Bidding.
- Evaluation of Bidding Capacity in each case.

The time frame for various activities in the tendering process is given below:

Particulars of Action	**Days**	**Cumulative Total Days**
Advertising the Press Notice	Time Count Starts	7
Sale of Bidding Documents 15 Days		
Pre-bid meeting, at least ten days before the last date for submission of bids		
Issue of corrections/clarifications at least six days before the last date of bid submission		
Last Date for submission of bids and opening of Tenders (Opening of outer envelope and technical Bids)	21	28
Evaluation of Technical Bids and notification of Results	10	38
Opening of Financial Bids	1	39
Evaluation and Approval of Financial Bids	10	49
Communication of Approval	7	56
Submission of Performance Security, Agreement and Work-order	15	71
Commencement of Work	15	86

All State level formalities relating to the issue of tender notice, finalisation of tender and award of works shall be completed within 71 days (120 days in case of re-tendering).

8.1.3 As a result of adoption of the Book of Specifications entitled as Ministry of Rural Development – Specifications for Rural Roads, August 2004 published by Indian Roads Congress, the Section 5 of the bidding document has been modified to define the above publication as 'Specifications' for the purposes of bidding under PMGSY. NRRDA has also issued the first amendment to the SBD effective for all tendering w.e.f. 15th February 2005. Brief description is given below:

- The provisions to obtain address and the contact details of the contractor at the time of Technical offer and submission of bid form have been modified.
- Provisions of communication through fax and other electronic means have been incorporated.
- Provision for deployment of machinery and establishment of field laboratory required to ensure the quality of works as has been made in Contract Data as well as in GCC. Failure to deploy machinery and equipments has been specifically included as a fundamental breach.
- Provision of part possession of the work site has been made but at the starting of the work, the Engineer will be required to handover possession of at least 75% of the site.
- Provision has been made for refund of 50% of retention amount and additional performance security for unbalanced bids after the completion of construction work.
- Provisions of issue of completion of construction works as well as maintenance work have been modified.
- Provision of final account and final payment of construction work and routine maintenance has been modified.
- The activities of routine maintenance and their frequency have been modified as per Ministry of Rural Development Specifications for Rural Roads, August 2004.

8.2 SCOPE OF WORK TENDERED

All the projects scrutinized by the STA and cleared by the Ministry shall be accorded Technical Sanction by the competent State Authority before issue of Tender Notice. In case of variations of upto 10% in a DPR, the State may continue with the tendering process, after informing NRRDA and making changes in the OMMS. Variations will be adjusted within the overall District allocation and failing that, within the overall State allocation. In cases where variation exceeds 10%, prior approval of NRRDA will be sought before tendering. Such packages may be excluded and tendering process continued with the other packages. After Technical sanction works will be tendered as such, and no changes shall be made in the work without the prior approval of the NRRDA. The complete items of work (construction and maintenance) will be put to tender since issue of any materials to the Contractors is not allowed, and the executing agencies are not allowed the separate procurement of the material like Hume pipes, cement, steel and bitumen etc. for issue to the Contractor.

8.3 SPECIFICATIONS, RATES AND BILL OF QUANTITIES

The Book "Specifications for Rural Roads IRC-August, 2004" shall be adopted as specifications for the works of rural roads under PMGSY. The rates and / or standard nomenclature of items of work contained in Bill of Quantities for the purposes of road works under the PMGSY will be taken from the "Schedule of Rates for Rural Roads" of the respective State Governments which will be prepared from the "Standard Data Book for analysis of rates IRC-September, 2004" published by Indian Roads Congress for the Ministry of Rural Development.

8.4 CALLING OF TENDERS BY SRRDA AND BID CAPACITY

8.4.1 Two envelope system the Standard Bidding Document envisages submission of bids in two envelopes marked respectively, "Technical Bid" and "Financial Bid". On the basis of the eligibility criteria laid down in the Instructions to Bidders (ITB), the Technical Bids will be evaluated, and a list will be drawn up of the responsive bids whose Financial Bids are eligible for consideration.

8.4.2 *Assessing Bid Capacity*: The Standard Bidding Document as per Clause 4.6 provides for calculation of 'Assessed Available Bid Capacity'. The bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity for construction work is equal to or more than the bid value under consideration. As per Clause 29 of ITB, the employer will award the contract to the bidder whose bid has been determined to be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration. The assessment of 'Assessed Available Bid Capacity' is carried out during evaluation of technical bids. The purpose of the Assessed Available Bid Capacity (AABC) is to ensure that the works being awarded to the contractor do not exceed what he can reasonably be expected to complete, given his earlier performance as well as ongoing commitment. Since in PMGSY proposals of the entire State are generally cleared at one go and a contractor can bid for a number of packages, it may happen that he is the lowest bidder for more works then he has the capacity to complete within the stipulated period. Accordingly, it is necessary to ensure that the sum total of works awarded to him does not exceed the AABC. This may be done by centralizing the process and sequencing it through an objective rule, so that at the time of award of each sequenced package, any work awarded previously in the sequence to the same contractor is deducted from his AABC, in order to work out the net AABC, and then award the package to the contractor only if the net AABC exceeds the bid value. The centralization for purposes of working one net AABC may be done at the level of the SRRDA, and any one of the following sequencing rules uniformly applied for determining the award. An alternative procedure which meets the expected standards of fairness and transparency may also be used, under intimation to the NRRDA. In the interest of transparent procurement, it is necessary that the sequencing rule be explicitly mentioned in the Notice Inviting Tenders.

8.4.3 *Sequencing Option:*

Option 1: Bidders may be asked to indicate in each technical bid the order of opening of their bids, so that the financial offers corresponding to the qualifying technical bids are opened in that order the his AABC is exhausted. Remaining financial offers of the bidder will be kept unopened.

Option 2: Financial bids of all qualifying bidders may be opened and bids arranged in order with that package where the difference between potential L-1 and potential L-2 is the greatest followed by the one in which it is next greatest and so on. L-1 will be awarded packages till his bid capacity is exhausted. The process will be repeated for the remaining packages based on difference between earlier potential L-2 (now potential L-1) and earlier potential L-3 (now potential L-2) values etc.

It may be noted that negotiation with bidder other than L-1 is not permitted. The determination of L-1 needs to be done carefully, and the lowest bidder whose net bid capacity is lower then his bid value would not be qualified to be declared L-1 for obvious reasons.

In case tenders are invited independently at PIU level, due to differences in dates and the inability of Bidders to indicate order of opening in case of option 1 the Bid capacity may not be applied properly. As such, it is preferable that, to facilitate proper bid capacity evaluation, tendering should be done centrally at SRRDA level.

8.5 PREPARATION OF BIDDING DOCUMENT

Bidding Documents for each package will be prepared by completing the following:

a. **Section 1: List of important Dates of Bids** – The list of important Dates of Bids will be completed by filling-up the prescribed spaces.

b. **Notice Inviting Tenders (NIT):** The NIT will be completed by filling-up the prescribed spaces and Press Notice will also be generated.

c. **Press Notice:** The notice for publication in the News papers will be completed by filling-up the prescribed spaces.

d. **Appendix to ITB:** The basic information regarding requirement of equipments, technical personnel and other details required for the bidder to understand the work shall be filled up in ITB. The information in this Section is very important and the PIU is expected to fill up the information regarding requirement of machinery

and equipments on the basis of the type of and quantities of items of work, similarly the information regarding the equipments for the field laboratory will also depend upon the type and quantity of items of work.

e. **Contract data:** The basic contract data shall be filled up in the prescribed format.

f. **Special Conditions of Contract**: If there are any special conditions of contract, these are to be shown in Section-4.

g. **Specifications:** The specifications to be adopted for the construction and maintenance work have to be clearly shown in this section.

h. **Drawings:** The list of drawings has been given in the SBD. All the drawings have to be attached in this section.

i. **Bill of Quantities:** There are two formats for Bill of Quantities. If item rate type of tendering is allowed by the State, the format for BOQ will be filled up by giving full and clear description of items and quantities. The contractor is required to fill up rates in figures and words. In case percentage rate bids are allowed, the BOQ should be filled up completely wherein the description of item, its reference to Schedule of Rate, quantity, unit, rate and amount columns will be filled up. However, the contractor is required to fill up the form of bid wherein the rates, percent above, below or at par will be indicated.

In both the cases the routine maintenance item for every year upto five years (the lump-sum amount per km.) shall be mentioned in the estimate and the contractor is required to fill up his per km. lump-sum amount.

8.6 GENERATING BIDDING DOCUMENT FROM OMMS

The State Specific Bidding Document is available on OMMS website which is based on the State's response on 36 action points. After the clearance of the DPRs from the STA, the PIU will prepare the package-wise bidding document by filling up the details in draft tender document module of proposals as given below:

- For entering the Press NIT details Input Format I (Publish tender notice) will be filled up.
- For generating the List of Important Dates etc. Input Format II (Package wise details) will be filled up.
- For generating ITB and Contract Data, Input Format III (ITB and Contract Data Format) will be filled up.
- The BOQ will be attached as MS-Excel or MS-Word file.

While scrutinizing the DPRs, the NRRDA will also scrutinize the tender document with a view to see that the tender document has been prepared in accordance with the requirement of the work. As soon as the clearance of the package is communicated by the Ministry of Rural Development and technical sanction has been accorded by the competent authority of the State Government, the PIU will make necessary entries regarding the dates or any modifications in other items. After the above modifications are affected, the tender will be published on OMMS website. The tender notice can be printed out and issued for the press advertisement.

8.7 PRESS ADVERTISEMENT OF NIT

In order to give wide publicity to the tendering process and generate adequate competition, the tenders shall be published in reputed news papers of the State in local language or English as well as in one national newspaper in English.

The tender notice for the press advertisement will generally be in the format given in the SBD. Both the construction and routine maintenance estimate shall be published. In the interest of economy, it is preferable that the entire or circle wise lot of cleared packages are advertised centrally by the SRRDA in one go. Since PMGSY places high emphasis on time and quality, States shall take steps to increase competition. As such the SRRDA may register contractors to whom Notice Inviting Tenders may be sent. They may also be asked to register online under OMMS so that SMS or E-mail notices can be sent to them. SRRDA may also make available the Bidding documents at Division, Circle as well as SRRDA level. States shall ensure that all Tender notices are put out on the Internet under the OMMS in such manner as may be prescribed in the Standard

Bidding Document and associated guidelines of NRRDA. To facilitate response, the Tender notice should mention that Bid documents are downloadable from the Internet, and necessary steps should be taken to enable this to be done.

The SRRDA shall at all times update the OMMS tendering module to enable downloading of complete and up-to-date tender documents including corrigendum's and amendments.

8.8 SALE OF BIDDING DOCUMENT AND PRE BID MEETING

The **sale of bidding documents** will be effected as per the schedule. Sale of Tender documents may also be arranged at Division, Circle and SRRDA levels. In order to allow adequate access to bid document, these documents may be made available at SRRDA, also on line. (In such cases cost of Bid Documents may be taken at the time of submission of the Bid).

A **Pre-Bid Meeting** will be organised on the specified date, place and time (after close of sale of tender documents and before last date for submission of bids). The meeting may be held at SRRDA in case the number of packages is not large, or at circle level in other cases. The meeting will be chaired by the officer inviting tender or an officer at-least of the rank of Executive Engineer. Clarifications given in response to queries may be circulated by fax/e-mail to all bidders whether or not they attended the pre bid meeting. As such, minutes of the Meeting will be drawn and circulated to all the bidders as per provisions of clause 9 of ITB.

8.9 RECEIVING OF BIDS

The officers responsible for receiving the bids shall place an appropriate sealed box with a provision of adequate size of slit to facilitate the insertion of sealed bid envelope which will be termed as 'Tender Box for receiving tenders vide notice no……dated ……' right from the day on which tender forms are issued. Last date and time for receipt of tenders will also be mentioned prominently. Before the box is sealed by the officer in-charge, the empty box should be shown to at-least three independent persons and the sealing should be done in their presence and recorded. It will be responsibility of the said officer to ensure safe custody of the box in such a way that during office hours the tender box is accessible to the bidders who want to put their bid, but cannot be tampered with in any manner.

The bidders will be required to put their sealed bids in the tender box. The bids will be received at the specified places up to the specified date and time. As soon as the time of receipt of bids expires, the officer responsible shall seal the slit, affixing his signature on the seal, and keep the box in his safe custody till time for opening of the bids.

8.10 OPENING OF BIDS

The bids shall be opened at the specified place, date and time by the officer authorised, in presence of bidders or their authorised representatives and will be recorded. The signatures of bidders present (including representatives) and officers present in the bid opening will also be obtained on the record of bid opening maintained in the prescribed register (To be prescribed by the State Government). At the designated time, the meeting to open bids will be held in which the authorised representatives of the bidders and other officers as decided by the officer in-charge will be present. Late bids will not be allowed and will be returned unopened as per provisions Clause 19.3 of ITB.

As per clause 19 of ITB, the two separate envelopes marked 'Technical Bids' and 'Financial Bids' are required to be placed in one outer envelope and before opening the bids. It will be checked by the officer in-charge that whether the sealing and marking is as per the provisions.

The outer envelope will be opened first then in case of submission of downloaded bidding documents, the envelope containing the 'cost of bidding document downloaded from internet' will be opened and if the cost of bidding document is not there, or incomplete, the remaining bid documents or envelopes will not be opened and bid will be rejected. After this, the envelope containing the 'Earnest money' and the 'Technical Bids' will be opened. The envelope containing the 'Financial Bids' will not be opened at this time. As a measure of abundant precaution, the sealed envelopes of financial bid may be got signed from present bidders or their representatives and this fact may be recorded.

In all cases the amount of earnest money, forms and validity shall be announced and after this the bidder's name and such other details as the employer may consider appropriate, will be announced in the meeting of bid opening. The officer in-charge will prepare the minutes of the Bid Opening which will include the information disclosed to those present in the meeting.

The list of certificates required in submission of bids is at Annexure 8.5.

8.11 TECHNICAL BIDS AND THEIR EVALUATION

8.11.1 The Technical Bid shall comprise of the following:

(i) Earnest Money in a separate cover marked as 'Earnest Money'.

(ii) If the bid has been prepared in downloaded bidding document from internet, the Demand Draft for the cost of bidding document in a separate cover marked as 'Cost of bidding document downloaded from internet'.

(iii) Qualification Information with supporting documents, certificates, affidavits and undertakings as specified in clause 4 of ITB.

(iv) Undertaking regarding validity of bid as per clause 15.1 of ITB.

(v) Any other information/documents.

(vi) An Affidavit affirming that information submitted in the Bidding Document is correct.

8.11.2 The technical evaluation shall be taken up and completed within five working days of the date of opening of bids. The officer responsible for evaluation of technical bid may follow the following steps for the evaluation:

(i) Cost of Bidding Document: If downloaded Bidding Document has been submitted without the cost of tender form, the bid will be rejected.

(ii) Earnest Money: The Earnest Money has to be as per clause 16 of ITB. If Earnest Money is not there or is not as per the provisions no further evaluation will be required and the bid will be declared non-responsive and rejected.

(iii) Qualification Information: After the above two points have been disposed off, the examination of qualification information will be started. The officer in charge will see that all the information prescribed in Section 3 Qualification Information has been duly completed and supported by the prescribed certificates. If the information furnished in the above section is not supported by desired authentic certificates, that particular information will not be considered valid. The evaluation of the Technical Bid in respect of Qualification Information will be based on provisions of Clause 4 of ITB. The evaluation of Bid based on Qualification Information (QI) may be carried out in the following manner.

- **Eligibility of bidder:** As per Clause 3 of ITB, the examination of the Constitution and Legal Status of the Bidder as presented by the contractor in Para 1.1 of QI on the basis of copies of relevant papers shall be carried out.
- **Qualification:** As per Clause 4.4 A of ITB, the examination of monetary value of civil construction work performed in last five years and experience of similar works as presented by the contractor in Para 1.2 and 1.3.1 of QI on the basis of copies of relevant papers shall be carried out.
- **Demonstration of availability of equipments and personnel:** As per Clause 4.4 B (b) of ITB, the bidder is required to demonstrate the availability of owned or hired key equipments, technical personnel and liquid assets and/or credit facilities as specified in Appendix to ITB. The examination of availability of owned or hired construction equipments, technical personnel and liquid assets and/or credit facilities as presented by the contractor in Para 1.4, 1.5, 1.7 and 1.8 of QI on the basis of copies of relevant papers shall be carried out.
- **Production of Certificates:** As per Clause 4.4 B (a), the bidder is required to produce an affidavit to the effect that the information furnished in the bid document is correct, current income tax clearance

certificates and such other certificates defined in Appendix to ITB. The above aspects will be examined and failure to produce the certificates shall make the bid non-responsive.

- For assessment of bid capacity as per clause 4.6 of ITB the Contractor is required to give the information regarding maximum value of civil engineering works executed in any one year of the last five years and value of existing commitments and on-going works. The first information will be available from para 1.2 of Qualification Information and will be verified from the certificates of Chartered Accountant and other relevant papers and the second information will be available from para 1.3.2 (A) of Qualification Information.
- **Sub-contracting:** As per clause 4.2 (k), the Bidder is required to propose for sub-contracting the components of work upto a maximum of 25% of the contract price. The Bidders proposal in this regard as presented by the contractor in Para 1.6 of QI on the basis of copies of relevant papers shall be examined from the point of view of its approval in case his bid is finally accepted, however, the Bidder is not authorised to propose for sub-contracting of component of works aggregating to more than 25% of the contract price.
- **Methodology and Work Programme:** As per clause 4.2 (l) of the ITB, the Bidder is required to furnish proposed methodology and programme of construction and quality management plan. The above information shall be examined for justification of the capacity of the Bidder regarding execution and timely completion as per specifications within stipulated period.
- **Disqualification:** Even if the Bidder meets the above qualification criterion, the bids are subject to be disqualified if the Bidder has made misleading or false representations, has a record of poor performance and the Bidder participated in previous bidding for the same work and has quoted unreasonably high or low bids and could not furnish rational justification.

8.11.3 After the detailed evaluation of the bids the employer will determine whether each bid meets the qualification criterion defined in clause 3 and 4 of ITB, whether the bid is properly signed at designated places, whether the bid is accompanied by required securities and each bid is substantially responsive to the requirements of the Bidding Document.

The bid capacity of every bidder will also be calculated on the basis of information furnished by the bidders during the evaluation of technical bids.

A list of responsive bids will be drawn up whose financial bids are eligible for consideration. The employer shall inform the bidders whose technical bids are found responsive the date, time and place of opening of financial bids by telegram or facsimile.

8.12 OPENING AND EVALUATION OF FINANCIAL BIDS

8.12.1 The Financial Bids will be opened at specified place, date and time in presence of bidders or their authorised representatives and will be recorded. At the designated time, the meeting to open bids will be held in which the authorised representatives of the bidders and other officers as decided by the officer in-charge will be present. At the time of opening of financial bid the names of the bidders whose technical bids were found responsive will be announced. The financial bids of only these bidders will be opened. The financial offers will be opened following the procedure given in Option 1 or Option 2 of Para 8.4.3, whichever was stated in the NIT. For the purpose, if Option 1 is being followed, the AABC of all responsive bidders will be announced before financial bids are opened. In all cases, the rates quoted by the bidder, total bid price and conditions, if any, and such other details as employer may consider appropriate shall be announced in the meeting of bid opening. The signatures of bidders present (including representatives) and officers present in the bid opening will also be obtained on the record of bid opening. The officer in-charge will prepare the minutes of the Financial Bid Opening which will include the information disclosed to those present in the meeting. The financial Bids of non-responsive bidders will be returned unopened to the bidders.

8.12.2 The evaluation of financial bids will be carried out to determine the responsiveness of the bid with respect to remaining bid conditions i.e. the rates quoted by bidder and the priced bill of quantities, technical specifications and drawings (if provided by bidder). The evaluation of the bid, correction of errors and comparison of bids will be done as per provisions in Clause 25.2, 25.3, 26 and 27 of ITB.

8.12.3 After the evaluation of financial bid in respect of bid conditions the bids will be evaluated in respect of award criteria as per Clause 29 of the ITB. The substantial responsive bid is the bid which has offered the lowest bidding price and if the bidders available bid capacity for construction work is equal to or more than the bid value under evaluation.

8.13 ACCEPTANCE OF BID AND PERFORMANCE SECURITY

8.13.1 After the evaluation, the complete case will be put up to the competent authority for approval. It is desirable that the Chief Engineer (PMGSY) or CEO of the SRRDA be empowered to decide Tenders so that long and complicated procedures are avoided in the interests of speedy decision. This will also ensure that validity period does not expire. The bidders whose bids have been accepted will be notified of the award by the PIU/SRRDA prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter (Letter of Acceptance – on format given in the SBD). This letter will state the sum that the employer will pay to the contractor in consideration of the execution, completion and maintenance of the Works, and the routine maintenance of the works for five years, by the contractor as prescribed by the contract. The Letter of Acceptance will constitute the formation of the contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 32. The agreement will incorporate all agreements between the employer and the successful bidder. It will be signed by the XEN in case of PIU and an authorised officer in case of SRRDA, and the successful bidder after the performance security is furnished. Upon the furnishing by the successful bidder of the performance security, the employer will promptly notify the other bidders that their bids have been unsuccessful.

8.13.2 Within 10 days after receipt of the letter of acceptance, the successful bidder shall deliver to the employer a performance security of 5% of the contract price, for the period of 5 years plus the time for completion of works. Additional security for unbalanced bids will also be delivered in accordance with Clause 27.3 and 27.4 of ITB and Clause 46 Part I General Conditions of Contract.

8.13.3 The performance security shall be either in the form of a Bank Guarantee or Fixed Deposit Receipts, in the name of the employer, from a Scheduled Commercial Bank. Failure of the successful bidder to comply with the requirements of Clause 32.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest Money. He will also be debarred from participating in bids under PMGSY for one year.

8.14 CONTRACT AND WORK ORDER

On completion of prerequisites, the Contract (Agreement – format given in SBD) shall be signed and Work Order (Notice to proceed with work – format given in SBD) shall be issued to the successful Bidder (Contractor).

Within 15 days of the date of Work Order, signboards along with the Logo of the PMGSY should be erected at the side of road works. The Signboards should indicate the name of the Programme (PMGSY), name of the road, its length, contracted cost of construction and cost of maintenance, date of commencement and due date of completion of construction and name of the executing contractor. It is desirable that after completion of construction, this is in the form of a permanent brick-masonry/ concrete structure at both ends of the road.

8.15 RE-TENDERING WORKS

If no bids have been received or in the opinion of the employer adequate competition has not been generated, if the technical evaluation indicates that no party has been qualified or an inadequate number have been qualified (say, single tender or inadequate number for generating competition), or if after the financial evaluation, it is found that there are no responsive bids, the tendering process shall be repeated. The same condition shall also apply to cases where the Performance Security is not furnished.

In such cases, if deemed appropriate, the duration of opening the bids from the date of NIT can be reduced from 28 days to 15days in the second and 7 days in subsequent calls and the duration of sale of bidding document will also be reduced correspondingly for cutting down the delays.

If the bidder who is awarded the work does not start the work within the time stipulated, the contract may be terminated as per the Condition of Contract and the entire bidding process repeated.

Annexure 8.1

(See Para 8.1)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

36 POINT CHECK LIST FOR PREPARING THE BIDDING DOCUMENTS FOR PMGSY WORKS

(i) The Ministry of Rural Development has prescribed standard bidding document for Pradhan Mantri Gram Sadak Yojana.

(ii) The following instructions check list are issued to help in the preparation of individual bidding document for each work, or a number of works for which bids are invited in one tender.

(iii) The State Government has to decide on the following aspects and inform the authorities inviting bids about its decision so that the bidding documents are prepared in line with its decisions.

The important points are:

1. On whose behalf are the tenders to be invited? Designation of the Employer on whose behalf, the bid is invited. Also decide who is his authorized representative?
2. Who is the tender inviting authority?
3. What is the percentage of the estimated cost of works for the Earnest money? (Usually it is two percent, rounded off to the nearest thousand.)
4. Whether down loading of the bidding documents from the internet is allowed?
5. Whether the bidding documents will be placed on the internet for viewing?
6. What will be the period of bid validity?
7. Whether pre-bid meetings will be held?
8. Who are eligible contractors?
9. Who are exempted from submitting earnest money?
10. Whether percentage rate or item rate tender will be invited?

    The name of the Schedule of rates to be adopted for the percentage rate tenders.
11. Price of tender documents.
12. Extra charges for sending the bidding documents by mail.
13. Whether any of the sub-clauses of Clause 4.2 of the Instructions to Bidders is to be amended? If so, what is the amended version?
14. What is the percentage of the contract price the successful bidder is expected to invest in cash?
15. The bidding document requires a bidder to have completed satisfactorily one work equal to one-third of the estimated cost of works. Does the State want to increase this percentage? If yes, then what would be the new percentage?

16. What other certificates the contractor should submit under clause 4.4 B (a) (iii) of the Instructions to Bidders?

17. What key equipment the contractor must possess or have access to? The equipment must be listed and not left blank in the bidding document. It is to be related to the nature of road work and the specifications. Some examples of equipment are:

Tar Boiler	Water Tanker with Sprinkler
Mini Hot Mix Plant	Road Rollers (8-ton)
Hot Mix Plant (Drum Type)	Vibratory Road Roller
Pave Finisher	Smooth wheeled Tandem Tired Rollers
Bull dozer	Truck
Excavator	Tractor
Air Compressor	Loader (5 Cum capacity)
Concrete Mixers	Tippers
Water tanker	Vehicle Mounted Mechanical Spray

18. How many degree and diploma holders in civil engineering the bidder must have in his employment?

19. What should be the qualification of the person for the field laboratory?

20. What is the minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful bidder must have.

[Note: Usually it is the equivalent of estimated payments flow over 2 months at the average (straight line distribution) construction rate.]

21. What are the designations of the departmental officers whose relations must not be in the contractor's employment?

22. What are the names of departments whose retired officers must not be in the employment of the contractor?

23. Should M be more than 2 for judging the available bidding capacity of the bidder? Refer Clause 4.6 of Instructions to Bidders. It cannot be more than 3. Higher the value, greater is the chance of failure of the contractor.

What is to be the language of the bid?

24 Clause 12.1 Part I (V) of Instructions to the Bidders. What are the other documents required from the bidders?

25. What are the deductibles, if any, for insurance? (Refer clause 13.1 of Part I General Conditions of Contract.

26. What are the powers of the Superintending Engineer and the Chief Engineer for settlement of disputes? (Refer clause 24.1 of Part I General Conditions of Contract).

27. What is the period within which the contractor must submit the programme for approval of the Engineer? (Refer clause 26.1 of Part I General Conditions of Contract).

28. What is the period of interval within which the contractor must submit the up dated programme to the Engineer? (Refer to clause 26.3 of Part I General Conditions of Contract).

29. What is the amount to be withheld if the up dated programme is not submitted? (Refer to clause 26.3 of Part I General Conditions of Contract).

30. What is the percentage of variation which calls for revision of rates? (Refer to clause 36.1 of Part I General Conditions of Contract).

31. What is the designation of the authorized person to make payment in case consultants are appointed? (Refer to clause 39.2 of Part I General Conditions of Contract).

32. Prescribe the State Government's form for unconditional bank guarantee.

33. What is the number of days within which the field laboratory must be set up after the notice to start work is issued? Refer to clause 52.2(i) of Part I General Conditions of Contract).

34. What is the percentage to apply to the value of work not completed. (It is usually 20 percent.) Refer to clause 53.1 of Part I General Conditions of Contract).

35. If the State Government wants to include any Special Conditions of Contract, it must take prior approval, in writing, of the National Rural Roads Development Agency.

36. The following is the schedule of time to be taken to complete the entire bid process.

(Time frame for various activities shall be same as given at the end of Para 8.1)

Check List for preparing Standard Bidding Document

Name of the Work.....

Identification Number of the Work.....

Name of the person preparing the bidding papers.....

Name of person checking the bidding papers.....

Section 1 List of Important Dates

Item	Date	Initials of person	
		Preparing	Checking
Name of the Work			
Completion Period			
Date of Issue of Notice Inviting Bids			
Period and Places of Sale of Bidding Documents			
Time, Date and Place of Pre-bid Meeting			
Deadline for Receiving Bids			
Time and Date for opening Technical Bids/Bids			
Time and Date of opening Financial Bids			
Place of opening bids			
Last Date of Bid Validity			
Designation and Address of Officer inviting Bids			

Section 1 Press Notice

Designation of Authority Inviting Bids	Initials of person	
	Preparing tender document	Checking tender document
Designation of authority on whose behalf bids are invited		
Contractors registered with		
Deadline for receiving bids (Time and Date)		
Fill in the columns of the table		
demand draft-fill in details of designation in whose name DD is drawn, where payable and the amount		
Write the name of the office where tender documents can be inspected and the dates when available for inspection		
State whether the tender documents are available on the internet site www.omms.nic.in		
State where the tender document can be downloaded from the internet		
Write the designation and the address of the authority inviting tenders		

Section 1 Notice Inviting Tenders

Item	Initials of person	
	Preparing tender document	Checking tender document
Paragraph no. 1. Designation of authority inviting tenders on whose behalf tenders are invited		
Percentage Rate or Item rate tenders (Delete whatever is not applicable)		
Fill in the columns of the table		
Paragraph No. 4 Write the name of the office where tender documents can be inspected and the dates when available for inspection		
Price of tender documents		
demand draft-fill in details of designation in whose name DD is drawn, where payable and the amount		
State if the bidding documents are available for viewing on the internet site www.omms.nic.in		
Paragraph 5. Extra amount for sending tender documents by mail		
Paragraph 6. Deadline for receiving bids (designation, Time and Date)		
Time, Date and place of bid opening		
Write the designation and the address of the authority inviting tenders		
Write the designation of authority on whose behalf bids are invited		

Section 2 Instructions to Bidders

Note: Any change in any clause of the Instructions to bidders is not allowed.

Section 2 Appendix to ITB

Item	Initials of person	
	Preparing tender document	Checking tender document
Clause 1.1 Write the designation of the Employer		
Write the name and summary description of the Works		
Write the Identification No. of the works		
Clause 2.1 Write the name of the State		
Clause 3.1 Write details of the eeligible bidders		
Clause 4.2 Check if the information required from bidders in Clause 4.2 is to be modified. If yes, write its details sub-clause wise. Otherwise write 'none'		
Clause 4.2 (g) Fill in the percentage of contract price the bidder will be able to invest if successful.		
Clause (4.4 **A**) (b). _____[insert the amount if the cost of successful completed works is more than one-third of the estimated cost of proposed works		
Clause (4.4 **B**) (a) (iii). Write what other certificates are required with the bid		
Clause (4.4. **B**) (b)(i). Write carefully the details of key equipments for road works and field testing laboratory Road Works.		
Clause (4.4 **B**) (b)(ii). Write details of the number of technical personnel, their qualifications and experience.		
Clause (4.4 **B**) (b)(iii). Write the minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder. [Note: Usually it is the equivalent of estimated payments flow over 2 months at the average (straight line distribution) construction rate.]		
Clause (4.4 **B**) (c) (i). Write the designations of the departmental officers whose relations must not be in the contractor's employment.		
Clause (4.4 **B**) (c) (ii). Write the names of departments whose retired officers must not be in the employment of the contractor.		
Clause 4.6. Write the value of M if it more than 2 and up to 3.		
Clause 71. Write the contact person's designation, address, and telephone no.		
Clause (9. 2.1). Write Place, Time and Date for pre-bid meeting		
Clause (11.1) Write the language of the bid.		
Clause (12.1) Part I (V) Write the details of other documents required		

Clause (13.2.). Select only one option, namely percentage rate or item rate. Delete the other option.		
Clause (13.2). Write the schedule of rate if percentage rate has been selected. Otherwise, leave it blank.		
Clause (16.2) Write the amount of the earnest money. It is usually two percent of estimated value of the Works, rounded off to the nearest thousand.		
Clause (16.2). Write the designation of the authority in whose favour the fixed deposit receipt should be drawn for the earnest money.		
Clause (16.3). Write categories of contractors exempted from submitting the earnest money.		
Clause (20.1). Write the Employer's address for the purpose of Bid submission		
Clause (20.1). Write the deadline for bid submission, hour and date.		
Clause (22.1). Write the date, time and place for opening of the Technical Bids and Financial Bids		
Clause (32.1) Write the amount of the performance guarantee.		

Section 3 Qualification Information
Note: No action is required.

Section 4 Conditions of Contract
Part I General Conditions of Contract.
Note. Any change in any clause is <u>not</u> allowed.

Section 4 Contract Data to Part I General Conditions of Contract

Clause	Item	Initials of person	
		Preparing tender document	Checking tender document
1.1	Write the designation and address of the Employer, and his authorized representative		
1.1	Write the designation and address of the Engineer		
1.1, 17 and 28	Write the intended completion date of the works.		
1.1	Write details of location of the Site		
1.1	Write the number of days to count the Start Date from the date of issue of notice to start work.		
1.1	Write identification number of the contract and the details of works.		
2.2	Write what is section completion, if any		
2.3 (11)	Write names of other documents if they are part of contract		

3.1	Write the name of the language of the contract		
8.1	Attach the schedule of other contractors, if any		
9.1	Write the number of technical persons required, degree and diploma holders in civil engineering; also write qualification of the persons for the field laboratory		
13.1	Write deductibles for insurance, if any		
14.1	Write brief details of Site Investigation Report		
24.1	Write the powers of the Superintending Engineer and the Chief Engineer for settlement of disputes		
26.1	Write the period within which the contractor must submit the programme for approval of the Engineer		
26.3	Write the period of interval within which the contractor must submit the up dated programme to the Engineer		
26.3	Write the amount to be withheld if the up dated programme is not submitted		
36.1	Write the percentage of variation which call for revision of rates		
39.2	What is the designation of the authorized person to make payment in case consultants are appointed? Otherwise, leave it blank		
46.1	Enclose the State Government's prescribed form for unconditional bank guarantee		
51.1	(a) Write the dates by which in-built drawings are to be supplied.		
52.2(i)	Write the number of days within which the field laboratory must be set up after the notice to start work is issued		
53.1	Write the percentage to apply to the value of work not completed. (It is usually 20 percent.)		

Section 4 Part II Special Conditions of Contract

Note: Special conditions of contract to modify Part I General Conditions of Contract may be added with the approval of the National Rural Roads Development Agency.

Section 5 Specifications and Drawings.

Write the specifications and details of drawings in the light of the notes given. Then delete the notes. The notes are not published. The notes are not part of the bidding document.

Section 6 Form of Bid

Note: No action on the part of the authority inviting tenders

Section 7 Bill of Quantities

Note: Select the form bill of quantities for item rate tenders or the bill of quantities for percentage tenders.

If the Bill of Quantities for Item Rate Tenders is selected, leave the columns of rates blank. The tenderer will fill it in. Fill in the column of description of works with brief specifications and reference to the book of specifications.

If the Bill of Quantities for Percentage Rate Tenders is selected, do not leave any column blank. Fill in all the columns.

Section 8 are standard forms for use.

Annexure 8.2
(See Para 8.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

OMMS Input Format I (Publish New Tender Notice)

Publish Tender Notice				
NIT No.				
NIT Publication Date		[DD-MM-YYYY]		
Tender Form Issue Start Date		[DD-MM-YYYY]	Time	[HH:HH]
Tender Form Issue End Date		[DD-MM-YYYY]	Time	[HH:HH]
[Designation of Authority inviting Bids]				
Invites on behalf of		sealed		
⊙ Item Rate ○ Percentage Rate Tenders from approved and eligible Contractors registered with				
	up to	[HH:HH] hours on		
	[Date in DD-MM-YYYY format] for each of the following works including maintenance			
for five years after construction.				
The earnest money should be deposited along with the tenders in the appropriate form as per the				
tender documents. The tender shall be issued on payment by demand draft drawn in the favour of				
	and payable at			
	for Rs.	only (non-refundable)		
for each package. Th e authorized tender documents are available for inspection in the office				
Of	from	[DD-MM-YYYY]		
to	[DD-MM-YYYY] during office hours on all working days.			
Designation of the authority inviting tender				
Address				

NEXT RESET

Annexure 8.3
(See Para 8.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

OMMS Input Format II (Package Wise Details)

Add Pacakage Details in Tender Notice No. : SDFDDS				HELP
Sanctioned year: 2005-2006		Package :	- Select -	
Class of Contractor	I	Cost of Tender Form (Rs.)		Earnest Money (Rs.)
Last Date and Time for Receipt of Application for Issue of Tender Form	[DD-MM-YYYY]	Time	15:00 [HH:MM]	
Tender Opening Date	[DD-MM-YYYY]	Time	15:00 [HH:MM]	
Date of Opening of Technical bid	[DD-MM-YYYY]	Time	15:00 [HH:MM]	
Date of Opening of Financial bid	[DD-MM-YYYY]	Time	15:00 [HH:MM]	
Place of Sale of Tender				
Receiving Authority				
Pre Bid Details and Place				
Date of Prebid Meeting	[DD-MM-YYYY]	Time	15:00 [HH:MM]	
Place of Opening Bids				
Deadline for Receiving Bids	[DD-MM-YYYY]	Time	15:00 [HH:MM]	
Total Estimated Cost (Rs. In Lakhs)		Time Allowed For Completion (in Months)		
Total Maintenance Cost (Rs. In Lakhs)	0			
Name & Designation of Contact person for site visit:				
Address of Contact person for site visit:				
Phone No. (Of Contact Person for site visit)				
Earnest Money to be/ pledged in the name of				
Extra cost for Dispatch by speed / Registered Post (in Rs.)	Rs. 500/-			
*Engineer for the purposes of this contract will be (fill up if Engineer is other than officer Inviting Bids)				
*The submission of Bidding Document will also be allowed at following places:				
*Section completion as per clause 2.2 of GCC, if any				
*Site investigation reports as per clause 14 of GCC (if any)				
* Are the fields which may not be mandatory. All others are mandatory fields				
NEXT				

Annexure 8.4
(See Para 8.6)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

OMMS Input Format – III (ITB and Contract Data Format)

1. Add Equipments For Construction

Close

Key Equipments For Road works

Sr. No.	Type of Equipment	Number of Equipment	Status

Name of Equipment : - Select - Quantity Add

2. Add Equipments For Field Laboratory

Close

Key Equipments For Field Testing Laboratory

Sr. No.	Type of Equipment	Number of Equipment	Status

Name of Equipment : - Select - Quantity Add

3. Technical Personnel Requirement For Construction and Up gradation

Close

Technical Personnel For Construction and Upggradation work

Technical Personnel	Number	Experience	Status

Name of Technical Personnel: Degree Holder in Civil Engineering Number Experience (In Years) Add

4. Technical Personnel Requirement For Maintenance

close

Technical Personnel For Maintenance work			
Technical Personnel	**Number**	**Experience**	**Status**
Name of Technical Personnel: Degree Holder in Civil Engineering	Number	Experience (In Years)	Add

5. Technical Personnel Requirement For Field Laboratory

close

Technical Personnel For Testing Laboratory			
Technical Personnel	**Number**	**Experience**	**Status**
Technical Personnel	Number	Experience (In Years)	Add

Annexure 8.5

(See Para 8.10)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

List of Certificates required in submission of bid under PMGSY

1. Proof of eligibility of Contractor as per clause 3 of ITB.

2. Copy of constitution or legal status of bidder.

3. Power of attorney of signatory of bid.

4. Certificates of Charted Accountant regarding annual volume of civil engineering construction works executed and payments received in last five years.

5. Certificates from employers regarding experience of construction of similar nature of work as detailed in para 1.3.1 of Qualification Information.

6. Certificate from Engineer in-charge regarding on-going works.

7. Evidence of submission of bids (bids not approved/ accepted) by bidders at other places.

8. Evidence of availability of owned key equipments or leased key equipments.

9. Certificate giving the availability of key technical personnel stated in Appendix to ITB.

10. Financial reports of last five years: balance sheets, profit and loss statement and auditor's report.

11. Bank certificate or other evidence of access to financial resources, cash in hand and lines of credit.

12. Undertaking that Bidder will be able to invest a maximum of cash upto the percentage of contract price as specified in the Appendix to ITB.

13. Affidavit to the effect that information furnished with the bid document is correct in all respects as per clause 4.4 B (a) of ITB.

14. Income tax clearance certificate.

15. Undertaking of the Bidder to the effect that near relatives and retired Gazetted officers are not and will not be in his employment.

16. Any other certificates as provided in Appendix to ITB.

CHAPTER - 9

PROJECT IMPLEMENTATION AND CONTRACT MANAGEMENT

9.1 INTRODUCTION

PMGSY requires that all works should be executed by Contractors with the capability of executing the work within the given time and with the requisite quality. PMGSY places high emphasis on both time and quality. Contracting out the work makes it possible to achieve both objectives of speedy execution and good quality by emphasizing requirements of adequate execution capacity (in terms of engineering personnel and necessary equipment and machinery) and adequate Quality Testing. The Standard Bidding Document developed for PMGSY not only sets down the well established procedures of competitive bidding to ensure selection of qualified Contractors with the necessary expertise and ability, it also ensures that the Contract terms and conditions are commensurate with the need to make both time and quality assurance the essence of the Contract.

Every work under the Programme is required to be contracted as per the provisions of Standard Bidding Document prescribed by NRRDA. The successful bidder, after furnishing the required Performance Security as per clause 32 of Instruction to Bidders (ITB), executes the Agreement, after which a notice to proceed with the work, often termed as 'Work Order' is issued by the Employer. For purposes of PMGSY, 'Employer' means the State Government or the SRRDA. The performance of the Contract will start from the date of issue of the notice to proceed with the work. The execution of work and management of the Contract is required to be done strictly as per the conditions of Contract.

9.2 CONTRACT DOCUMENTS

To properly manage the Contract, it is necessary to understand the Contract documents and their order of priority. As given in the Agreement constituting the Contract, the following documents shall form part of the Contract, interpreted in the following order of priority:

(a) Agreement.

(b) Notice to Proceed with the Work (Work Order).

(c) Letter of Acceptance.

(d) Contractor's Bid.

(e) Contract Data.

(f) Special Conditions of Contract (SCC).

(g) General Conditions of Contract (GCC).

(h) Specifications.

(i) Drawings.

(j) Bill of Quantities (BOQ), and.

(k) Any other document listed in the Contract Data.

The obligations arising out of these documents, generally in the naturally occurring sequence is given in the following paragraphs.

9.3 PRE-MOBILIZATION

9.3.1 Insurance: The Contractor is required to provide insurance cover from the start date to the date of completion as per clause 13 of the GCC. Insurance policies and certificates shall be delivered by the Contractor to the engineer for the approval before the start date. The Contractor and Employer should note that as per clause 52 of GCC, it is a fundamental breach of the Contract if the Contractor fails to provide insurance cover.

9.3.2 Subcontracting: After the issue of Work Order, the engineer (i.e. the Executive Engineer who would be the 'engineer' as defined in the Contract) would first ascertain whether there is any sub-contracting allowed within the Contract. As per clause 4.2(k) of ITB, if the Contractor has proposed to sub-contract the work and the proposal has been accepted by the competent authority, the sub-contracting will be allowed. The conditions of sub-contract will be governed by clause 7 of General Conditions of Contract (GCC).

9.3.3 Mobilization Advance: As per clause 45 of the GCC, the Contractor is entitled to get mobilization advance upto 5% of the Contract price (excluding routine maintenance). The advance shall be paid by the Employer against submission by the Contractor of an unconditional Bank Guarantee in the prescribed format by a commercial bank acceptable to the Employer in an amount equal to advance payment. The Bank Guarantee shall remain effective until the advance payment has been repaid. The amount of the Bank Guarantee shall be progressively reduced by the amounts repaid by the Contractor. The Employer is entitled to ensure that the advance payment has been used by the Contractor for the purpose it has been released. The Employer is entitled to ask for copies of invoices or other documents as may be determined by him. The repayment of advance will be effected by the engineer by deducting proportionate amounts from the payments due or otherwise falling due.

9.4 MOBILIZATION

The Contractor is required to mobilize men, material and machinery within 10 days after the date of issue of the Work Order. The duration between the date of issue of the work order and the date of actual commencement of the work is termed as 'Mobilization Time' which is very important for the Contractor as well as the 'engineer'. During this period, the complete planning of the work and mobilization of resources i.e. men, material and machinery is carried out for ensuring not only completion of the work, but also timely completion of various items of work so as to ultimately achieve the target of timely completion of whole work with requisite quality.

The following activities are required to be completed, generally in the suggested order, by the 'engineer' and the Contractor during the Mobilization Time:-

(a) **Deployment of Contractor's personnel**: As per clause 9 of the GCC, the Contractor is required to employ the technical personnel enumerated in the Contract data. At the start of the Mobilization Time, technical and administrative instructions will be passed on to the Contractor by the engineer and therefore, to fully understand the instructions and before any further activity is allowed, the Contractor will be required to employ his key technical personnel who will interact with the Engineer. At the mobilization stage, at-least one graduate Engineer and required number of diploma Engineers should be deployed to attend to the work programme, working drawings and recording of pre-commencement level. After the mobilization activities completed, the requirement of technical personnel will depend on the items of work being executed but soon after the commencement of the work the technical personnel required for field laboratory should be in place till the completion of the work.

(b) **Listing of Requirements by Engineer:** As per the Bill of Quantities, the requirement of material, labour and machinery during the construction period divided suitably in the defined durations is required to be listed by the 'engineer'. The 'engineer' will also prepare the list of the equipments required to establish the field laboratory. These will be based on the data entered in Appendix to ITB with reference to clause 4.4 B (b) (iii) of the ITB and the list of equipments given in Contract Data to GCC.

(c) **Work Programme:** Based on the BOQ and the list of requirements of men, material and machinery, the 'engineer' is required to guide the Contractor for the preparation of work programme. The **Work Programme** is the programme showing the general methods, arrangements, order and timing of all the activities in the

works along with monthly cash flow forecasts for the construction of the works. Based on the guidance of the 'engineer' and availability of resources, the Contractor is required to prepare his work programme and assess the requirement of additional men, material and machinery. The work programme should be detailed in such a way that the date of start and date of completion of every item of work is clearly laid down; the details of requirements for completion of various items of works including cash flow forecasts should also be captured. It is desirable that a sample PERT-chart of complete activity of construction should be drawn up wherein the details of every large or small activity should be clearly shown. It is also desirable that in the work programme, the Contractor should clearly indicate the tentative periods during which the presence of the engineer or his representatives will be required at site.

(d) Handing over of Site to Contractor: The 'engineer' is required to handover the full possession or part possession (at least 75%) of the work site to the Contractor. As far as possible, the 'engineer' should handover the possession of the full work site.

(e) Working Drawings & Designs: While the 'engineer' is handing over the possession of the work site, complete set of working drawings should be handed over to the Contractor which, inter-alia, will include L-Section, Cross-Section and Plan of road alignment, drawings of CD works and designs as decided by the 'engineer'.

(f) Specifications & Drawings of Temporary Works: The Contractor has to submit the specifications in drawings of proposed temporary works for the approval of the engineer as per clause 18 of the GCC. The Contractor shall be responsible for temporary works as well as for the safety of all the activities on the site.

(g) Approval of Work Programme: Once the above activities are complete, the work programme will be submitted by the Contractor for approval of the 'engineer' and the 'engineer' after checking that the work programme is realistic (keeping in view seasonal factors) shall accord his approval. It is important that the time period given for completion of different portions of the work are properly checked with reference to availability of machinery and if necessary the 'engineer' should advise the contractor to redraw the work programme before according his approval. It is to be stressed that as per Clause 26.2 of GCC ("An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities"), not deploying requisite key personnel or equipment is a fundamental breach of the contract as per clause 52.2 k which is worded as "if the Contractor fails to deploy machinery and equipment or personnel as specified in the Contract Data at the appropriate time".

(h) Establishment of Field laboratory: The Contractor will establish the field laboratory at a convenient location as approved by the engineer. It will be ensured by the Contractor that the laboratory has all the equipments as required by the engineer. It should be noted that the Contractor will not be allowed to commence the work if the field laboratory is not established in the stipulated time frame. Non-establishment of the Laboratory within the time given is a fundamental breach of the Contract. The Contractor shall have some area available for holding meetings with PIU. It is suggested that the Contractor should provide a temporary site office along with the field laboratory. Such an office would serve as a meeting place between PIU Engineers and the Contractor's Engineer's. Also the works programme and other day-to-day required information can be kept in such office.

(i) Pre-Commencement Levels: Recording of pre-commencement levels is the first activity of the Work Programme. After the handing over of the possession of the work site, actual measurements of pre-commencement levels will be recorded by the representative of the 'engineer' in the presence of authorized representative of the Contractor in the Measurement Book. The acceptance signature of the representative of the Contractor will invariably be recorded.

9.5 INTIMATION OF MOBILIZATION

As soon as the above mentioned activities are complete, and in particular the men and machinery are in position and site Quality Control Laboratory has been established, the PIU shall inform the SQC so that the Empowered Officer can operationalise the financial limits for the Contract package (See para 13.1.4).

9.6 MANAGEMENT MEETINGS

As per clause 29 of GCC, there is a provision for Management Meetings to review plans and progress of work. The 'engineer' may require the Contractor to attend the management meetings. It is highly desirable that the 'engineer' should organize the first Management Meeting within 3 days of issue of the Work Order and the items listed above under the head of mobilization should be attended to in this Management Meeting. It is also desirable that the 'engineer' works out a schedule of Management Meetings in relation to the Work Programme. A communication listing the Schedule should be sent to the Contractor well in advance so that the business of review of progress of works is well understood and appreciated by the all concerned. The management meeting should be an integral part of the Contract management process to ensure that there are no deficiencies or delays on part of the Contractor or the Employer/ Engineer. As such it would be useful to maintain a clear record of such meetings. A copy would be given to the Contractor, and a copy would be given to the AE/JE, with the office copy being filed in the relevant Management Meeting file for the Package.

9.7 COMMENCEMENT OF WORK, PROGRESS AND TIME CONTROL

The Contractor will commence the work as per the Work Programme. The 'engineer' is required to monitor the progress of execution of work in relation to the work programme and as per clause 26 of GCC, in case, the Contractor is not in a position to carry out the work as per the work programme, the updated/revised work programme shall be invariably submitted by the Contractor, without affecting the total stipulated duration of the Contract. In case of initial delay in activities, the Contractor may adjust the activities of the further work within the stipulated duration and furnish the revised work programme, within the duration prescribed in the Contract data, for approval as per provisions of the Contract. If the Contractor fails to submit revised work programme, there is a provision of withholding the amount as per the Contract data. The 'engineer' is empowered to withhold from the next due payment and continue to withhold this payment until the next payment after the date on which overdue programme is submitted. The 'engineer's approval of the programme shall not alter the Contractors obligations.

9.8 UPDATING WORK PROGRAMME

The **revised/updated work programme** shall be a programme showing the actual progress achieved for each of the activity and the effect of the progress achieved on the timing of remaining works including any changes to the sequence of the activities. The Contractor is free to revise the programme and to submit it to the 'engineer' again at any time. The revised/updated work programme must show the effect of variations if any and compensation events (if any).

9.9 SUBCONTRACTING DURING CONSTRUCTION

The Contractor may propose sub-contracting any part of the work during execution, beyond what has been stated in clauses 7.1 and 7.2 of GCC generally to make up for unexpected delays which cannot be made up in the normal course. To enable the Contractor to complete the work as per terms of the Contract, the Employer will consider the following before according approval.

(a) The Contractor shall not sub-contract the whole of the works.

(b) The Contractor shall not sub-contract any part of the work without prior consent of the Employer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any of his sub-contractor, agents and workmen.

The Engineer should satisfy himself before recommending to the Employer whether

(a) the circumstances warrant such sub-contracting; and

(b) the sub-contractor so proposed for the work possess the experience, qualifications and equipment necessary for the job proposed to be entrusted to him in proportion to the quantum of works to be subcontracted.

9.10 LIQUIDATED DAMAGES

In case the following milestones are not achieved by the Contractor, he shall be liable for payment of liquidated damages for the period that the completion date is later than the intended completion date as per clause 44 of the GCC:

i) if 1/8th of the value of entire Contract work has not been completed upto 1/4th of the period allowed for the completion.

ii) If 3/8th of the value of entire work has not been completed upto ½ of the period allowed for completion.

iii) If 3/4th of the value of entire Contract work has not been completed upto 3/4th of the period allowed for completion.

1% of the initial Contract price, rounded off to the nearest thousand, per week, is the amount of liquidated damages for delay in completion subjected to maximum of 10% of initial Contract price.

The engineer is empowered to withhold the amount of liquidated damages if Contractor fails to achieve the above milestones. However, if the Contractor achieves the subsequent milestone in time, the withheld amounts would be restored.

The engineer should note that the quality and time are the essence of the Contract, as such, the **delay in completion of the work constitutes a fundamental breach of the Contract** as per clause 52. The provision in this respect is given below:

(a) The Contractor stops the work for 28 days when no stoppage of work is shown on the current programme and the stoppage has not been authorized by the engineer.

(b) The Contractor has delayed the completion of the work by the number of days for which maximum amount of liquidated damages can be paid, as defined in clause 44.1

(c) If the Contractor has not completed at least 30% of the value of work required to be completed after ½ of the completion period has elapsed.

As soon as a delay occurs, is essential for the engineer/Employer to issue appropriate notices/ letters giving clear reference of the specific clauses of Contract. Since a legal Contract is involved, unofficial/oral warnings to Contractors should not be resorted to as a substitute for a formal notice. The Employer is empowered to terminate the Contract if the fundamental breach of the Contract occurs in respect to delay in completion of the work.

9.11 QUALITY CONTROL

As per Clause 16 of the GCC, the Contractor has to construct and install and maintain the works in accordance with specifications and drawings. Section 5 'Specifications' of the Contract Document forms the part of Contract and all the works shall be carried out by the Contractor strictly as per specifications prescribed in Section 5. As per clause 31 of GCC the Contractor is solely responsible for carrying out mandatory tests prescribed in Rural Roads Manual and for correctness of test results whether performed in his field laboratory or elsewhere. For ensuring effective quality control the Employer/ engineer will be required to ensure the following:

(a) The Contractor will be required to furnish a Quality Management Plan along with the work programme. The Engineer will prepare the schedule of those tests which will be carried out in presence of JE, AE or EE as per the provisions given in Quality Control Register/Handbook.

(b) The Contractor is required to establish field laboratory as per provisions of clause 31.1 of the GCC read with clause 4.4 B (h) of ITB. The engineer will ensure that the field level quality control laboratory required for mandatory tests is established by the Contractor during the mobilization time.

(c) No material will be used on the work unless the mandatory tests have been conducted and the material has qualified the tests parameters. No work will be accepted unless the mandatory tests for workmanship have been conducted and the workmanship has qualified the tests parameters. In case the Contractor

has failed to comply with the above the Engineer will take cognizance of this under clause 30 of the GCC and will issue a written notice to the Contractor for rectification of the defect.

(d) Quality Control Register Part I will be maintained by the designated personnel of the Contractor at the field laboratory and this register will be made available for inspecting officers as prescribed in the conditions of the contract. For this the Contractor will be required to furnish clear authorization because the responsibility of maintenance of Quality Control Register will be of the Contractor. Every week, the abstract of the register will be communicated by the personnel of the Contractor to the Assistant Engineer in-charge of work in the format 'Abstract of Tests Conducted' given in Quality Control Register Part II.

(e) The personnel of the Contractor responsible for laboratory will inform the AE the cases of non-conformance within the duration (generally within next two days of conducting tests) prescribed by the Engineer in the form prescribed by PIU which will include the test no., name of test, date of test, results and its comparison with standard values.

(f) The AE will maintain Quality Control Register Part II which is abstract of the mandatory tests conducted and record of non-conformance reports. The AE will ensure that non-conformance report is issued to the Contractor immediately on occurrence. The Contractor will take immediate steps for rectification. In case the Contractor fails to comply with the above the Engineer will take cognizance of this under clause 30 of the GCC and will issue a written notice to the Contractor for rectification of the defect.

(g) As per clause 22 of GCC, the Contractor has to allow the access to the site to the Engineer and other authorized persons. The supervising officer in the department, the State Quality Monitors and National Quality Monitors will be carrying out inspections of the work and subject to guidelines issued separately for the purpose, the instructions given by the above persons will be the instructions to the Engineer. The Engineer/ Employer will ensure the compliance of the instructions of the inspecting officers through the Contractor.

(h) As per clause 30 of the GCC, without affecting the Contractor's responsibility, the Engineer shall check the work and notify the Contractor if any defects are found. The Engineer is also empowered to instruct the Contractor to search for a defect and to uncover and test any item of work that the Engineer considers may have a defect.

(i) As per clause 32, even after the completion of work but before the end of the defect liability period the Contractor has to correct the defects within the specified duration of time.

The engineer should note that the time and quality are the essence of the Contract, and **failure to ensure quality of the work constitutes a fundamental breach of the Contract** as per clause 52 of the GCC, provision of which include:

(i) Clause 52.2 (i):- If the Contractor fails to set up a field laboratory with the prescribed equipment, within the period specified in the Contract Data.

(ii) Clause 52.2 (c):- The Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer.

(iii) Clause 52.2 (k): If the Contractor fails to deploy machinery and equipment or personnel as specified in the Contract Data at the appropriate time.

It is very essential for the engineer to issue appropriate written notices/ letters giving clear reference of the specific clauses of Contract, if the instances of unacceptable quality are detected. The Employer is empowered to terminate the Contract if a fundamental breach of the Contract occurs.

9.12 COST CONTROL AND VARIATIONS

The execution of work is required to be done as per the items and quantities detailed in the Bill of Quantities. The Contractor is paid for the quantity of work done at the rate approved for the purpose either on the basis of

Schedule of Rates in case of percentage rate tenders or on the basis of approved rates given in Bill of Quantities for each item of work in case of item rate tenders.

Having regard to the scope of works and sanctioned estimated cost, the Engineer has the power to order in writing, variations within the scope of works he considers necessary or advisable during the progress of work. The Contractor shall carry out such works and such variations shall form the part of the Contract. If the Engineer gives oral order for variations, these orders will have to be confirmed by written directions.

If rates for variation items are specified in the Bill of Quantities, the Contractor shall carry out such work at the same rate. This shall apply for variations only upto the limit prescribed in the Contract Data. If the variation exceeds this limit, the rate shall be derived under the provisions of clause 36.3 of GCC for quantities (higher or lower) exceeding the deviation limit.

9.13 EXTENSION OF INTENDED COMPLETION DATE

The Engineer is empowered to extend intended completion date in the following events:

- If a compensation event occurs.
- If it is impossible for completion to be achieved by intended completion date because of a variation order issued by the Engineer.

The Engineer shall decide within 21 days of the request of the Contractor whether, and by how much time, the extension is to be granted. The Contractor is required to give full and detailed proposal for extension of time along with supporting information. It should be noted that as per para 27.2 of GCC, if the Contractor fails to cooperate in dealing with a delay, the delay because of the failure shall not be considered in assessing the new intended completion date. The Engineer as per clause 28 of the GCC is empowered to instruct the Contractor to delay the start or progress of any activity within the works. However, the Engineer will have to obtain a written approval of the Employer for ordering delay totaling more than 30 days.

9.14 PAYMENTS AND DEPOSITS

As per clause 38 of the GCC, the Contractor is required to submit fortnightly/ monthly statements of value of the work done including variations and compensation events, if any, supported with detailed measurement of each item. The Engineer within 14 days is required to check the Contractor's statement and certify the amount. It is to be noted that the value of work executed shall be determined on the basis of measurements by the Engineer.

Payments shall be adjusted for various deductions and the Engineer shall pay the Contractor amounts certified within 15 days of date of each certification.

The rates quoted by the Contractor shall be deemed to be inclusive of the sales and other levies, duties, royalties, cess, toll, taxes of Central and State Governments, local bodies and authorities that the Contractor will have to pay for the performance of this Contract.

The Engineer shall deduct a security deposit of 5% from each running payment due to the Contractor. The security deposit and performance security, aggregating to 10%, of the Contract price shall be released to the Contractor, after completion of defect liability period provided that the Contractor has corrected defects notified to him during the period of performance guarantee and the Contractor has satisfactorily completed the routine maintenance of roads as per the conditions of Contract. The Engineer would convert security deposits for the defect liability period into interest bearing securities of a scheduled commercial bank in the name of Employer if so desired by the Contractor.

The amendment to SBD applicable for the tenders invited after 15th February, 2005 provides for release of 50% of the retention amount and performance security for unbalanced bids just after completion of the construction work. However, the release of rest of the retention amount and performance security shall be done only after the routine maintenance period.

9.15 COMPENSATION EVENTS

The Contractor is entitled for compensation for the following events, if these events have not been caused by the Contractor:

- The Engineer orders a delay or delays exceeding a total of 30 days.
- The effects on the Contractor of any of the Employer's Risks.
- If a compensation event prevents or is likely to prevent the works being completed by the intended completion date, the intended completion date shall be extended in writing by the Engineer. The Engineer shall decide whether and by how much the intended completion date shall be extended.

9.16 DEFECT LIABILITY PERIOD AND ROUTINE MAINTENANCE

All the contracts under PMGSY will not only be a construction Contract but will also include the routine maintenance for five years. Description of items to be attended during the routine maintenance has been clearly laid down in the Contract data. As per clause 32 of GCC, the Contractor will be required to attend to the defects during the defect liability period. The Contractor is also required to carry out routine maintenance of the work executed by him, in such a way that road surface and structures are kept in defect free condition during the entire maintenance period of five years. To fulfill the above objectives the Contractor is required to fulfill the requirements stipulated in para 32.2.2, 32.2.3 and 32.2.4 of GCC.

The Engineer is required to issue written notices to correct the defects noticed during the defect liability period. In case the defect is not satisfactorily rectified within the given time period the Engineer shall deduct the cost and get the defect corrected under clause 33 of the GCC.

9.17 DISPUTE RESOLUTION

The Standard Bidding Document of PMGSY provides for simplified and effective dispute redress mechanism, governed by clause 24 of GCC. Any dispute or difference of any kind arising in connection with the execution of the Contract whether before its commencement, during the progress of work, after the termination or abandonment or breach of Contract, in the first instance is required to be referred for settlement to the competent authority specified in Contract data. Generally, the States have empowered Superintending Engineers and Chief Engineers of the executing department for the above purpose. Either party have right of appeal against the decision of competent authority to the Standing Empowered Committee, in case the amount appealed against exceeds Rupees one Lakh. The composition of Standing Empowered Committee (SEC) shall be as per clause 24.3 of GCC.

In States where mandatory provisions of arbitration are applicable the provisions of Clause 24 and 25 of the General Conditions of Contract under the Standard Bidding Document for Pradhan Mantri Gram Sadak Yojana will not be applicable. Such State Governments will propose modifications in the provisions of Clause 24 and 25 of the General Conditions of Contract under the Standard Bidding Document for Pradhan Mantri Gram Sadak Yojana. States may keep in view the provisions in this respect applicable to World Bank funded PMGSY works. The details are given in Annexure 9.1.

9.18 COMPLETION

The Contractor shall request the Engineer to issue a certificate of completion of the construction of the works, and the Engineer will do so upon deciding that the works is completed. In case of Routine Maintenance the Contractor shall request the Engineer to issue the certificate of completion of the Routine Maintenance and the Engineer will do so upon deciding that the Routine Maintenance is completed.

9.19 FINAL ACCOUNT

The Contractor shall supply the Engineer with a detailed account of the total amount that the Contractor considers payable for works under the contract within 21 days of issue of certificate of completion of construction of works. The Engineer shall issue a defect liability certificate and certify any payment that is due to the Contractor

for works within 42 days of receiving the Contractor's account if it is correct and complete. If the account is not correct or complete, the Engineer shall issue within 42 days a schedule that states the scope of the corrections or additions that are necessary. If the Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate within 28 days of receiving the Contractor's revised account. The payment of final bill for construction of works will be made within 14 days thereafter.

In case the account is not received within 21 days of issue of Certificate of Completion as provided in clause 50.1 above, the Engineer shall proceed to finalise the account and issue a payment certificate within 28 days. The payment of final bill for construction of works will be made within 14 days thereafter.

In case of Routine Maintenance, the Contractor shall supply the Engineer with a detailed account of the total amount that the Contractor considers payable under the contract 21 days before the end of the Routine Maintenance Period. The Engineer shall issue a Routine Maintenance Completion Certificate and certify any final payment that is due to the Contractor within 42 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 42 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate within 28 days of receiving the Contractor's revised account. The payment of final bills for routine maintenance will be made within 14 days thereafter.

In case the account is not received within 21 days of issue of Certificate of Completion as provided in clause 50.3 above, the Engineer shall proceed to finalise the account and issue a payment certificate within 28 days. The payment of final bill for routine maintenance will be made within 14 days thereafter

9.20 TERMINATION

As per clause 52 of the GCC, the employer is empowered to terminate the contract if the Contractor causes a fundamental breach of the contract. Some of the main conditions of fundamental breach are:

- The contractor stops the work for 28 days without authorization of Engineer.
- Contractor fails to correct the defect within the time determined by Engineer.
- Contractor delays the completion of work by the number of days for which maximum amount of liquidated damages can be paid.
- Contractor has not completed 30% of the value of work after half of the completion period.
- Contractor fails to establish field laboratory.
- Contractor fails to deploy required machinery and equipment for construction and personnel as prescribed in the contract.

If the Contract is terminated, the Engineer shall issue the certificate for value of work and if the total amount due to Employer exceeds any payment due to the Contractor, the difference shall be recovered from the deposits available with the Employer, if amount is still left un-recovered it will be a debt payable to employer.

As per the clause 54 of GCC, if the Contract is terminated because of Contractor's default the property as mentioned in the said clause shall be deemed to be the property of the Employer and credit of the same will be given to the Contractor.

Annexure 9.1
(See Para 9.17)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Provisions Regarding Disputes
in some of the World Bank Funded PMGSY Projects

Disputes

If the Contractor believes that a decision taken by the Engineer was either outside the authority given to the Engineer by the Contractor or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of notification of the Engineer's decision. Performance under the Contract shall continue notwithstanding the reference to the Adjudicator, and payments by the Employer to the Contractor will not be withheld unless they are the subject matter of dispute.

Procedure for Resolution of Disputes

The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

The Adjudicator shall be paid daily at the rate specified in the Contract Data together with reimbursable expenses to the types specified in the Contract Data and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to Arbitration within 28 days of the Adjudicator's written decision. Arbitration shall be under the Arbitration and Conciliation Act 1996. If neither party refers the dispute to Arbitration within the above 28 days, the Adjudicator's decision will be final and binding.

Where the Initial Contract Price as mentioned in the Acceptance Letter is Rs.5 Crore and below, disputes or differences in which an Adjudicator has given a decision shall be referred to a sole Arbitrator. The Sole Arbitrator would be appointed by the agreement between the parties; failing such agreement within 15 days of the reference to arbitration, by the appointing authority, namely the Chairman of the Executive Committee of the Indian Roads Congress.

Arbitration proceedings shall be held in India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

Performance under the Contract shall continue even after reference to the arbitration and payments due to the Contractor by the Employer shall not be withheld, unless they are the subject matter of the arbitration proceedings.

Replacement of Adjudicator

Should the Adjudicator resign or die or be incapable, or should the Employer and the Contractor agree that the Adjudicator is not fulfilling his functions in accordance with the provisions of the Contract; a new Adjudicator will be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the appointing authority designated in the Contract Data, at the request of either party within 14 days of receipt of such request.

CHAPTER 10

PRINCIPAL AND STATE TECHNICAL AGENCIES

10.1 BACKGROUND

The PMGSY is a programme involving huge investments and represents a major step-up in Rural Road Construction activity. It is no longer either desirable or even practicable that the requisite technical and engineering inputs should be managed in-house. Need based outsourcing will not only be more economical, it will also ensure access to a better range and quality of services and enable R&D and innovations to enter into the mainstream of rural road construction. Over the years, many Engineering Colleges and Technical Institutes have grown into centres of excellence imparting quality education, and at the same time taking up R&D studies. Recognising the vast reservoir of knowledge in these bodies, the MoRD has devised a scheme to utilise the potential of a Government -academia partnership for the benefit of PMGSY. Partnership with State Technical Agencies (STAs) is oriented more towards outsourcing of technical functions, while partnership with Principal Technical Agencies (PTAs) will have a higher R&D and academic content.

10.2 STAs AND PTAs

The STAs are Engineering Colleges/ Technical Institutes which have been identified in various States (in consultation with the States) for acting as catalyzing agents in the State level Rural Road programme. These agencies are expected to improve the project quality at the design and conceptual level and function as a 2nd tier of quality management at the Project preparation level.

PTAs are premier technical institutions having in-depth knowledge of the technology of road design and construction and therefore, able to provide additional R&D and training inputs.

10.3 ROLE AND RESPONSIBILITY OF STATE TECHNICAL AGENCIES (STAs)

State Technical Agencies are envisaged as catalysing agents in the State Level rural road programme. Their functions include:

- **Verification of the District Rural Roads Plan prepared by the district Programme Implementation Unit**

The verification will include:

  - Checking of correctness of existing links.
  - Checking of new proposed links in terms of the parameters laid down by the District Panchayat.
  - Ensuring that all necessary coding and indexing has been done to enable extraction of the Core Network.

- **Post-Scrutiny of the Core Network**

  The State Technical Agency will, after finalisation of the Core Network by the District Panchayats, conduct a 100% review (suitably phased) in consultation with the DPIUs in order to help locate deficiencies, if any, in the Core Network with the objective of achieving a standard suitable for a GIS application.

- **Scrutiny of the Detailed Project Reports for road works prepared by the District Programme Implementation Units**

  The scrutiny by STAs of project reports shall be a thorough and detailed one in order to ensure that

geometric and physical design is appropriate and economic, that the specifications are adequate and based on site conditions and that the estimation of quantities is accurate and reasonable. PMGSY roads are to be of the highest quality and it is the STAs that will have to provide the new inputs into the system to ensure the paradigm shift in terms of proper designing of roads for excellence with economy.

As such STAs while scrutinising DPRs must

- Ensure that mere time constraint does not interfere with proper scrutiny. They should liaise with DPIUs to ensure a proper phasing out of the process.
- Ensure that each DPR is made on the basis of thorough field investigation. If necessary additional data may be asked for.
- Check that the basic parameters viz, traffic and CBR are properly estimated.
- Determine that the design is really appropriate and there is no over-designing.
- Investigate that all possible economies on use of materials, including soil stabilisation measures, use of alternate material like flyash/ industrial waste etc have been fully explored and used appropriately wherever possible.

- **Provision of requisite technical support to the State/ District Units**

  The District Programme Implementation Unit (DPIU), if required may take the advice of the STA in design of works involving special problems. The DPIU will associate the STA in all cross drainage design works where the proposed structure involves a span exceeding 15 metres.

  The STA would normally not be involved in routine monitoring of execution of works. However in case of works involving new or innovative features or with R&D components, the DPIU may take the technical services of the STA in studying the benefits of such innovations and to make general recommendations on their utility.

- **Undertaking normal tests of parameters for road design and Quality Control tests for PIUs and QC**

  The STA laboratories would be available for conducting tests necessary for design and quality control. The DPIU and the SQM would liaise with the STAs for the tests. Samples may also be sent by NQMs for testing through the DPIUs.

  The STA will also liaise with other engineering institutions in the area in order to maintain information regarding whether testing facilities in such institutions are available so that routine testing for design and estimation could be done at such locations as well.

- **Training**

  The training modules designed by Principal Technical Agencies (PTAs) will be operationalised by STAs who will draw resource personnel from their own as well as other suitable technical institutions. The STAs will conduct training, evaluate feedback and suggest future training needs. The training may include both routine and refresher programmes as well as specific technical programmes of local or special relevance.

  The STAs may also prepare audio-visual training material for dissemination and use under the overall specifications and guidance of Principal Technical Agencies.

- **R&D Monitoring**

  Research & Development activities will be carried out by STAs with the involvement direction of PTAs. STAs may be associated with specific projects in terms of implementation, monitoring and feedback, and in terms of general evaluation on behalf of the PTA.

  STAs are most welcome to identify active research projects after consultation with the DPIUs. Such projects should be aimed as using locally available materials or locally relevant designs with a view to effecting economy. NRRDA will give 100% funding support to such proposals. Research work will be executed

through DPIUs as a part of the PMGSY and the STA will monitor/ advise the DPIU and document and report the research project.

- **Technical Advice**

  STAs may be associated by State Governments with all activities concerning the rural road sector. The nodal Department as well as the SRRDA should maintain close liaison with STAs and use their resources to provide valuable policy level and technical inputs into the State Government decision making process. The STAs will be associated with the State Level Standing Committee for the purpose.

  State Governments may also, if required, commission studies through STAs on issues such as traffic patterns, road designs, quality control, maintenance etc. STAs may however not be associated with day to day operational issues.

  PTAs would utilise STA inputs for determining R&D activities, training requirements etc.

10.4 THE ROLE AND RESPONSIBILITIES OF THE PRINCIPAL TECHNICAL AGENCIES

Principal Technical Agencies are premier institutions with in-depth knowledge of the technology of road design and construction. As agencies helping manage technical change in rural road programmes, PTAs are expected to:

- Oversee the activities of the State Technical Agencies (STAs) in the region and advise/ assist in resolving issues that may arise at the time of the scrutiny of Project Proposals of the States.
- Carry out random ex-post facto checks of the Proposals scrutinised by STAs to identify systemic issues
- Organise Orientation/ Refresher Programmes for the STA Personnel for Proper Scrutiny of Project Proposals.
- Identify at SRRDA's request the type of strengthening required for the Laboratories in the Districts (PIUs) and also at STAs.
- Advise Programme Implementing Units (PIUs) on the basis of SRRDA request on any region specific issues that will have a bearing on the Design, Construction and Performance of Rural Roads.
- Design and manage Regional Training Programmes for the Engineers of PIUs and Contractors by developing course material for different training modules and acting as Resource persons/ Institutions.
- Manage Regional Quality Control System and assist NRRDA with the analysis of Quality Monitoring Reports of State Quality Monitors (SQMs) and National Quality Monitors (NQMs). Also, help identify and resolve the issues arising out of the Quality Monitoring System.
- Evaluate specifications, practices and the use of locally available materials for making the proposals Cost Effective.
- Formulate design specifications for new and innovative technologies.
- Study the gaps in the existing practices in Rural Roads Construction and to identify areas for R&D. The PTAs will also assists NRRDA in processing the R&D proposals and entrusting the same to reputed organisations.

CHAPTER 11

QUALITY MANAGEMENT

11.1 INTRODUCTION

In order to achieve the aim of building safe and durable roads economically, the road structure should meet certain requirements. The characteristics that such a structure should posses should be specified through codes of practices and enforced through contract documents. Laying down not only the technical specifications but the workmanship and the testing and acceptance criteria, Quality Control comprises the operational techniques of controlling quality. A Quality Assurance Standard is set when the Quality Control system is operationalised using human resources, trained to a particular standard. Quality Management includes quality planning to maintain a Quality Assurance Standard, as well as Quality Control. Quality Management which includes an external mechanism providing Quality Assurance and an internal mechanism to constantly improve the quality system is termed Total Quality Management (TQM) and PMGSY Quality Management is intended to evolve in that direction. PMGSY aims at Quality Assurance through procedures prescribed in the PMGSY Quality Control Handbook and enforced through the contracts framed under the Standard Bidding Document process. Quality Control operational procedures described below need to be supported by the requisite training and HRD measures in the SRRDAs, PIUs and contracting personnel to generate the requisite Quality Assurance.

11.2 QUALITY STANDARDS

Road works under PMGSY are designed and constructed to standards prescribed in the Rural Roads Manual and Book of Specifications for Rural Roads of Ministry of Rural Development published by Indian Road Congress, August, 2004. In order to provide guidance to the officers implementing the PMGSY, the NRRDA has brought out a Quality Control Handbook at the work level, which provides the information regarding equipment for tests, procedures for quality control tests, process of recording the test results in prescribed registers of tests and details about the drainage aspects and third party inspections.

Proper quality testing and recording is an essential feature of PMGSY which believes that relentless testing and meticulous quality control is the only way to build good roads.

11.3 THREE-TIER SET UP FOR QUALITY MANAGEMENT

Ensuring the quality of the road works is the responsibility of the State Governments, who are implementing the Programme. To this end, all works must be effectively supervised. The Quality Control Register prescribed by the NRRDA to operationalise the provisions of the mandatory testing prescribed under the specifications shall invariably be maintained for each of the road works. Payment shall not be made to the Contractor unless the tests have been conducted as per the prescribed procedure and the results have been found to be satisfactory. A three-tier Quality Management mechanism is envisaged under the Pradhan Mantri Gram Sadak Yojana. The first tier of quality management mechanism is in-house quality control system of the Executing Agency whereas, the second tier of quality management mechanism will be independent quality assurance system operationalised by the State Government. Therefore, the State Governments would be responsible for the first two-tiers of the Quality Management Structure. The third tier is envisaged as independent quality management mechanism operationalised by the NRRDA, as such, this tier would be enforced by NRRDA through the National Quality Monitor (NQM).

11.4 FIRST TIER

11.4.1 The in-house quality control system to ensure the implementation of quality standards by way of carrying

out mandatory tests shall be termed as first tier of quality management mechanism. The supervision of works by the officers of implementing agency will also form the part of this system. The PIUs as the first-tier of quality management have the crucial responsibility in the Quality Assurance system which determines the quality standard delivered by the Contractor. The PIU's quality management functions shall include:

- Preparation of quality DPRs with adequate attention to aspects impinging on quality, including geometrics, drainage and correct estimation of items and scope of work. The quality standards will be as prescribed in the Rural Roads Manual.
- Effective selection process for contracting of execution of works, based on proven capacity and ability of the Contractors, including access to funds, equipment and engineering resources. Even where contracting is centralised, PIUs will be preparing the bid documents and the NITs, which are crucial in the selection of competent contractors. The quality standards will be as prescribed in the Rural Roads Manual and specified in the Standard Bidding Document.
- Ensuring that the Contractor brings adequate resources to bear for the proper execution of the contracted work including
  - Necessary equipment
  - Qualified key engineering personnel
  - Field laboratory properly equipped for testing quality

As per PMGSY guidelines, payment cannot be made to contractor unless these conditions are satisfactorily fulfilled and work programme approved. The quality standards will be as prescribed in the Standard Bidding Document and Quality Control Handbook.

- Supervising Site Quality Control arrangements including materials and workmanship, primarily through testing as per provisions of the Quality Handbook.
- Taking action to ensure replacement of defective material and rectification of defective workmanship.

11.4.2 Where in-house capacity in a PIU is limited, a Project Implementation Consultant (PIC) may be outsourced for carrying out all or any of the PIU functions including actual operation of the first level of the quality control. The PIC will be recruited on the basis of NRRDA's PIC procurement procedure which is quality- cum -cost based. The PIU, as employer/principal for the PIC will continue to have overall responsibility for the first level of quality control.

11.4.3 To ensure quality control on materials and work management at site, the PIU shall ensure that: -

(i) All the tests are conducted by the designated staff of the Contractor and the test results are recorded in the Quality Control Registers prescribed, maintained separately for each of the road work. The registers shall be in two parts, viz,

Part I : Quality Control Register – Record of Tests

Part II : Record of Abstract of Tests and Non-Conformance Report Register

Part 1 Register is the register of all Quality Control Tests conducted by the person who is responsible for the basic Quality Control Testing. It is, therefore, maintained by the person who is responsible for the basic QC tests. If the Contract provides for Quality Control by Contactor, the Part 1 Register will be issued to the Contractor for each road work; but if the responsibility of basic QC tests is with Department (for agreements entered into prior to adoption of SBD), the register will be issued to the site-in-charge officer of basic quality control testing, not below the rank of Junior Engineer/Sub-Engineer.

The Part 1 Register will always be available at the work site. If some tests are required to be conducted in a laboratory situated away from the work, the prescribed format of the test conducted will be duly filled up on a separate sheet and this sheet will be pasted on the space prescribed for the test but the register will not be taken away from the site in any case.

The Part 1 Register contains forms for tests sufficient to accommodate quantities given in Para 12.2 of the Rural Roads Manual for a length of road up to 3km.If the quantities of the items in the work exceed this, additional forms required as per prescribed frequency may be added at the end of the register and the corresponding entries should be done in the abstract. In case the quantities or the items in the work are less, the remaining forms may be left blank and a corresponding note recorded in the abstract. If the length of the road is more than 3km, additional Register(s) should be maintained. The Part I Register will have the following three sections:

Section 1 : Earthwork

Section 2 : Granular Construction

Section 3 : Bituminous Construction

For effective Quality Control, the following percentages of various categories of tests will be done in the presence of the JE/AE/EE:-

(ii) **50 percent** of the tests are conducted in the presence of the in-charge JE of the work. The JE should record his observations in the Quality Control Register, Part I.

(iii) **20 percent** of the tests are conducted in the presence of the AE in charge of the work recorded in the quality Control Register, Part I.

(iv) **5 per cent** of the tests shall be conducted in the presence of the EE in charge of the work, and the EE should record his observations in the Quality Control Register, Part I. The EE will also see that the Non-Conformance Reports are issued in time and timely action is taken by the Contractor.

Register Part II is the Record of abstract of the tests conducted and Non-Conformance Reports. It will be maintained by the site-in-charge officer not below the rank of Assistant Engineer. If the test results do not conform to the prescribed limits, a Non-Conformance Report (NCR) in the format prescribed in the Register will be issued to the Contractor.

11.4.4 A monthly return of the tests shall be submitted in the prescribed Profoma (Annexure 11.1) by the AE to the EE in the first week of every month. The EE will review this return regularly to see that the Quality Control tests are being performed at the desired frequency and with the desired accuracy. The EE will also verify that the Non-Conformance Reports are being issued by the AE whenever non-conformance occurs and the Contractor is taking action promptly on the Non-Conformance Reports. Payment to the Contractor shall be regulated by the EE as per the returns of the Quality Control tests. Any deviation will be the personal responsibility of the EE.

11.4.5 The SE in charge of the circle and the Chief Engineer having jurisdiction are responsible for the proper functioning of the PIU as part of their normal administrative duties. Their inspection and quality testing supervision will therefore be counted as part of effective supervision of the 1st tier of quality management (and not as a 2nd tier of quality management). The SE/ CE shall

i) During his visits to the work, oversee the operation of the Quality Control Testing procedure and record his observation in the Quality Control Register, Part I. The SE and CE will also verify that the Non-Conformance Reports are issued in time and action is being taken by the Contractor promptly.

ii) Prepare Inspection Reports in the prescribed formats which shall be sent to the PIU for taking remedial action. A copy of all such reports will be endorsed to the State Quality Coordinator in the SRRDA. The report shall be detailed and precise and shall cover all aspects of the work inspected, including: -

- Design and estimation
- DPR
- Contract Management by PIU
- Contractor performance
- Quality testing
- On line data entry status

11.5 SECOND TIER

11.5.1 While the 1st tier of Quality Management has the primary function of quality control through enforcement of technical standards, the function of the 2nd tier of independent quality management is to improve the quality and effectiveness of the enforcement process. This includes

- Checks to ensure that the 1st tier is properly functional
- Independent quality tests to verify that the quality control system is achieving its intended objective
- Detection of systemic flaws in the quality control process and action to improve the process
- Independent supervision of deterrent and punitive measures in respect of the 1st tier and the Contractor

In order to be able to take an independent, impartial and dispassionate view of quality control, it is essential that the 2nd tier should have no stake in the outcome. In other words it should have nothing to do with the day-to – day or supervisory management or administration of contracts so that issues of legal action against the contractor, disciplinary proceeding against PIU officials, answerability to audit etc do not colour its judgement or actions.

11.5.2 The 2nd tier of Quality Management will function from the SRRDA, utilising upto 0.5% of the project funds provided for the PMGSY. The 2nd tier will be headed by the State Quality Coordinator (SQC), an officer of the SRRDA. Quality management function may be provided by a combination of

- Independent Quality Management Division of the Executing agency
- State Quality Monitor, mainly retired senior engineers of the State with adequate experience in road project management and suitable for the assignment.
- Outsourced Consultancy organisations with proven capabilities selected on quality-cum-cost criteria based on NRRDA's Project Management Consultant (PMC) procurement document.

All functionaries in the system will be designated by the generic term 'State Quality Monitor'.

11.5.3 The SRRDA will nominate/appoint State Quality Coordinator with the following minimum qualifications:

a He/She should be a graduate Civil Engineer not below the rank of Superintending Engineer.

b He/She must possess field experience of working for construction of roads for at-least five years in last ten years. Also in the last five years he/she should have worked for at-least two years in the field of construction/ maintenance of road works.

In some cases it has been noticed that officers having the experience in the field of construction of Irrigation structures or Water Supply schemes and now deployed for rural roads are being designated as SQCs. Appointing an Engineer with inadequate knowledge and experience as the Head of Quality Control will defeat the very purpose. Officers not possessing the laid down experience should not be designated to work as SQC. States will ensure that the State Quality Coordinator appointed by the State Government possesses the above qualifications, in case the present SQC does not possess the above qualifications State will take appropriate steps to appoint an officer who fulfils the qualification criteria.

11.5.4 The main function of the State Quality Coordinator will be the following-

- Supervise the first tier Quality Management arrangement.
- Liaise with the STAs who function as the 2nd tier of Quality Control for Design and DPR.
- Coordinate and control the activities of State Quality Monitoring arrangement (the 2nd tier), and ensure compilation by PIUs of action on the reports of State Quality Monitors. (SQM)
- Facilitate and coordinate the activities of the National Quality Monitoring arrangement (the 3rd tier) and ensure compilation by PIUs of action on the reports of National Quality Monitors.
- Prepare monthly abstracts of SQM visits and an Annual Quality Report based on the Reports of SQMs and NQMs, Identifying systemic and procedural deficiencies in the Quality Management System and submit the Report for the consideration of the SRRDA and the State Level Standing Committee.

- To assess training requirements at PIU level and to arrange for and coordinate training programmes in coordination with STAs.
- To act as nodal point for request of public complaints and for taking action thereon.

11.5.5 Supervision of the 1st tier of Quality Management shall include

- Obtaining a certificate from PIUs at the time of commencement of the contract that
  - Contractors have brought the necessary machinery and equipment
  - Field laboratory has been established
  - Key engineering personnel have been deployed by the contractor
  - The work programme has been approved

    After the certificate is received, the State Quality Coordinator shall intimate the Empowered Officer of the SRRDA to allocate the credit limits for the contract and operationalise the accounting system in order to enable payments to be made and accounted for.
  - Obtaining monthly return of the tests (Annexure 11.2) conducted by the PIU, and the action taken on non-conformance reports (see para 11.4.4). The SQC shall test check to see that payments to contractors have not been made in the absence of satisfactory tests.

11.5.6 Liaison with the State Technical Agencies to ensure quality in Design and DPR including: -

- Holding of initial coordination meeting with STAs and PIUs (see para 6.2) to sort out issues of design, investigation and data collection, so that DPR is of acceptable standard.
- Coordination of the scrutiny process so that STAs get adequate time to scrutinise DPRs.
- Sorting out issues raised by STAs during scrutiny of DPRs, and making references to NRRDA for clarifications where required, through the Chief Engineer (PMGSY), (see para 7.4)

11.5.7 To coordinate and control the activities of the State Quality Monitors and operationalise the 2nd tier of Quality Management, the SQC will proceed as follows: -

- Draw up programmes for SQM inspections in such a way that every work is inspected at-least three times. The first two inspection of every work should be carried out during the execution of work spaced at least 3 months apart and the last inspection should be carried out on the completion of every work, within one month of its completion.
- The schedule should be drawn up monthly, specifying the Block and preferably the road, so as to ensure systematic coverage. Effort may be made to get those road works in the package inspected first by SQM, which have not been inspected by the NQMs. This may include other roads in package, one road of which was inspected by an NQM recently.
- The SQM should be asked to give his inspection report, covering all the following aspects.

(i) Design of pavement and CD woks.

(ii) Provisions made in estimates.

(iii) Management of the contract, deployment of qualified staff by the contractor and establishment of Quality Control Laboratory by the contractor.

(iv) Work Programme and progress of work.

(v) Execution methodology and adherence to specifications.

(vi) Arrangement at Quality Testing Laboratories.

(vii) Record of Tests – Quality Control Registers and their upto date maintenance.

(viii) Accuracy of Quality Tests, issuance of non-conformance reports (NCR) and action of contractor on NCRs.

(ix) Inspection by departmental officer/ SQMs or NQMs and compliance of the instructions.

(x) Provision and execution of CD works and side drains.

(xi) Road furniture, Logo and Signboards.

(xii) Timely payment to the contractors.

(xiii) Other issues including the technical knowledge of the staff of the executing agency and the contractor.

- The SQC should examine the reports with regard to their adequacy and counsel SQMs in case of deficiency. The State Quality Coordinator should send the Monitor's reports to the Project Implementing Unit with a copy to the SE. Compliance reports to the SQC should be routed through the CE/SE. All cases of delay in reporting compliance and major cases of deviation from acceptable quality standards should be taken seriously. The SRRDA may adopt a two level classification for quality Unsatisfactory and Satisfactory. The earlier NQM formats can be used for inspection of works by the State Quality Monitors. For grading the works as 'Satisfactory' and 'Un-satisfactory', the corresponding changes shall be made in the format.
- Each month, the SQC will compile an abstract of the SQM visits giving the District-wise grading and send copies to the DPIU, CE, Nodal Department and NRRDA in the prescribed Format (Annexure 11.3).
- The State Quality Control Coordinator should send an Annual Report to NRRDA through the State Nodal Agency comprising the analysed performance of the State Quality Monitoring System in a prescribed format. The analysis should include the SQM reports, NQM reports, Action taken in individual cases and systemic deficiencies detected and remedied.
- The Annual Quality Report will be forwarded to the NRRDA, the STAs concerned and the PTA for the State. The PTA shall analyse the Report and after such further study and field visits as may be necessary, with the approval of NRRDA, shall make recommendations on action to be taken at systemic and organisational level to improve quality of constructed roads and the programme performance in general.

11.5.8 The suggested guidelines to SQM are attached as Annexure 11.4.

11.5.9 As part of the Quality Management process, the SQC shall also look after the training needs of the PMGSY staff and contractor's personnel, drawing up an annual programme of training at various institutions such as the NITHE, CRRI, State Training Institutes, and Engineering Institutes etc. He shall operationalise a management system for training programmes and ensure that training inputs are optimised.

11.5.10 The State Quality Coordinator/Head of PIU shall be the authority to receive and inquire into complaints/ representations in respect of quality of works and they would be responsible for sending a reply, after proper investigation, to the complaint within 30 days. The SRRDA, for this purpose, shall ensure the following:

- The name, address and other details of the State Quality Coordinator will be given adequate publicity in the State (including tender notices, websites, etc.) as the authority empowered to receive complaints.
- The State Quality Coordinator shall register all complaints and will get them enquired into by the PIU or if circumstances so require, by deputing a State Quality Monitor.
- All complaints shall be acknowledged on receipt (giving registration number) and likely date of reply shall be indicated. On receipt of the report, the complainant shall be informed of the outcome and the action taken/proposed.
- Action on anonymous/pseudonymous complaints will be taken as per extant instructions of the State Government.
- Complaints received through the Ministry of Rural Development/NRRDA will normally be sent to the State Quality Coordinator for enquiry and necessary action. In case report from an SQM is desired, this shall be furnished within the time specified. In case an adequate response is not received within the stated time schedule, the NRRDA may depute an NQM and further processing will be done only on the basis of NQM report.

The SQC shall make a monthly report to the State Nodal Department/ SRRDA in the prescribed format (Annexure 11.5). The status of action taken on complaints shall be discussed as an Agenda item of the State Level Standing Committee, a copy of the proceedings of which shall be sent to the MORD.

11.5.11 Supplementary guidelines on quality control will be issued from time to time by the NRRDA. However, the Nodal Agency in the State should ensure that adequate quality consciousness is created among the PIUs Also, adequate number of SQMs should be made available under the SQC to undertake the tasks assigned to the 2nd tier, with the designated frequency.

11.6 THIRD TIER

Whereas the State Government is responsible for Quality Management, the NRRDA arranges for external Quality Assurance by deploying National Quality Monitors, whose responsibility is to verify that the State's Quality Management is adequate. Their role is to guide the Quality Management team and to give feedback on the quality management shortcomings to enable systematic improvements.

11.6.1 As the third tier of the Quality Management Structure, the NRRDA engages independent National Quality Monitors (NQM), mostly retired Senior Engineers from State/ Central Organisations. The detailed guidelines for the third tier of quality management shall be issued by NRRDA from time to time. As per the present guidelines, the NQMs are given the programme of inspection once in two months for carrying out inspection as per the programme for the forthcoming two months, indicating the Districts (and Blocks) to be visited. The inspection schedule of NQMs is also displayed on PMGSY web site. Guidelines for the Third Tier Independent Quality Monitoring are available on the OMMS website. The present guidelines provide for:

- Arrangements for Inspection by NQM: The NQMs will be sent a letter of request once in two months covering the 2 months period. The details of schedule of visit will also be available on PMGSY web site in the last week of the preceding month to enable SQC and PIUs to make necessary arrangements:
  - It will be the responsibility of the SQC to ensure adequate arrangement for inspection by the NQM, including local stay and transport.
  - The NQM is required to inspect these districts in a single visit in one State in each two months (the total districts inspected during one visit shall not exceed three). He should finalise a suitable programme to spend not more than 3 days in each district inspecting normally between 2-4 works on each day and one old road work of PMGSY completed at-least 1 year back to assess the maintenance in each district (2 works in progress or 1 work in progress and 2 completed works or 4 completed works but in both cases 1 work of earlier phases completed at-least 1 year back to be inspected to assess the routine maintenance). The format for inspection of work for assessment of routine maintenance shall be prescribed by NRRDA.
  - The programme of inspection is valid for the month mentioned in the letter of request only, and in no case should the inspection spill over to the next month, since it will not be counted in a valid inspection.

    Prioritisation of Works for Inspection: The NQM will prioritise the selection of roads as per guidelines of NRRDA from time to time.
- Information and Details to be furnished to the NQM by the PIU:
  - Phase wise list of all works according to the priority with details of dates of previous inspection, for the Block of the district due to be visited.
  - A road map showing location of roads to enable planning of itinerary and selection of works to be inspected.
  - Necessary work information in respect of the road selected by NQM for inspection in part-1 of the inspection report format (formC1 and C2) for ongoing and completed works respectively.
  - Any previous inspection report of the selected road and Action Taken Report thereon.

- Guidelines to NQMs for filling up the Inspection Formats: -
  - Before filling in part-2(forms D1 and D2) respectively for ongoing and completed works, NQMs should traverse the entire road upto the end habitation.
  - NQM should focus on project management by the PIU and make his observations on
    - DPR quality.
    - Contract management.
    - Quality management.
- Post-inspection discussion
  - The NQM should hold informal meeting with the PIU officers to discuss the results of inspection and to suggest improvements necessary in order to obtain better quality.
- Submission of Inspection Report by NQM and action by PIU/SQC
  - Copy of part II of reporting format will be handed over by NQM to the PIU before leaving the district. The NQM should also forward a copy of the completed report to the SQC and NRRDA within 10 days of the date of completion of inspection.
  - The PIU will immediately inform the SQC in case the NQM Report is not received before he leaves the district and the SQC shall inform NRRDA.
  - The SQC shall at the end of each month submit a report to NRRDA on NQM visits to the State during the month in format given in Annexure 11.6.
  - The PIU will not wait for the grading of the work to be communicated by NRRDA or SQC but will start taking action based on inspection reports furnished by NQM immediately after inspection, unless it disagrees with a recommendation. In all such cases, the matter should be immediately referred to the SQC.
  - SQC should ensure that the PIU takes immediate steps to implement the observation of NQM. In case PIU proposes not to implement a recommendation the SQC should give suitable advice or if required, seek further clarification from the NRRDA.
  - The reports of the NQM will be examined in NRRDA and internal grading of works will be done as 'Satisfactory' or 'Unsatisfactory'.

11.6.2 The grading of works will be done by National Quality Graders (NQG) based on the report of NQM and the following guidelines:-

- The NQG will carefully read the observations of the NQM given in the Part II of the Inspection Report and summarize them in the prescribed format (Annexure 11.7). Every sub-item in format F(Annexure 11.7) will be graded as 'Satisfactory' (S) or 'Unsatisfactory' (U). Grading of sub-item will be done as per details given in column 'How to grade'. Based on the grading of sub-items, the main items will be graded. If, the grading of any of the sub-items is U, the complete item will be graded as U.
- Based on the grading of the items, the grading of the work will be done on the basis of the overall grading of the individual issues. The overall grading will be coded based on the issue(s) graded unsatisfactory in the following manner:
  - Management Standard: In this issue items about information in format C-1 /D-1 and inspections will be incorporated and if any of the two items are graded U; the overall grading of the institutional issues will be U, which will be graded as UMS.
  - Contract Management: If any of the sub-items is graded U, the overall grading of the contract management issues will be U, which will be graded as UCM.
  - Quality of Work: The grading of quality issues will be based on grading of items pertaining to design,

quality control arrangements and quality of works. If any of the sub-items in the items of quality control arrangements and quality of works is graded as U, the overall quality of this issue will be U, which will be graded as UQW.

- Works found 'Satisfactory' will be graded simply as 'S'.

11.6.3 Action Taken Report

- The Following Action will be taken on the grading of works by NQG:-
  - The overall grading will be communicated to the State Quality Coordinator. The action in respect of institutional issues i.e. UMS will be taken by the SRRDA and ATR will be communicated to NRRDA.
  - The action in respect of UCM i.e. contract management issues will be taken by PIU and the ATR will be communicated to NRRDA through the SQC. If the work is graded as UCM the ATR is expected to include details of action taken against the Contractor and/or PIU.
  - The action in respect of UQW i.e. work quality issues will be taken by PIU and the ATR will be communicated to NRRDA through the SQC. If the work is graded as UQW the ATR is expected to include details of action taken against the Contractor and/or the staff of PIU in addition to rectification of work. The work or any of its items graded as unsatisfactory will be required to be re-done unless in-situ rectification is possible. While furnishing the ATR, the head of PIU will clearly mention that whether the item of work graded as unsatisfactory has been removed and re-done and if in-situ rectification has been done, the process of rectification will be explained in sufficient details.
- The following action will be taken by SQC in respect of Action Taken Reports:
  - Whether the grading has been communicated by NRRDA or not, it will be basic duty of the SQC to take Action Taken Report from the PIU after the lapse of one month of inspection i.e. if, inspection is done in January the SQC must have ATR from PIU positively in the first week of March.
  - As soon as the grading of particular work is communicated to SQC, the compilation of ATRs will be carried out by him and ATR will be sent to NRRDA in format given as Annexure 11.8 within one month of receipt of grading of the work. It is quite possible that some time will be required to complete the action on the observations of NQM, still when the action is started it will be reported in column 5 of the format and in column 6 word 'Yes' will be used if the action is complete, but word 'No' will be used if action is not complete and in column 7, probable date will be shown when action is likely to be completed. The ATR will be treated interim, if the action is not complete and the ATR will be treated final, if the action is complete. The monitoring of Action Taken Reports will be done accordingly in NRRDA.

11.7 QUALITY CONTROL LABORATORIES

The States are required to establish (or cause the Contractor to establish) the Field Level Quality Control Laboratories and district Level Laboratories as per the provisions of the Rural Road Manual. The laboratories are required to be provided with the equipments and trained staff. The Laboratories of Engineering Colleges and other institutions can also be used for higher level of Quality Control Testing. For meeting the requirements of testing, the SRRDA may empanel the laboratories of such institutions and may also fix the rates for conducting different tests. The training and staffing of the Laboratories under its control should be done by the State Governments.

Taking cognisance of the views put forward by State Executing Agencies that for conducting accurate surveys and soil and materials tests, laboratory testing facilities need to be properly provided, it has been decided to provide a one-time assistance for the replacement/ upgradation of District level and central level labs, acquisition of Mobile Laboratories where ever considered necessary can also be provided. (See also para 11.4). For the purpose:-

- The State Executing Agency will forward a consolidated proposal after joint assessment with the State Technical Agency (STA).

- The requirement of equipment shall be worked out, in accordance with the Rural Roads Manual and Quality Control Handbook issued by NRRDA.

In case of mobile laboratory equipment, the operating costs will be borne by the State Government. It is expected that PIUs will posses survey equipments such as Dumpy level, Abney level, Theodolite, Chain, Steel and metallic tapes, Plane table etc., in order to ensure acceptable DPR quality.

Regular training Programmes should be organised for the staff of laboratories also to ensure effectiveness of testing process and accuracy of results.

11.8 ENTRY IN OMMS

11.8.1 In respect of NQM visits, Quality Management Division of NRRDA will place inspection data on the website by selecting the name of the NQM and the road visited, and entering the date and grading.

11.8.2 The SQC is required to similarly enter data of SQM visit in the website on the Quality Monitoring database.

11.8.3 PIUs will check the data in the database and supply the print out of PMGSY roads in the District showing status of previous inspection by NQM/SQM, to enable NQM to decide on the road to be inspected on a visit.

Annexure-11.1
(See Para 11.4.4)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Monthly Return of the Tests conducted (Return from AE/AEE to EE/Head DPIU)

Name of District: .....Name of Block .....

S.No.	Name of Work	Total No. of mandatory QC Tests required	Total No. of mandatory QC Tests required	Tests Conducted During the Month			Cumulative Tests Conducted			Action Taken Report				Remark
				Nos. Conducted	Nos. Qualified	Nos. Not Qualified	Nos. Conducted	Nos. Qualified	Nos. Not Qualified	Nos for. which NCR issued	Nos. Action taken by contractor	Nos. Contractor's Action Pending	Nos. DPIU's Action Pending	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**

Instructions to fill up the format

1. Sl. No. 1 & 2 are self explantory.

2. Sl. No. 3-Total No. of Mandatory tests required as per estimate to be shown.

3. Sl. No. 4-Total No. of Mandatory tests required during the month as per the work done.

4. In column No. 5,6 & 7 - No. of tests conducted, out of which No. of Tests which have qualified and No. of Tests which have not qualified should be mentioned.

5. In column No. 8,9 &10 - Total cumulative No. of tests conducted since the starting of the work out of which No. of Tests which have qualified and No. of Tests which have not qualified should be mentioned.

6. In column No.11,12,13 & 14 the details of Action Taken is to be given. In column No. 11, No. of Tests for which Non-Conformance Report (NCR) has been issued should be mentioned. Similarly for column No. 12 No. of Tests for which action has been taken by the Contractor should be mentioned and in column No. 13, No. of tests for which action is pending at Contractor level should be mentiond. In Column No. 14, No. of tests for which DPIU's action is pending should be mentioned.

Annexure- 11.2
(See Para 11.5.5)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Monthly Return of the Tests not meeting the Standards and Action taken thereon*
(Returen from EE/PIU to SQC)

Name of District: …….. Name of Block ……

S.No.	Name of Work & Contract Package No.	Tests Conducted During the Month		CumulativeTests Conducted		Action Taken Report				Remark
		Nos. of tests conducted	Nos. not Qualified	Nos. Conducted	Nos. not Qualified	Nos. for which NCR issued	Nos. where material/work replaced/rectified	Nos. where work rejected	Nos. action pending	
1	2	3	4	5	6	7	8	9	10	11

Instructions to fill up the format

1. Sl. No. 1 & 2 are self explantory.

2. In column No. 3 & 4- Nos. of tests conducted, out of which, No. of tests which have not qualified should be mentioned.

3. In column No. 5 & 6 - Total cumulative No. of test conducted since the starting of the work, out of which No. of tests which have not qualified should be mentioned.

4. In column No. 7,8,9 & 10, the details of Action taken is to be given. In column No. 7 tests for which Non Conformance Report (NCR) has been issued should be mentioned. In column No. 8, No. of tests where the material or the work has been replaced or rectified should be mentioned and in column No. 10, No. of tests for which Action is pending should be mentioned.

** Copy of Annexure 11.1 received form AE shall be sent to SQC along with Annexure 11.2*

Annexure 11.3
(See Para 11.5.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Abstract of Report of State Quality Monitors for the month of ……

Name of State

Sl. No.	District	Month of Visit	No. of Works Visited			Grading					
						Completed			In Progress		
			C	I	T	U	S	T	U	S	T
1	2	3	4	5	6	7	8	9	10	11	12
	Total District Wise										
	Total for the Month										

Instructions to fill up the format

1 This format will be filled up District wise and month wise
2 Column No. 1 & 2 are self explanatory
3 In this Format C, I, T, U and S stands for Completed work, Incomplete work, Total works, Unsatisfactory and Satisfactory respectively.
4 In column No. 4, 5 & 6 No. of works visited should be mentioned.
5 In column No. 7 to 12 the works graded as Unsatisfactory and satisfactory as graded by State Quality Monitor should be mentioned.
6 The total of every District should be done and grand total should also be done.

Annexure-11.4
(See Para 11.5.8)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Guidelines for Second tier of Quality Mechanism

The First tier of quality mechanism is an in-house Quality Control and supervision of not only quality of works but also the other aspects of execution. The Second tier is envisaged as an independent monitoring mechanism for quality control at State Level.

The State Quality Monitors will be identified by the State Government and sent for inspection of works in such a way that each work is inspected at least three times.

In order to have uniformity in reporting and for better analysis, the format prescribed by NRRDA for Third tier of quality monitoring issued in the month of August, 2002 can be used.

GRADING OF THE WORKS

The works will be graded in the following manner:

A. Each layer of the work will be graded separately for Material used as well as for Workmanship. The **Grading** will be indicated as 'Satisfactory' or 'Unsatisfactory'.

B. The **overall Grading** of the work will be the lesser of the two Grades (for Material used and Workmanship). For example if Material used is 'satisfactory' but the workmanship is 'Unsatisfactory', the overall Grading of the work will be 'Unsatisfactory'. Only if the Average Grading of both materials used and workmanship is 'satisfactory', then the overall Grading be treated as 'satisfactory'.

In short it shall be:

1. Each layer or item of work will be graded for Material and Workmanship.

2. In case of incomplete works, only the **Overall Grading** will be worked out. These will be only 'satisfactory' or 'Unsatisfactory'.

3. **FINAL GRADING** will be worked out only in case of Completed works. The Grading in these cases will also be 'satisfactory' or 'Unsatisfactory'.

It will be the responsibility of all Executing Agencies that all completed works of PMGSY are 'satisfactory'.

Annexure 11.5
(See Para 11.5.10)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Report for the month_____, 2003

State_____

Part A: Monthly abstract of complaints with reference to quality of PMGSY works

# of pending complaints at start of month	# received during month	# disposed off	Balance		
			less than 1 month	1-3 months	over 3 months

Part B: Details of pending complaints over 1 month old

Regn #	Date of complaint	From	Subject	Sent to	Status

Part C: Action taken against contractor / official during the month _____

District	Road name	Contractor name	Nature of complaint proved	Action taken against contractor / official

Annexure 11.6
(See Para 11.6.1)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Monthly Statement Showing the Visits of NQMs
(to be submitted by the SQC to NRRDA)

STATE:
Month of Inspection:

S. No.	Name of NQM	District Visited	No. of completed works inspected	No. of on-going works inspected	No. of maintenance works inspected	Dates of Inspection		Date of handing over of inspection report by NQM to PIU by NQM to PIU)	Remark (Mention if inspection report not handed over
						Start Date	End Date		
1	2	3	4	5	6	7	8	9	10

Annexure 11.7
(See Para 11.6.2)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Format for Grading the Work

State: District and Block: Month of Inspection:

Name of Work:

Complete/On-going: Package No.

Date of Receipt of NQM Report:

Name of NQM:

Grading done by (NQG code)_____on date:

S. No.	Issue	Item	Sub-Item	Individual Grading
1	Management Issues	Information in Format C-1/ D-1	1.1. General	
			1.2. Contract Details	
			1.3. *Physical Progress and Work Programme	
			1.4. Contract Management Information	
			1.5. QC tests	
			1.6. Inspections	
			1.7. Quality Control Monitoring	
			1.8 $ Maintenance	
		Item Grading		
2		Inspections (As per item 7 of D-1 and 5 of D-2).	2.1 Inspection by Departmental Officer	
			2.2 Inspection by SQMs	
			2.3 Inspection by NQMs	
		Item Grading		
	Overall Grading			
3	Contract Management	Contract Management (As per item 1 of D-1 and 1 of D-2 and item 10 of D-1 and item 9 of D-2).	3.1. Delays and Action	
			3.2. *Work Programme	
		Item Grading		
Overall Grading				

S. No.	Issue	Item	Sub-Item	Individual Grading
	Overall Grading			
4		Design of Pavements, Drainage and Geometrics (As per item 2 and 3 of D-1 and 2 and 3 of D-2).	4.1 Pavement	
			4.2 Cross Drainage	
			4.3 Side Drains	
			4.4 Geometrics	
		Item Grading		
5		Quality Control Arrangements (As per Item 5 and 6 of D-1 and Item 4 of D-2.)	5.1 Arrangements	
			5.2 Attention to quality and QC Registers	
			5.3 *Plant & Machinery	
			5.4 *Deployment of Technical Staff	
		Item Grading		
5	**Quality Issues**	Quality of Works	6.1.1 *Preparatory work	
		6.1. Pavements (As per Item No.9 of D-1 and Item No.7 and 8 of D-2)	6.1.2 Earth Work	
			6.1.3 Sub-base	
			6.1.4 Base Course	
			6.1.5 Bitimunous Courses	
			6.1.6 CC Pavements	
			6.1.7 Shoulders	
			6.1.8 $ Maintenance	
		6.2 Drainage	6.2.1 Side Drains and catch water drains	
			6.2.2. CD works	
		6.3 Road Furniture and Markings	6.3.1 Board and Logos	
			6.3.2. Road Stones	
			6.3.3. Signages	
		Item Grading		
	Overall:			
	Summary of Overall Grading:		Management Issues	
			Contract Management	
			Quality of Work	
***** Not applicable for Completed works, **$** Not applicable for on-going works				

Annexure 11.8
(See Para 11.6.3)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Action Taken Statement on the Pending Reports of NQMs of the

…….. District for the month of……..

Name of National Quality Monitor:…… **Date of Inspection……**

S. No.	Name of Block & Name of Work	Paragraph of Report on which action required.		Parawise Action Taken.	Whether Action is complete (Yes/No)	If 'No' in col 6, specify the Date when the Action will be completed	Remarks/ Reasons for delay if any
		S. No. of Para.	Action Required				
1	2	3	4	5	6	7	8

(Name and Signature of Executive Engineer/ DPIU)

Remarks of SQC

(Name and Signature of SQC)

Guidelines to fill up the format

1. In case of works, if the overall grading of work "Unsatisfactory" or some action point is suggeste by the NQM, the action taken report is to be prepared.
2. Separate format shall be filled up for each District.
3. Column 1 & 2 are self explanatory.
4. In Column No. 3 & 4, the serial No. of paragraphs of Report of National Quality Monitor and in short the action warranted is required to be mentioned.
5. In Column No. 5, short descriptions of the action taken should be mentioned.
6. In Column No. 6, it should be mentioned that whether the action taken is complete or not.
7. If the reply in the Column No.6 is No then in Column No. 7, the date is to be mentioned on which the action will be completed.
8. Column No. 8 may be used for remarks and reasons for delay in taking action should be mentioned.
9. The Format will be filled up by the EE/DPIU and sent to SQC. The SQC will fill up the Remark Column and forward the Report to the NRRDA.

CHAPTER 12

MONITORING

12.1 ONLINE MONITORING

Computerisation of data has the advantage of reliable storage, easy retrieval, immediate processing and complicated calculation ability useful in generating high level abstracted information for use in management. The advantage of a Centralised database is that the range of comparison is not only vertical in terms of the time period but also horizontal in terms of geographic spread across Districts and States. If to this is added the facility of being able to access the data anywhere/anytime through a web-based system, the utility and transparency is multiplied manifold, enabling an extremely high level of project management and monitoring.

The OMMS software is designed especially for PMGSY as an online web-based system with centralised database and the principles underlying the operational management of the software are the following: -

- Data entry should be done at the point where data will be generated i.e. at the PIU level for project data and at the STA/SRRDA and NRRDA level where their intervention contributes value addition to the data.
- The data entry should be near real-time, to enable outputs to be useful for management as well as monitoring. This implies that the data entry should closely parallel the actual work process and to ensure this, system checks must be in place to ensure that the data precedent is on-line before processing for the next step is done.
- Since data entry may involve some extra effort, it must be seen to be sufficiently advantageous. This involves building in the ability to generate MIS outputs closely resembling or better than existing manually generated outputs and dispensing with manually generated outputs and attendant labour.
- The full power of the software is to be brought to bear to generate outputs useful at all levels – monitoring and management output at PIU levels, progress management and management-by-exception outputs at SRRDA level MoRD and NRRDA level and abstracted and analysed information policy and overall management information for use in NRRDA.
- Transparency must be inbuilt in the system enabling abstracted data to be drilled down to the basic data, generally ‘road’ or ‘Habitation’.

12.2 ONLINE MONITORING RESPONSIBILITIES

Effective monitoring of the Programme being critical, the State Nodal Departments must ensure that all aspects of the PMGSY programme in the State are systematically monitored and feedback used for correcting deficiencies. The Online Management & Monitoring System developed for the PMGSY is the chief mechanism for monitoring the Programme. Officials managing the various aspects of the programme are required to furnish online all the data in respect of road details and transactions carried out by them in the relevant module of the Online Management & Monitoring System.

The OMMS consists of the following main modules: -

- *Master data Module:* - Master data includes the following
  - Area master which contains data regarding the villages/Habitations and details of facilities available at habitation level (To be entered at PIU level).
  - Roads master which includes details regarding the name of the road, surface type etc. (To be entered at PIU level).

- Contractor master (To be entered at SRRDA level).
- MP/MLA Constituency (To be entered at SRRDA level).
- Contractor details (To be entered at SRRDA level).
- Standard bidding document (including check-list) in order to generate bidding document (to be entered at SRRDA level).

- *Rural Road Plan Module*
  - DRRP road data categorising it as NH/SH/MDR/ Rural Road. Further categorisation of rural roads into Link Routes and Through Routes and also into existing routes and proposed routes. (entered at PIU level).
  - Core network data – selecting links from DRRP for inclusion in Core Network (entered at PIU level from CN.I).
- *Proposal Module: -*
  - Entry of annual proposals based on selection of road links from the Core Network (to be entered at PIU level).
  - Data entry of proposal details based on DPRs prepared and packaged for tendering purposes. (Initial physical and financial data to be entered by PIUs with further entry by STA and cleared by NRRDA.)
- *Tendering Module*
  - Tendering data and NIT. (PIU level).
  - Contractor award details.(PIU level).
- *Execution & Monitoring Module*
  - Entry of progress against each work in physical and financial terms (PIU level).
  - Completion of road works (PIU level).
- *Payment and fund flow Module* Accounting data with regard to classified expenditure against each road work (entered by PIU level).
- *Maintenance Module:* - Physical and financial data regarding 5 years contract-based maintenance (entered by PIU level).
- *Security and Administration:* - Management of procedures etc (*at SRRDA level*).
- *Quality Monitoring* – Data Regarding QC inspection carried out by NQMs is entered. The monthly schedule of inspection of NQM is entered on website.

Details of procedure for making data entry are given in the PMGSY Online Management and Monitoring System Users Manual prepared by Centre for Development of Advanced Computing (C-DAC) on behalf of the NRRDA (Brief mention of the procedure is also made in this Operations Manual in the relevant Chapters).

12.3 OPERATING THE ON-LINE MONITORING AND MANAGEMENT SYSTEM (OMMS)

12.3.1 The SRRDA will appoint one officer of sufficient seniority and having adequate knowledge of Information Technology to function as the State IT Nodal Officer. His function will be to oversee the regularity and accuracy of the data being furnished by the District PIUs. The IT Nodal Officer shall also be responsible to oversee the upkeep of the Hardware and Software as well as the training requirements of the personnel dealing with PMGSY. He shall maintain close liaison with C-DAC (the software developers), NIC State Unit/District Units and the IT Division of NRRDA.

The SRRDA will ensure provision of necessary manpower, space and facilities to set up the Computer Hardware at the District and State Level apart from ensuring regular and timely feeding of data. Since most of the data

would reside on the State Servers, the IT Nodal Officer must ensure that the State server is functional all 24 hours of the day.

12.3.2 The main function of the IT Nodal officers will accordingly include the following: -

- Ensuring proper management of the State server, including its functioning, maintenance, data backup, and connectivity.
- Overseeing the proper management of the computer system at PIU level, including their functioning, maintenance, connectivity etc.
- Monitoring the progress of data entry at PIU level and apprising the CEO of the SRRDA of persistent delays/failure to update data.
- Supervising bulk data entry, management of data entry operator deployment etc.
- Monitoring effectiveness of online connectivity status of PIU computers, devising and implementing solutions for better and more secure connectivity.
- Coordination with the Financial Controller for the continued and accurate operation of the payment and fund flow module. Coordination with the SQC for ensuring updating of SQM inspection data on the OMMS.
- Liaising with the NIC officers at State and District levels, and ensuring integration of data and applications with similar or complementary applications in State.
- Managing the PMGSY e-mail system for the State and District level functionaries and liaising with C-DAC and NRRDA's IT Division for the purpose.
- Developing and keeping updated, State level PMGSY website.
- Printing out monthly/quarterly MIS outputs and submitting them to the CEO of the SRRDA along with his comments.
- Training needs assessment.

12.3.3 It shall be the responsibility of Executive Engineer/ Head of the PIU to ensure at District level, effective up-time of the Hardware and also the Internet connectivity, with the State Server and the Central Server. He shall be responsible for the constant updating and accuracy of data relating to the progress of road works, record of Quality Control tests as well as the payments made. The data shall be updated as warranted but at least once a week.

The Executive Engineer/Head of PIU is pivotal to the successful operation of the OMMS and the CEO of the SRRDA must hold him personally responsible in case of persistent failure to keep the OMMS data updated, since the programme funding in the District can be affected adversely. The Executive Engineer/Head of PIU shall be responsible for:-

- Ensuring proper management of the DPIU computers and peripherals including the software, data backup etc.
- Enforcing an Annual Maintenance Contract (AMC) for the computer system.
- Ensuring internet connectivity.
- Managing the offline software and uploading of data in case of poor internet connectivity.
- Supervising data entry in all modules of the OMMS and ensuring in particular that the payment and fund flow module is working satisfactorily.
- Using the PMGSY email system at PIU level and liaising with the NIC's DIO and the IT Nodal Officer on all aspects.
- Printing monthly quarterly MIS outputs and forwarding them to the IT Nodal officer along with his comments on the reliability of the data.

12.4 SEQUENCING PROTOCOL UNDER OMMS

12.4.1 The PMGSY Guidelines in Para 19.3 states that the release of the second Instalment for PMGSY projects is subject inter-alia to submission of the outputs of the relevant modules of the OMMS, duly certified by SRRDA as being correct. These outputs relate to physical and financial progress and accounts. In order to ensure accuracy of information at all times, system checks have been placed in the software and it is necessary therefore that PIUs and SRRDAs ensure that data entry is accurately, systematically and regularly done into the system, since release of instalment may otherwise get held up.

12.4.2 The following main points are therefore to be kept in view:-

- Annual Proposal cannot be placed online unless the relevant road is already entered in the Core Network, since the roads are to be selected online from the Core Network for the purpose of annual proposals.
- The annual proposals will not be considered by the Empowered Committee until the DPR data has been correctly entered online and verified by STA. Since this data is checked by the State Technical Agency while scrutinising DPRs, it is essential that the data entry be made before the DPRs are forwarded to the STA.
- Instalments are released to the SRRDA on the basis of financial and physical progress as recorded in the OMMS .As such completion data of road works need to be entered online since the second instalment can be released only if at least 80% to 100% of the road works of earlier years are completed and recorded as such in the website. The completion data of the road work can be entered only if the tendering and contractor details of the road works had been previously entered by the PIU.
- The release of instalment is also subject to 60% expenditure of the earlier released funds. The expenditure details in OMMS are taken from the payment & fund flow module which includes an accounting system where the package is selected from the proposals cleared and tendered, and classified payment details are entered against each road of the package. It is necessary therefore that the accounting system should be updated promptly by the PIU and SRRDA to avoid delays in release of funds. Needless to add, the accounts for the PIU and SRRDA will be generated as part of this process.

12.5 M.I.S OUTPUTS AND ANALYSIS

12.5.1 Progress of Works Sanctioned During Each Year

The States shall report the progress achieved for PMGSY works sanctioned during each year as under:

- Works sanctioned during 2000-01 (Form PW-1).
- Works sanctioned during 2001-02 (Form PW-2).
- Works sanctioned during 2002-03 (Form PW-3) and so on.

The forms are given in Annexure 12.1. It may be noted that in case the OMMS data is complete and accurate, the information is available as an output from the system.

12.5.2 Analysis of Cost per Km of PMGSY Works

The States shall submit an analysis of the cost per Km of PMGSY sanctioned during various years. Forms CP-1, CP-2 and CP-3 etc shall be used (Annexure 12.2).

The analysis shall be done once a year.

12.5.3 Report on Projected Completion Plan

The States shall send progress reports on the projected completion plan among the works sanctioned during the various years. Forms WP-1, WP-2, WP-3 etc shall be used (Annexure 12.3).

12.5.4 Report on Projects Completed

The States shall send progress reports on the projects completed among the works sanctioned during various

years. Forms CW-1, CW-2 etc shall be used (Annexure 12.4). In case data entry on OMMS is complete, these formats are available as outputs of the system.

12.6 MONITORING AT DPIU LEVEL

The DPIU is overall responsible for all aspects of operational level monitoring of PMGSY, from preparation of proposals and DPRs to recording the work completion for constructed road works. Project Management of contracted road works however is the one aspect, which requires not only day to day management but also monitoring of key indicators on periodic basis, and submission of data (paper as well as on-line) to the SRRDA monitoring cell. If, all the transactional data is entered by PIU in OMMS, the required outputs will be available not only to the PIU for monitoring at PIU level but also to State level for overall management and monitoring.

The monitoring at PIU level shall be carried out on the following items:

- Preparation of proposals.
- Monitoring of Survey and DPR Preparation.
- Monitoring of Works:
  - Procurement.
  - Physical and Financial Progress.
- Monitoring of Contract:
  - Time Control.
  - Quality Control.
  - Advances, Payment of Works and Recoveries.
  - Other Aspects of Contract.
  - Final Accounts of the Contract.
- Monitoring of Routine Maintenance.
- Monitoring of Handing over of Works to PRIs after Completion of Routine Maintenance Period.

12.6.1 Preparation of Proposals: The PIU will need to monitor the process of preparation of proposals of the road works, including the approval by District Panchayats, and ensure that the consultation process is conducted smoothly and efficiently.

12.6.2 Monitoring of Survey and DPR Preparation: Based on the proposals cleared by the SLSC, PIUs are to conduct survey and prepare DPRs. The head of the DPIU needs to monitor the progress on a weekly basis, particularly the conduct of the Transect Walk.

12.6.3 Monitoring of Procurement: Once the project is cleared by the Government of India, the works are required to be tendered in time. The State will devise suitable mechanism for monitoring of procurement of works. However, based on the reports required in the NRRDA for monitoring of procurement, the PIU will be required to submit report in the format shown as Annexure 12.5 to the SRRDA. The information regarding delays in contracting for more than 90 days will be furnished by PIU to the SRRDA in the format shown in as Annexure 12.6.

12.6.4 Monitoring of Progress of Work: For monitoring the physical and financial progress of the works at PIU level the State will devise suitable mechanisms. However, the formats for monitoring of the progress should be so prescribed by the State that the quarterly and monthly information required at NRRDA could be easily extracted out of the information, furnished by PIUs to SRRDA.

12.6.5 Monitoring Implementation of Contracts: Monitoring of work under the contracts shall form an important element of the contract management. Time and quality is the essence of the Contract and therefore, these items should be monitored by the PIU on a regular basis. To enable monitoring the delays at SRRDA level, the

PIUs will also furnish a report in the format prescribed as Annexure 12.7 which shall form the basis of communication of further information to the NRRDA. These aspects need to be monitored closely not only by SRRDA level but also by Supervisory level Engineers like Superintending Engineers. The SRRDA shall devise a suitable mechanism for monitoring of the following aspects of the Contract at PIU/SRRDA levels:-

(a) **Time Control**: Suitable formats has been prescribed, however the SRRDA will be free to prescribe such a format which will cover the aspects given in Annexure 12.7 but will also provide desired additional information to the SRRDA.

(b) **Quality Control:** The responsibility of establishment of field laboratory is of the contractor and he is supposed to maintain Quality Control Register Part-I. The SRRDA should devise suitable mechanism to monitor this aspect including monitoring of maintenance of Quality Control Register Part-II and non-conformance reports.

(c) **Advances, Payment of Works and Recoveries:** The contract allows mobilization advance and machine advance to the contractor. It is also prescribed in the SBD that the PIU should make monthly payments to the contractor. The SRRDA is required to devise a suitable mechanism for monitoring of this aspect.

(d) **Other Aspects of Contract:** Monitoring of other aspects like compliance to existing law, rules and regulations, etc. is required to be done by the SRRDA/Nodal Department.

(e) **Final Accounts of the Contract:** The contract cannot be termed complete unless the Final Accounts are settled. The aspect of timely final payment and closing of accounts requires greater attention of the senior officers, therefore, the SRRDA should devise the mechanism for monitoring of this aspects.

12.7 MONITORING AT STATE LEVEL

The SRRDA shall closely monitor the PMGSY works on a regular basis. The items of monitoring in respect of PIUs will need to be monitored at the State level from an overall management point of view:-

- **Preparation of proposals:** The SRRDA will need to monitor the process of preparation of district wise proposals.
- **Monitoring of Survey, DPR Preparation and Clearance:** The process of survey, DPR preparation and clearance of DPRs by the STA will need to be monitored on a weekly basis at the SRRDA level. The road works needing clearance from Forest Department is to be monitored at State level. The Quarterly inspection on Forest clearance will be furnished to NRRDA in Annexure 12.8.
- **Monitoring of Procurement:** Once the project is cleared by the Government of India, the works are required to be tendered in time. The SRRDA will devise suitable mechanism for monitoring of procurement of works. The quarterly information regarding award of contract will be furnished to NRRDA in Annexure 12.9.
- **Monitoring of Proposals dropped:** Sometimes, after a proposal has been cleared by MoRD, a few of the roads, which can not be taken-up due to various reasons, are proposed by the State to be dropped. In such cases, the details of road dropped by State along with corresponding values of road works dropped total length of road works, number of affected habitation and name of the block should be clearly mentioned by the State. The reason behind dropping a proposal is also to be intimated to MoRD for acceptance. Once approved by MoRD, the corrected position should be reflected in the web as well as in the subsequent progress reports to NRRDA.
- **Monitoring of Progress of Work**: For monitoring the physical and financial progress of the works the SRRDA would be well advised to hold monthly meetings with PIU heads. The formats for monitoring of the progress should be so prescribed by the SRRDA that the quarterly and monthly information required at NRRDA could be easily extracted out of the information which is being furnished by PIUs to SRRDA. The monthly and quarterly information regarding progress and its monitoring will be submitted to NRRDA by the State in the formats given below:

- Format for Monthly Physical and Financial Progress – Format in Annexure 12.10.
- The following formats will be submitted by the State to NRRDA on quarterly basis.
- Format for quarterly Physical and Financial Progress – Phase-wise Format PW given in Annexure 12.1 (referred earlier).
- Format for quarterly work plan – Phase-wise Format WP given in Annexure 12.3 (referred earlier).
- The information regarding works completed during the quarter will be furnished in Phase-wise Format CW given in Annexure 12.4 (referred earlier).

- **Monitoring of Contract:** As the monitoring of contract is an important element of the contract management, the SRRDA is required to closely monitor the contract management work of the PIUs. Time and quality are the essence of the Contract, and the PIUs are required to furnish the report in the format prescribed as Annexure 12.7 which shall form the basis of communication of further information to the NRRDA. The SRRDA shall devise a suitable mechanism for monitoring of the following aspects of the Contract at State level.
  - **Time Control**: Suitable formats have been prescribed. However the SRRDA will be free to prescribe such a format which will cover the aspects given in Annexure 12.7 and will also provide desired additional information to the State. The SRRDA will be required to furnish phase-wise information regarding delay in execution of works to NRRDA in format given in Annexure 12.11. To monitor the action taken in respect of works delayed beyond 90 days the SRRDA will be required to furnish information in format given in Annexure 12.12.
  - **Quality Control:** The responsibility of establishment of field laboratory is of the contractor and he is required to maintain Quality Control Register Part-I. The SRRDA should devise a suitable mechanism to monitor this aspect as well as monitoring of maintenance of Quality Control Register Part-II and action regarding non-conformance reports. The SRRDA is to furnish quarterly report regarding the second tier of quality mechanism in the format given in Annexure 11.3. The action taken statement on pending reports of NQMs shall be furnished by the SRRDA on monthly basis in the format given at Annexure 11.8.
  - **Advances, Payment of Works and Recoveries:** The SRRDA is required to devise a suitable mechanism for monitoring of mobilization advance and equipment advance to the contractor. The monthly payments to the contractor will need to be closely monitored by the Empowered Officer of the SRRDA, to ensure that limits are set or reset keeping in view the field situation and fund demand forecasting can be reliably done.

    The aspect of timely final payment and closing of accounts for each contract requires greater attention of the senior officers, and the SRRDA should devise suitable mechanisms for monitoring the finalization of final bills and completion of contracts. The SRRDA will send to NRRDA quarterly reports regarding final payments in the prescribed format given in Annexure 12.13.

12.8 MONITORING OF PROGRESS AT MoRD/ NRRDA LEVEL

12.8.1 The progress reports and analysis data received from the States shall be analysed in the NRRDA on the respective State files and put up to the Head of the respective Project Division. Cases of poor performance or deviation from procedures will be brought to the notice of the Director-General on file.

12.8.2 The monitoring of ongoing works is also being done through Regional Review meetings held periodically with SRRDAs. The items of review meeting shall include:

- Review of Institutional and capacity issues as per Annexure 12.14.
- DRRP and Core Network.
- Progress of works for Phase-I, II, III & IV etc.

- Progress in respect of World Bank/ADB Projects where applicable.
- Quality Management.
- Maintenance.
- OMMS and Data entry status.
- Accounting Systems.
- Training and HRD.
- Unspent Balances as per Annexure-12.15.
- Forest cases.
- Delay in Final payment cases.

12.8.3 Regional Review would generally be held in May-June to take stock of progress up-to the Monsoon. Another series of Regional Review would be held in January-February to enable assessment of final fund requirement during the financial year, and status of preparation of proposals for the next year. These would be supplemented with State-level discussions with SRRDAs and PIUs, particularly in the 10 Core States.

Annexure 12.1
(See Para 12.5.1)
Format- PW-…..

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Progress of PMGSY Works Sanctioned During Phase …….. (for the year ……..)

Name of State

Reporting for the quarter ending..... **Length in Km and Amount in Rs.Lakh**

#	District	Road Works *						Amount as cleared by GoI	Estimated Cost after Technical Sanction	Tendered Cost	Physical Progress of Road Works												% Physical Progress	Expenditure	Remarks (if any)
		New Connectivity		Upgradation of through Routes		Other Upgradation					Completed Works						On going Works								
											New Connectivity		Upgradation of through Routes		Other Upgradation		New Connectivity		Upgradation of through Routes		Other Upgradation				
		Nos.	Length	Nos.	Length	Nos.	Length				Nos.	Length	Nos.	Length	Nos.	Length	Nos.	Length	Nos.	Length	Nos.	Length			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

This Format to be Filled-up Phase-wise and to be termed as PW-1, PW-2, PW-3 and so on.

Annexure - 12.2
(See Para 12.5.2)
Format- CP-.....

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Analysis of Per Kilometer Cost PMGSY Works Sanctioned During Phase ….. (for the year …..)

Name of State

Reporting as on …….. **Length in Km and Amount in Rs.Lakh**

#	District	Road Works Sanctioned							Amount as cleared by GoI	Estimated Cost after TS	Per Kilometer Cost as per Technical Scrutiny								Rema-rks (if any)
		New Connectivity		Upgradation of through Routes		Other Upgradation		Total length			New Connectivity		Upgradation of through Routes		Other Upgradation		Cross Drainage		
		Nos.	Length	Nos.	Length	Nos.	Length				Pave ment Cost	Cost per Km. Pavement (Col 10/4)	Pave ment Cost	Cost per Km. Pavement (Col 10/6)	Pave ment Cost	Cost per Km. Pavement (Col 10/8)	CD Cost	Cost per Km.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Annexure - 12.3
(See Para 12..5.3)
Format-WP.....

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Projected Completion Plan PMGSY Works Sanctioned During Phase…….(for the year…….)

Name of State
Reporting for the quarter ending……..

Upto quarter ending ……. Upto quarter ending ……

Length in Km and Amount in Rs.Lakh

S. No	District	Road Works Sanctioned		Estimated Cost after Technical Sanction	Tendered Cost	Completion Status as on ……		Completion Plan									Remarks if any
								Upto quarter ending.....			Upto quarter ending.....			Upto quarter ending.....			
		Nos.	Length			Completed Length	Expendit-ure	Nos	Length	Expenditure	Nos	Length	Expenditure	Nos	Length	Expenditure	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Annexure-12.4
(See Para 12.5.4)
Format-CW……

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

List of Completed PMGSY Works Sanctioned During Phase……. (for the year……..)

Name of State
Reporting for the quarter ending……..

Length in Km and Amount in Rs.Lakh

S. No.	District	Block	Pkg.	Name of Road	New Connectivity/ Upgradation	Length (N/U)	Amount as cleared by STA	Estimated Cost after GoI	Tendered Cost after TS	Date of Starting Work	Date of Compl etion	Cost of Completed Work	Whether Inspected by NQM/ SQM (Yes/No)	If Yes in col. Inspection		If Grading is not very good, action taken	Habitations Connected	
														Date of Inspection	Grading		Name	Population (2001)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Annexure 12.5
(See Para 12.6.3)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

MONTHLY RETURN FOR DELAY IN AWARD OF CONTRACT FOR PMGSY WORKS
(To be submitted by PIU to CE/ SE)

STATE :
REPORTING MONTH :
YEAR OF CLEARANCE FROM GoI :

S. No.	District	No. of Packages in Hand	No. of Packages Awarded	No. of Un-awarded Packages in Hand at the Start of Month			Awarded During Month	No. of Balance Un-awarded Packages in Hand at the End of Month		
				<75 Days Old	75 to 90 Days Old	>90 Days Old		<75 Days Old	75 to 90 Days Old	>90 Days Old
1	2	3	4	5	6	7	8	9	10	11

Instructions to fill up the format:

1. Row 1 & 2 are self explainatory, this information is to be prepared phase-wise. The works cleared in 2000-01, 2001-02 and 2003-04 will be treated as phase-1, phase-2 and phase-3 respectively, therefore, in 3rd row phase will be mentioned.
2. In Column no. 3 the total number of packages cleared from GOI for the Phase under reporting should be mentioned.
3. Column no. 4 and 8 are self explainatory.
4. Column no. 5,6,7,9,10 and 11 show the number of packages pending for award of contract, period being counted from the date of clearance by Empowered Committee.

Annexure 12.6

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

STATEMENT SHOWING DETAILS FOR PACKAGES CONTRACT NOT AWARDED FOR MORE THAN 90 DAYS (To be submitted by PIU to CE/ SE)

DISTRICT:
REPORTING MONTH:
YEAR OF CLEARANCE FROM GoI :

S. No.	Block	Package No.	Cost (Rs. in Lakh)	Date of Clearance from GoI	Delay in Days from Date of Clearance	Reasons for Delay
1	2	3	4	5	6	7

Annexure 12.9
(See Para 12.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
QUARTERLY ABSTRACT OF AWARD OF CONTRACTS UNDER PMGSY
(To be submitted by State to NRRDA)

STATE:
REPORTING QUARTER:
YEAR OF CLEARANCE FROM GOI :

S. No.	Month of Clearance from GOI	No. of Packages Cleared	No. of Packages Contracted	No. of Packages, where Contract not Awarded		
				Delayed for <75 Days	Delayed for 75 to 90 Days	Delayed for >90 Days
1	2	3	4	5	6	7

Annexure 12.7
(See Para 12.6.5)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

MONTHLY RETURN OF DELAY IN EXECUTION OF PMGSY PACKAGES
(To be submitted by PIU to CE/ SE)

DISTRICT:
REPORTING MONTH:
YEAR OF CLEARANCE FROM GOI :

S. No	Block	Package	Date of Clearance by GOI	Date of Award of Work	Name of Contractor	Stipulated Date of Completion	% of Work to be Completed During Month	% of Work Completed During Month	Delay in Months	Reasons for Delay	Action Taken by PIU	Liq. Damages Levied	If Liq. Damages not Levied, Reasons	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Instructions to fill up the format:

1. This information is to be prepared year-wise on separate sheets.

2. Column No. 1 to 7 are self explanatory.

3. As per the contract data clause 19 of SBD (in case of use of other bid document for phase-1 and phase-2 works, clause relating to prescription of progress of work for a defined part of the total period of execution may be referred) milestones are required to be achieved. In column no. 8, the milestone in terms of percentage of work to be completed during the month should be mentioned and in column no. 9, the progress actually achieved should be mentioned. Delay in achieving the milestone prescribed for the month in months should be mentioned in column no. 10.

4. Reason for delay should be mentioned in column no.11. Reasons should be specific to each work or the package.

5. As per the contract conditions the notice should be given to the contractor promptly, if delay is expected other appropriate action is also required if the contractor has failed to achieve milestones.

6. As per provisions in the clause 44 of the SBD an amount equal to the liquidated damages at the rates prescribed in contract data shall be withheld/ levied. In Column no.13 the liquidated damages as a percent of contract price should be mentioned.

7. In Column no.14 reasons for not levying liquidated damages should be mentioned.

Annexure 12.8
(See Para 12.7)
Format FC-1

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Quarterly Return for Forest Clearances

Quarter ..... Year.....

Name of the State:

S. No.	District	No. of cases pending at start of quarter	No.of cases referred to Forest Department during quarter	No.of cases cleared Forest Department during quarter	No. of cases pending at the end of quarter with Forest Department			
					<3 months	3-6 months	>6 months	Total
1	2	3	4	5	6	7	8	9

Annexure -12.10
(See Para 12.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY) Statement showing Physical & Financial progress

Name of State: **Reporting month & year :** **(Length in Km. Amount in Rs. Lakh)**

Item					Phase I@	Phase II	Phase III etc.
Total Value of proposals cleared							
Amount released							
Details of road works cleared		New Connectivity	No. of road works				
			Length of road works				
			Value of road works				
			No. of Habitations to be benefitted	>1000			
				999-500			
				499-250 *			
				Incidentally <500**/ <250#			
		Upgradation	No. of road works				
			Length of road works				
			Value of road works				
Physical and Financial Progress	During the Month	New Connectivity	No. of road works completed				
			Length of road works completed				
			Expenditure				
			No. of Habitations benefitted (for completed road works)	>1000			
				999-500			
				499-250 *			
				Incidentally <500**/ <250#			
			% physical progress				
		Upgradation	No. of road works completed				
			Length of road works completed				
			Expenditure				
			No. of Habitations benefitted (for completed road works)	>1000			
				999-500			
				499-250 *			
				Incidentally <500**/ <250#			
			% physical progress				
	Cumulative Figures including the current month	New Connectivity	No. of road works completed				
			Length of road works completed				
			Expenditure				
			No. of Habitations benefitted (for completed road works)	>1000			
				999-500			
				499-250 *			
				Incidentally <500**/ <250#			
			% physical progress				
		Upgradation	No. of road works completed				
			Length of road works completed				
			Expenditure				
			No. of Habitations benefitted (for completed road works)	>1000			
				999-500			
				499-250 *			
				Incidentally <500**/ <250#			
			% physical progress				
Total (uptodate)			No. of road works completed				
			Length of road works completed				
			Expenditure				
			% physical progress				

@ Note: Information in this column will be prepared by the States in which only PMGSY works were taken up and incomplete BMS works were not taken up in the Phase I, i.e. year 2000-01.

* Information to be furnished in case of Hilly, Desert or Tribal Areas only. ** Information regarding incidentally connected habitations, where eligibility of habitations is 500 or more population. # Information regarding incidentally connected habitations, where eligibility of habitations is 250 or more population.

Annexure - 12.11
(See Para 12.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
QUARTERLY ABSTRACT FOR DELAY IN EXECUTION OF PMGSY WORK
(To be submitted by State to NRRDA)

STATE:
REPORTING QUARTER:
YEAR OF CLEARANCE FROM GoI :

S. No.	Date of Clearance	No. of Packages Cleared	No. of Packages Completed inTime	Packages not Completed and Delay has already Occurred			Remarks
				Upto 75 Days	Upto 75 to 90 Days	More than 90 Days	
1	2	3	4	5	6	7	8

Note: In this case, time period will be reckoned from date of clearance, with time period for completion being the time given in the PMGSY guidelines.

Annexure - 12.12
(See Para 12.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

QUARTERLY ABSTRACT FOR DELAY BEYOND 90 DAYS IN COMPLETION OF PACKAGES
(To be submitted by State to NRRDA)

STATE:
REPORTING QUARTER:
YEAR OF CLEARANCE FROM GoI:

S. No.	District	Package No.	Estimated Cost	Date of Award of Work	Stipulated Date of Completion	Name of Contractor	Physical Progress of Work	Reasons for Delay	Action Taken by PIU	Liquidated Damages Enforced on Contract in Percentage	If Damages not Enforced, Reasons
1	2	3	4	5	6	7	8	9	10	11	12

Annexure - 12.13
(See Para 12.7)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Statement Showing Details of Disposal of Final Payment Cases of Road Works

S.No.	District	Total No of Cleared Packages	No. of Packages Completed	Details of Disposal of Final Payment			Brief Reasons for delay beyond 3 months if any	Remarks if any
				No. of Pkgs - Final Payment Made	No of Pkgs Final Payment pending for > *3 months	No of Pkg Final Payment pending for > *6 months		
	Total of State							

Note: Information should be given for PMGSY works of Phase 1 (Excluding BMS works), Phase 2 and Phase 3 Only.
* From Date of Physical Completion of work.

Annexure 12.14
(See Para 12.8)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Institutional and Capacity Issues

State:	As on	
No.	**Issues**	**Response of the State**
A	**Institutional Issues**	
1	Setting up and operationalization of SRRDA (appointment of SQC, Empowered Officer, Financial Controller, Nodal IT Officer, etc.)	
a	SRRDA: Name & Date of Registration, etc.	
b	Designation and Contact details of Chief Executive Officer	
c	SQC	
d	Empowered Officer	
e	Financial Controller	
f	I T Nodal Officer	
2	Setting up of Programme, Administrative and Maintenance Accounts and their operations as per Tripartite Agreement with Bank	
a	Date and details of tripartite agreement	
b	Programme account details: Bank and Account No.	
c	Administrative account details: Bank and Account No.	
d	Maintenance account details: Bank and Account No.	
3	Making SRRDA nodal for rural roads and bringing PIUs under administrative control of SRRDA	
a	Action taken regarding SRRDA strengthening	
b	Brief description of constitution of PIUs & their dedication	
c	Brief description and nature of administrative control of SRRDA on PIUs	
4	Making the SRRDA the dedicated agency for all rural road programmes and for maintenance	
a	Action taken details	
5	Policy & Co-ordination role of the State level Standing Committee	
a	Constitution of State Level Standing Committee	
b	Role	
c	Meetings and issues (copies of minutes to be endorsed and NRRDA to be invited)	

State:		As on
No.	**Issues**	**Response of the State**
B	**Programme Issues**	
1	Status of preparation of Comprehensive New Connectivity Priority List (CNCP List)	
2	Conducting a Pavement Condition Survey	
3	Status of preparation of Upgradation Priority Lists based on prioritization criteria	
4	State specific Standard Bidding Document	
a	Date and reference of order issued by the State Government for adoption of SBD	
b	Providing soft copy of 36 points & SBD to NRRDA/ CDAC	
5	Action taken on Centralized tendering / evaluation for attracting better contractors and assessing bid capacity	
6	State's promptness in submission of monthly / quarterly formats prescribed by NRRDA	
a	Monthly formats in format IIA and IIB	
b	Monthly formats in format III B and III C	
c	Quarterly formats PW, WP and CW, MF and FC	
C	**Accounting Procedures:**	
1	Status of adoption of new Accounting System (IPAI Report)	
2	Adoption of computerised accounting at SRRDA	
3	Status of finalization of Audit Reports for 2000-01 / 2001-02 / 2002-03	
4	Utilization certificate for 2000-01 / 2001-02 / 2002-03	
5	Posting of Accountants in SRRDA	
6	Ensure Empowered Officer is setting limits package & work-wise PIU-wise and PIUs are issuing cheques to Authorized Payees only as per Tripartite Agreement	
a	Date from which system of setting limits operationalised. Give reference of the communication issued to PIUs.	
b	Briefly describe arrangements at State level for setting limits package wise and work-wise. Give reference of the communication issued to PIUs.	

State:		As on
No.	**Issues**	**Response of the State**
c	Date from which system of issue of cheques by PIU to authorized payees operationalised. Give reference of the communication issued to PIUs.	
d	Arrangements at State level for ensuring that PIUs are issuing cheques to authorized payees only. Give reference of the communication issued to PIUs.	
7	Transferring unspent balances to Agency Account. Give amount transferred, amount remaining.	
D	**Quality Issues**	
1	Independent 2nd tier of quality control by identified independent Department Engineers / retired engineers / consultancy firms.	
a	What is the system of second tier of quality monitoring.	
b	What is the frequency of inspection of works through second tier of quality monitoring.	
c	What is the mechanism at State level to ensure adequate action on report of second tier of quality monitoring.	
d	What are the laboratory facilities available at Circle and Divisional Level.	
E	**Capacity Issues**	
1	Status of taking action on NQM Reports ensuring rectification of defective works in every case and action against contractors with defective works	
a	Status of furnishing ATRs to NRRDA.	
b	What is the mechanism at State level to ensure adequate action on report of third tier of quality monitoring.	
2	Status of training for PIU engineers through STAs under NRRDA funded programme.	
3	Action taken in respect of inducing project management consultants at State level and / or design & supervision consultants at PIU level to augment capacity if required.	
F	**Online Management & Monitoring**	
1	Results of review of online / offline status of PIUs and action taken to provide better connectivity (ISDN / LAN).	
2	Briefly describe PIU's level of usage of OMMS for data entry and outputs.	
3	Ensure master data entry for roads and habitations (complete DRRP).	

State:		As on
No.	**Issues**	**Response of the State**
a	Status of data entry in OMMS	
b	DRRP	
c	Annual Proposals	
d	2nd level Quality Monitoring	
e	Maintenance	
f	Accounts	
G	**Maintenance**	
	Tender	
1	Produce Road List out of OMMS and publish annual road list as on 31.3.2004	
a	Whether road list as on 31st March 2004* published	
b	Whether the road list has been generated through OMMS	
2	Planning and Financing Maintenance	
a	Briefly explain the methodology of maintenance of works completed in first and second phase.	
b	Indicate the Budget provision for maintenance of roads constructed under PMGSY in the Budget for the year 2004-05*.	
c	Give methodology for allocation of funds District-wise and within District Road-wise (Whether PCI is/ will be used).	

* Appropriate year to be entered

Annexure 12.15
See Para (12.8)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Monthly report on unspent balances of PMGSY funds with the State Government Implementing agencies

For the Month ending_____.

NAME OF SRRDA_____

Name of Account Bank Branch _____ A/c No. _____

Sl.No.		Rs. (In lakhs)
1.	Opening balance on 1st of the month (previous month closing balance).	
2.	Receipts during the month (give sanction no. and date)	
3.	Accruals during the month a) Interest. b) Miscellaneous receipts other than 2 and 3 (a)	
4.	Expenditure during the month.	
5.	Unspent balance as on _____ (Reason for non-transfer in case of DRDA)	

Empowered Officer
SRRDA
Telephone No._____
Fax No. _____
E-mail id. _____

Note: -

- It should include all funds released to SRRDA from the beginning of the Programme.
- Old Amounts lying with DRDAs etc. should be indicated separately, DRDA wise, on the same proforma till such time as the unspent balance is transferred to SRRDA account. The reason for non-transfer till date may be indicated.
- Sl. No. 5 (unspent balance) of current report should be Sl.No. 1 of next months report.

CHAPTER 13

FINANCE & ACCOUNTING SYSTEM

13.1 FLOW OF FUNDS

13.1.1 SRRDA to receive funds :

The State Level Autonomous Agency, designated as the SRRDA for each State shall receive the funds for the PMGSY from the MORD / NRRDA. These include the Programme Funds, Administrative Expenses Funds and Maintenance Funds. The Agency will be responsible for rendering its accounts to the State Nodal Department and the Ministry of Rural Development.

13.1.2 Bank : The SRRDA shall select a branch of any Public Sector Bank, or Institution based Bank, having a branch at the State Headquarters and Internet connectivity for operating the PMGSY's OMMS. Once selected, the accounts shall not be changed to any other Bank or branch without the concurrence of the NRRDA. There shall be a written understanding from the Bank that it will follow the Guidelines of the Government of India for payments from PMGSY Fund. The concerned branch will maintain Internet connectivity and enter the data into the relevant module of the OMMS. The SRRDA shall communicate to the NRRDA and MORD the details of the Bank branch and the Account Numbers. There will be separate Account Number for the Programme Fund, for the Administrative Expenses Fund and the Maintenance Fund.

The Bank shall provide the following facilities to the PIUs by its branches at the Headquarters of PIUs.

(i) To draw self cheque by the PIUs.

(ii) To accept deposit of moneys received by the PIU in the bank account of the SRRDA maintained at State Level.

(iii) Clear the cheques issued on the account at par, the same day in the designated accounts.

(iv) To furnish bank statement at the close of each month showing the opening balance of bank authorisation account, details of PIU's cheques encashed during the month and the balance of bank authorisation account on the closing day of the month. This statement shall also be furnished to the SRRDA.

(v) For interest paid to SRRDA, the bank statement will show both the gross amount of interest and tax deducted at source.

13.1.3 PMGSY Programme Fund, Administrative Expenses Fund and Maintenance Fund:

The SRRDA will open with the selected bank and branch one bank account for the PMGSY Programme Funds, one for Administrative Expenses and one for Maintenance Funds. The MORD will release the funds only to these accounts, on the recommendations of the NRRDA, who shall satisfy itself that the requirements in the Guidelines have been met. All payments for work related expenses under the programme will be made from the programme fund account. No other administrative expenditure (such as purchase of vehicles and office equipment) shall be debitable to this account. Expenses on administration for items approved by MORD guidelines will be debitable to Administrative Account.

The Maintenance Fund will be used to manage the funding of the Maintenance contracts, and the State Government will release funds from the State Budget for the purpose.

13.1.4 Regulation of Programme expenditure:

Expenditure under the PMGSY Programme Fund will be regulated as under: –

1. The SRRDA will declare the Executive Engineers of PIUs/Heads of PIUs (who are the drawing and disbursing officers of the PIU) as its ex-officio members or officers so as to enable them to draw on the funds of the Agency from the Programme Fund Account. They shall be **Authorised Signatories**.
2. There will be no separate bank accounts of the PIUs for the PMGSY Programme Fund.
3. The SRRDA shall designate a senior officer as the Financial Controller of this Agency so that he can oversee the implementation of the accounting system. The Financial Controller would be a Senior Accounts Officer, with adequate experience in works accounting.
4. The SRRDA will nominate one of its senior officers, normally of the rank of Finance Controller or Chief Engineer or Superintending Engineer, as the Empowered Officer. It shall be open only to the Empowered Officer to inform the Bank of the names of the Authorised Signatories, for issuing cheques on the Agency's bank account.
5. The Empowered Officer will furnish this list of Authorised signatories along with attested signatures to the Bank, apart from himself maintaining a record of it. This list will be verified quarterly and updated list supplied to the Bank each quarter. As soon as there is a change in the name of an Authorised signatory the Bank will immediately be informed, with instructions on disposal of cheques issued.
6. The Bank will issue Cheque Books to each of the Authorised signatories on the basis of written requisitions from the Empowered Officer. Cheque Book numbers shall be intimated to the Financial Controller.
7. When a work is awarded, the PIU shall obtain the Bank details and account no. of the contractors and intimate the Empowered Officer of all Account Payee information for each package, including the total amount admissible for each account payee. The Empowered Officer will inform the Bank of the names of Authorised Payees (contractors and suppliers with whom Agreements have been duly entered into, as well as Statutory Authorities, such as ITO etc) and their designated payee accounts. The Empowered Officer will authorise the payment of mobilisation and machinery advance admissible. He will authorise payment of running bills after obtaining a certificate of satisfactory mobilisation from the PIU, which will certify that the contractor has mobilised the required key personnel and equipment, has set up the site Quality Control Laboratory, and has got his work programme approved. A list of the authorised payees will be entered in the Master of the OMMS by the Empowered Officer enabling operations of the Accounting Module for the package.
8. The Empowered Officer will lay down suitable limits on monthly/quarterly payments in line with the agreed Works Programme for the respective packages. Standing instructions will be issued to the Bank Branches by the Empowered Officer in this regard.
9. The Authorised Signatories will make payments, as per the established PWD procedure, by Account Payee cheque mentioning the designated payee accounts. They will immediately enter the cheque and payee details in the Payment Module of the OMMS, and also issue an advice to the Bank which may consist of electronic advice available on the OMMS Accounting Module.
10. On presentation of the cheque, the Bank would satisfy itself after checking the advice from the PIU that the payment details have been entered in the Payment module, and that the cheque meets with all other requirements, among others, like signatures agreeing with specimen signatures, the cheque amount being within the balance authorised limit, and the payee being the authorised payee, payee account details being fully and correctly specified etc. The Bank will then made payments and confirmatory entries in the OMMS Accounting Module.
11. Normally, there will not be any self-cheque drawn on the PMGSY Programme Funds Account. However, in individual cases, the Empowered Officer may make the Executive Engineer/Head of PIU an authorised payee for a specified amount and also as one time measure only. There will not be any standing directions/ instructions to the Bank for this.
12. The Bank will not allow the funds to be used by any person other than the Authorised Signatories and for any purpose other than the authorised payment for Works taken up under the PMGSY. Nor will it be open

to the SRRDA to invest these funds in any other Bank Branch, whether for short or medium term, including under Fixed Deposits.

13. The Bank will render monthly account, in respect of PMGSY Funds, to the SRRDA and the National Rural Roads Development Agency by processing the data on the Receipts and Payment Modules of the OMMS. It will also inform the concerned PIU of its cheques encashed.

14. A tripartite Memorandum of Understanding will be entered into between the Bank, State-level Agency and the Ministry of Rural Development wherein the parties would agree to abide by the provisions of the Guidelines. In particular, the Bank will agree to abide by the instructions issued, from time to time, by the Ministry of Rural Development/ National Rural Roads Development Agency (NRRDA) regarding the operation of the Account. The Bank will not make any advance, overdraft or loans to any State Government or its agency or unit or corporation or any one else out of or against the security of the investments or funds or PMGSY account under any circumstances.

15. All funds in excess of Rs. 50 (fifty) lakhs will be automatically maintained by the bank as Fixed Deposits, at an interest rate not below that of Treasury Bill for 91 days. The Bank may encash the Fixed Deposits in tranches of Rs. 25 lakhs by paying the interest for the days of the FDR without any reduction in the rate of interest (The Reserve Bank of India follows this procedure for investing in 91-day treasury bill the surplus funds of the State Government and Union Government).

16. Money accruing as Interest will be added to the same account. The expenditure out of this interest amount will be guided by the instructions/ guidelines to be issued by the Ministry of Rural Development/ NRRDA from time to time. The Bank shall intimate to the SRRDA, the interest amount credited by it to the Account from time to time. The MORD or the NRRDA may, from time to time, issue such directives to the Bank/ SRRDA as necessary for smooth flow of funds and effectiveness of the Programme, and the Bank shall take note of the advice, and comply with such directives.

13.1.5 Regulation of Administrative Expenditure: Unlike the Programme Fund, the Administrative Fund may be credited with funds from both PMGSY and the State Grant-in-aid. These are funds necessary for the administration of the SRRDA and PIUs and for Quality Management. The operation of the Administrative Account will be as follows:-

1. The SRRDA will declare the Executive Engineers of PIUs/Heads of PIUs (who are the drawing and disbursing officers of the PIU) as its ex-officio members or officers so as to enable them to draw on the funds of the Agency from the Programme Fund Account. They shall be Authorised Signatories.

2. There will be no separate bank accounts of the PIUs for the PMGSY Administrative Fund.

3. The Bank will issue Cheque Books to each of the Authorised signatories on the basis of written requisitions from the Empowered Officer. Cheque Book numbers shall be intimated to the Financial Controller

4. The position of the PMGSY administrative expenses and travel expenses which are meant for PIUs will be distributed in the form of limits under intimation to the Bank.

5. The 2nd tier quality monitoring expenses shall only be used to the purposes specified in the guidelines. They shall not be used for defraying administrative and travel expenses except travel expenses of designated State Quality Monitors.

6. The Authorised Signatories will make payments, as per the established procedure, by Account Payee cheque mentioning the designated payee accounts. They will immediately enter the cheque and payee details in the Payment Module of the OMMS, and also issue an advice to the Bank which may consist of electronic advice available on the OMMS Accounting Module. However, the Empowered Officer may allow drawal of self cheques by PIUs within an overall limit, to meet petty expenses.

7. On presentation of the cheque, the Bank would satisfy itself after checking the advice from the PIU that the payment details have been entered in the Payment module, and that the cheque meets with all other requirements, among others, like signatures agreeing with specimen signatures, the cheque amount being

within the balance authorised limit, and the payee being the authorised payee, payee account details being fully and correctly specified etc. The Bank will then made payments and confirmatory entries in the OMMS Accounting Module.

8. The Bank will not allow the funds to be used by any person other than the Authorised Signatories and for any purpose other than the authorised payment for Works taken up under the PMGSY. Nor will it be open to the SRRDA to invest these funds in any other Bank Branch, whether for short or medium term, including under Fixed Deposits.

9. The Bank will render monthly account, in respect of PMGSY Funds, to the SRRDA and the National Rural Roads Development Agency by processing the data on the Receipts and Payment Modules of the OMMS. It will also inform the concerned PIU of its cheques encashed.

10. A tripartite Memorandum of Understanding will be entered into between the Bank, State-level Agency and the Ministry of Rural Development wherein the parties would agree to abide by the provisions of the Guidelines. In particular, the Bank will agree to abide by the instructions issued, from time to time, by the Ministry of Rural Development/ National Rural Roads Development Agency (NRRDA) regarding the operation of the Account. The Bank will not make any advance, overdraft or loans to any State Government or its agency or unit or corporation or any one else out of or against the security of the investments or funds or PMGSY account under any circumstances.

11. All funds in excess of Rs. 50 (fifty) lakhs will be automatically maintained by the bank as Fixed Deposits, at an interest rate not below that of Treasury Bill for 91 days. The Bank may encash the Fixed Deposits in tranches of Rs. 25 lakhs by paying the interest for the days of the FDR without any reduction in the rate of interest (The Reserve Bank of India follows this procedure for investing in 91-day treasury bill the surplus funds of the State Government and Union Government).

12. Money accruing as Interest will be added to the same account. The expenditure out of this interest amount will be guided by the instructions/ guidelines to be issued by the Ministry of Rural Development/ NRRDA from time to time. The Bank shall intimate to the SRRDA, the interest amount credited by it to the Account from time to time. The MORD or the NRRDA may, from time to time, issue such directives to the Bank/ SRRDA as necessary for smooth flow of funds and effectiveness of the Programme, and the Bank shall take note of the advice, and comply with such directives.

13.1.6 Regulation of Maintenance Expenditure:- SRRDA's are required to have separate maintenance funds and operate a separate Maintenance Fund Account with the same bank which operates the other two accounts, namely Programme Fund Account and Administrative Expenses Account. Funds for this account will primarily flow from the State Government and may also come from other sources. The funds will be used for payments to contractors for the routine maintenance of rural roads for five year after construction. Guidelines for the management of this fund will be issued from time to time as required. Similarly, its accounting procedure will be laid down separately.

13.2 ACCOUNTING SYSTEM

13.2.1 Since the PMGSY funds are now administered by the SRRDA and are, therefore, outside the Government finances (with no role for the district treasury and the State Accountant General), it is necessary to maintain accounting system capable of on-line monitoring and management. This system has now been developed by the Institute of Public Auditors of India (IPAI), and a software for the accounting system has been developed by the C-DAC. Until the OMMS system becomes fully operational, the accounts will be kept on manual basis on the procedures and formats prescribed by IPAI

13.2.2. The new system, while retaining the basic structure of the PWD accounting system, incorporates the following:

a. Bank authorisation account will be opened and operated both in the books of accounts of PIUs and the SRRDA.

b. SRRDA shall maintain PIU-wise ledger account for the "Programme Fund, Admn. Fund and Maintenance

Fund" as well as "Bank Authorisation". The balances in these accounts kept by SRRDA must agree with the balances appearing in the monthly accounts of the PIU.

13.2.3 Chart of Accounts:- Transactions under PMGSY works are further sub-divided according to the chart of accounts. The chart of accounts of PMGSY is like the List of Major and Minor Heads of Accounts for Government transactions. The prescribed chart of accounts for PMGSY is as follows:

CHART OF ACCOUNTS FOR PMGSY PROGRAMME FUND

Head of Account	Credit / Debit Balance	Account Head Number	Entry To be made By
Programme Funds			
Programme Funds received by SRRDA from GoI	Credit	1.01	SRRDA
Programme funds transferred by SRRDA to PIU	Debit	1.02	SRRDA
Programme funds received by PIU from SRRDA	Credit	1.03	PIU
Bank Authorization Account (Books of SRRDA)	Credit	1.04	SRRDA
Bank Authorization Account (Books of PIU)	Debit	1.05	PIU
Incidental funds generated from interest and net Incidental Receipts etc.	Credit	1.06	SRRDA and PIU
Funds transferred from interest income to Administrative Expenses Fund on orders of the Ministry of Rural Development	Debit	1.07	SRRDA
Statutory Deductions from Contractors/suppliers			
Income Tax and Surcharge from contractors/ Suppliers	Credit	2.01	PIU
Commercial/Sales/Entry tax from contractors / Suppliers	Credit	2.02	PIU
Any Other statutory deductions	Credit	2.03	PIU
Deposits Repayable			
Earnest Money Deposits from Contractors / Suppliers	Credit	3.01	PIU
Security Deposit from contractors/ Suppliers	Credit	3.02	PIU
Sums due to contractors on closed accounts	Credit	3.03	PIU
Miscellaneous Deposits	Credit	3.04	PIU
Purchases (Suspense)	**Credit**	**4.01**	**PIU**
Spare number for future use			
Expenditure on works			
Construction of New Roads	Debit	11.01	PIU
Up-gradation of existing Roads	Debit	11.02	PIU
Expenditure on Plantation	Debit	11.03	PIU
Expenditure on Sign Boards	Debit	11.04	PIU
Technical Monitors	Debit	11.05	PIU
Laboratory and Equipment	Debit	11.06	PIU
Detailed Project Report	Debit	11.07	PIU

Head of Account	Credit / Debit Balance	Account Head Number	Entry To be made By
Materials at Site Account (Material issued to Departmental Works)			
Construction of New Roads	Debit	12.01	PIU
Up-gradation of existing Roads	Debit	12.02	PIU
Stores and Stock	**Debit**	**13.01**	**PIU**
Misc. Works Advance			
Against Contractors	Debit	14.01	PIU
Against Staff	Debit	14.02	PIU
For DPR Preparation			
Cash Balance			
Cash in Chest	Debit	15.01	PIU
Imprest with Staff	Debit	15.02	PIU
Bank Balance			
Bank	Debit	16.01	SRRDA
Advances			
Advance Payment to Contractors	Debit	17.01	PIU
Materials issued to contractors	Debit	17.02	PIU
Secured Advance against materials	Debit	17.03	PIU
Mobilisation Advance	Debit	17.04	PIU
Machinery Advance	Debit	17.05	PIU
Advances to Suppliers	Debit	17.06	PIU
Other Advances	Debit	17.07	PIU
Spare No.			
Income Tax			
Tax deducted at Source on the investments of SRRDA	Debit	19.01	SRRDA
Balance Sheet			
Balance Sheet Account	NIL	20.01	PIU/ SRRDA
Incidental Receipts			
Interest received from Bank Account	Credit	21.01	SRRDA
Forfeiture of Earnest Money Deposit	Credit	21.02	PIU
Fines, Forfeitures, Penalties etc	Credit	21.03	PIU
Any Other non refundable Deductions from Contractor / Supplier Bill	Credit	21.04	PIU
Miscellaneous Receipts	Credit	21.05	PIU / SRRDA
Recoverable Administrative Expenses	Debit	22.01	PIU / SRRDA
Spare numbers for future use			

EXPLANATORY NOTES ON CHART OF ACCOUNTS PROGRAMME FUNDS

ACCOUNT CODE/HEAD	Explanatory Notes
1.01	Funds received by the SRRDA at State level from the Government of India shall be credited.
1.02	Programme funds transferred through Bank Authorisation by SRRDA to PIU shall be accounted for by Debit to this account code in the Transfer Entry Book of the SRRDA. Moneys if any, received by the PIU relating to Programme and deposited in the Bank Account of SRRDA by the PIU shall be accounted for by credit to this account on the receipt side of Cash Book of SRRDA in "Bank Column".
1.03	Programme funds received through bank Authorisation by PIU from SRRDA shall be accounted for by Credit to this account code on the receipt side of the Cash Book of PIU in "Bank Authorisation" column. Moneys, if any, received by PIU relating to programme shall be accounted for on the receipt side of PIU Cash Book in "Cash column" by credit to related account code. On deposit of such moneys in the Bank account of SRRDA it shall be accounted for on the "Payment side" of the cash book in "Cash" column by debit to this account code.
1.02 & 1.03	Account code 1.02 & 1.03 shall be squared up and hence shall not appear in State Level Consolidated Balance Sheet of PIU and SRRDA.
	Programme funds transferred through Bank Authorisation by SRRDA to PIU shall be accounted for by Credit to this account code in the Transfer Entry Book of the SRRDA.On receipt of the statement for the cheques drawn by the PIU during the month against Bank authorisation in the prescribed format the SRRDA shall account for the amount of cheques drawn by the PIU on the payment side of its cash book in Bank column by debit to this account code.
1.04	Programme funds received through Bank authorisation by PIU from SRRDA shall be accounted for by the PIU on receipt side of its cash book in Bank Authorisation column.All payments made by the PIU against Bank authorisation shall be accounted for by the PIU on the payment side of its cash book in "Bank Authorisation" column.No ledger account of Bank Authorisation account shall be maintained by the PIU as the Cash Book of PIU with column "Bank Authorisation" on the receipt as well the payment side will serve the purpose of ledger.
1.05	Account code 1.04 and 1.05 shall be squared up and shall not appear in State Level Consolidated Balance Sheet.
1.06	At the close of each financial year shall be adjusted by credit to this (1.06) account code.
2.01, 2.02 & 2.03	Statutory deductions viz. Income tax, Commercial Tax, Sales Tax, surcharge on tax and any other Tax etc. made from the payments to Contractors/Suppliers by the PIU shall be credited.The payment to the concerning authorities by the PIU shall be made by debit resulting in NIL balance.
3.01	Earnest money deposits received from Contractors/Suppliers shall be credited.
3.02	Security Deposits received/recovered from Contractors/Suppliers shall be credited.Refund of Earnest Money Deposit/Security Deposit shall be Debited resulting in NIL balance.
3.03	Sums due to Contractors on closed accounts shall be credited. The payment to Contractors shall be made by Debit resulting in NIL balance.
3.04	All other deposits received by PIU shall be credited and refund thereof shall be made by Debit resulting in NIL balance. Amount with-held and any other refundable deduction from the bill of the Contractor/Supplier shall also be credited to this account code.

ACCOUNT CODE/HEAD	Explanatory Notes
4.01	Materials purchased from Suppliers remaining unpaid during the month shall be accounted for by debit to the concerned account code and credit to PURCHASES. The payments to suppliers in subsequent month shall be made by Debit to Purchases resulting in NIL balance. It is a suspense head to account for the unpaid materials at the close of the month.
11.01 & 11.02	Expenditure on works: The works have been classified as per guidelines of the Government of India, Ministry of Rural Development (MORD). Expenditure incurred for the execution of works shall be debited to the works concerned. Account Codes are self-explanatory i.e. Construction of New Roads and Up-gradation of Existing Roads.
11.03	Expenditure on plantation on both sides of the road shall be debited to this Account Code.
11.04	Expenditure of fixing of Sign Boards on the roadside as per guidelines of MORD shall be debited to this Account Code.
12.01 & 12.02	Materials required for the execution of works shall be routed through Stores and Stock Account. Materials issued from Stores shall be debited to Material and Site and its account shall be maintained by the Site Engineer. When the Materials are finally consumed on the works the expenditure shall be debited to works concerned under major code 11 by Credit to this account code.Unconsumed Materials/Tools & Plants, if any, left at the site of work shall be returned to Stores and the cost thereof shall be adjusted by debit to Account Code 13.01 “Stores & Stock” and Credit to this Account Code. This Account Code shall finally be closed with “NIL” balance. Scrap, if any, shall also be returned to Stores for auction.
13.01	Value of stores purchased shall be debited to this Account Code and issues thereof from Stores to site of work/Contractors shall be credited to this Account Code by debit to Account Code of works concerned under Major Head–12–”Expenditure on Materials directly charged to works (MAS) or Account Code 17.02-Materials issued to Contractors.Stock account code 013.01 shall be minus debited/minus credited in the following cases:
	1. In the absence of the bill of Supplier approximate value of the unpaid materials received during the month is adjusted by debit to stock account code 13.01 and credit to purchase. Suspense account code 04.01. If the actual payment for the supplies is found to be less than the approximate value, the difference shall be adjusted by minus debit to account code 13.01 and debit to account code 04.01.
	2. There may be some credit balance in stock account “Account Code 13.01” at the time of closing stores due to issue rates. Such credit balance (profit on stock) shall be adjusted by minus credit to account code 13.01 and credit to miscellaneous receipt account code 021.07 and stock account code 13.01 shall be closed with NIL balance.
	Scrap in stores, if any, shall be sold by auction and sale proceeds thereof shall be credited to Account code 021.07 “Miscellaneous receipts”.At the close of scheme the value of stores and stocks, if any, shall be adjusted as per guidelines issued by Govt. of India, Ministry of Rural Development.
14.01 & 14.02	Any expenditure, which can not be debited to any Account Code and require investigation/recovery from the Contractor/staff shall be debited to Account Code number 14.01/14.02. Theft/losses shall also be debited to this account code. It is a suspense head and is to be adjusted by debit to final Account Code and credit to 14.01/14.02 after investigation. This Account Code is to be finally closed with NIL balance.

ACCOUNT CODE/HEAD	Explanatory Notes
15.01	Account Code-Cash in Chest is self explanatory. Cash balance appearing in Cashbook at the close of month shall be shown against this Account Code.
15.02	Imprest issued to staff for petty expenses/purchases/labour payment shall be debited to this account code. On receipt of account this account code shall be adjusted by debit to final head of account code relating to expenses. This Account Code is to be finally closed with NIL balance.
16.01	Funds received by SRRDA from Govt. of India, Ministry of Rural Development shall be kept in an account opened in any one of the Scheduled Bank. The funds shall be transferred to PIU through "Bank Authorisations". Bank account for the funds received from the State Govt. shall be opened in another Scheduled Bank, so that the transactions from Central and State funds may not be mixed-up. Name of the Scheduled Bank in which account is opened shall be incorporated in the Chart of Account.Funds shall be released on the basis of requisition of PIU. Bank reconciliation statement shall be prepared at the end of each month by SRRDA as well as PIU to reconcile the difference, if any, in balance as per Bank and Cash Book.
17.01	Advance Payment if any made to the Contractor against his running bill shall be debited to this account code. Recovery as and when effected shall also be credited to this account code.
17.02	Materials issued to the Contractors from store shall be debited to this account code. Materials as per requirements of the work and as per terms and conditions of contract shall be issued and cost thereof shall be recovered on the basis of its consumption
17.03	Secured advance against imperishable materials brought to site of work shall be debited. Secured advance shall be limited to 75 per cent of value thereof and for the quantity actually required and brought to the site of work. Advance shall be given after signing indenture in the prescribed format and it shall be recovered on the basis of consumption.
17.04 & 17.05	These advances shall be debited to the concerned Account Code. The advances shall be given strictly as per terms and conditions of agreement after ensuring its recovery. Advance shall also be recovered as per terms and conditions of the Agreement.Interest recovered from the Contractor on the amount of advance shall be credited to Miscellaneous receipts account code 21.05.
17.06	Advances to Suppliers shall be debited to this account code. Advances shall be given as per conditions of supply order after ensuring its security and recovery. Recovery of advances shall be adjusted when supplies are received and accepted.
18.01	All payments relating to repairs and maintenance of the road after the expiry of Defects Liability Period as per terms and conditions of the contract shall be debited to this account code. Expenditure on repairs and maintenance of Sign Boards and maintenance of road side plantation shall also be debited to this account code.Schedule of works expenditure shall be prepared showing the road wise details of expenditure for the month and to end of the month etc. and the total of the schedule shall agree with that shown in the account.
19.01	Tax deducted at source by the Bank from the interest shall be debited to this account code. Refund for the same shall be claimed from Income Tax Department.
20.01	This account code shall be operated to account for the assets and liabilities of the programme if the SRRDA has been changed. The following adjustment shall be done to account for the assets and liabilities.

ACCOUNT CODE/HEAD	Explanatory Notes
	(i) Debit : Balance Sheet Account Credit : Liabilities (ii) Debit : Assets Credit : Balance Sheet Account
	This account code shall be closed with NIL Balance.
21.01	Gross amount of interest received on deposits etc. shall be credited to this head of account.
21.02 to 21.04	These account codes are self-explanatory. Account Code 21.03 will also include deduction on account of non-refundable liquidated damages etc. from the bill of Contractor.
21.05	All other receipts shall be credited. Sale proceeds of scrap etc. shall also be credited. Interest recovered from Contractor against mobilisation/ machinery advance shall also be credited. At the close of each financial year the total amount of incidental receipts shall be credited to Account Code 1.06 Incidental Funds generated from interest etc. and account code 21 shall be closed with NIL balance.

Note: –

1. Account Codes (1.02 and 1.03) and (1.04 and 1.05) while preparing the balance sheet of the state by the SRRDA will be normally squared up. Monthly meetings of the PIUs shall be arranged by SRRDA so that the differences if any may be reconciled and adjusted.
2. Balances if any against major code numbers 3, 4, 13, 14, 16 and 17 at the close of the scheme shall be adjusted as per the guidelines issued by the Govt. of India, Ministry of Rural Development.

CHART OF ACCOUNTS FOR PMGSY – ADMINISTRATIVE EXPENSES FUNDS

The Chart of Account for Administrative Expenses Fund is as follows:

Charts of Accounts

PMGSY - Administrative Expenses Fund

Head of Account	Credit / Debit Balance	Account Head Number	Entry To be made By
Administrative Funds			
Central Administrative Expenses Funds received by SRRDA from GoI	Credit	51.01	SRRDA
Central Administrative Expenses Funds transferred by SRRDA to PIU	Debit	51.02	SRRDA
Central Administrative Expenses Funds received by PIU from SRRDA	Credit	51.03	PIU
State Administrative Expenses Funds received by SRRDA from State Government	Credit	51.04	SRRDA
State Administrative Expenses Funds transferred by SRRDA to PIU	Debit	51.05	SRRDA
State Administrative Expenses Fund received by PIU from SRRDA.	Credit	51.06	PIU
Bank Authorization Account(Books of SRRDA)	Credit	51.07	SRRDA
Bank Authorization Account(Books of PIU)	Debit	51.08	PIU
Incidental funds generated from interest and net Incidental Receipts etc.	Credit	51.09	SRRDA/PIU
Cash and Bank Balance			
Cash in Chest	Debit	52.01	PIU/SRRDA
Imprest with Staff	Debit	52.02	PIU/SRRDA
Bank Balance	Debit	52.03	SRRDA
Fixed Deposits with Bank	Debit	52.04	SRRDA
Income Tax (Receivable)			
Tax Deducted at source	Debit	53.01	SRRDA
Administrative Expenses			
Travelling expenses	Debit	54.01	SRRDA/PIU
Telephone Expenses	Debit	54.02	SRRDA/PIU
Maintenance of Computers	Debit	54.03	SRRDA/PIU
Internet Expenses	Debit	54.04	SRRDA/PIU
Data Entry Costs	Debit	54.05	SRRDA/PIU
Other Office Expenses	Debit	54.06	SRRDA/PIU
Quality Monitoring Expenses	Debit	54.07	SRRDA
Bank Charges		54.08	SRRDA
Any other expenses with approval of MoRD		54.09	SRRDA/PIU
Expenses approved by the State Government to be incurred from	Debit	54.10 –	SRRDA/PIU
Funds it provided.		54.19	
Assets expenses allowed by the MoRD (i.e., computers)	Debit	54.20-24	SRRDA/PIU
Assets expenses allowed by State Government	Debit	54.25-54.30	SRRDA/PIU
Incidental Receipts			
Interest received from Bank	Credit	55.01	PIU
Miscellaneous Receipts	Credit	55.02	PIU

EXPLANATORY NOTES ON CHART OF ACCOUNTS FOR PMGSY ADMINISTRATIVE EXPENSES FUNDS

ACCOUNT CODE/HEAD	Explanatory Notes
51.01	Funds received from Govt. of India by SRRDA shall be credited
51.02	Funds Transferred during the year by SRRDA to PIU shall be debited to this account
51.03	Funds received during the year by PIU from SRRDA shall be credited to this account
51.04	Funds received during the year from State Government by SRRDA shall be credited to this account
51.05	Funds transferred during the year by SRRDA to PIU shall e debited to this account
51.06	Funds received during the year by PIU from SRRDA will be credited to this account
51.07	Administrative Expenses funds transferred through Bank Authorisation by SRRDA to PIU shall be accounted for by credit to this account in the Transfer entry book of SRRDA
51.08	Administrative Expenses funds received through Bank Authorisation by o PIU from SRRDA shall be accounted for by the PIU on receipt side of its cash book in the Bank Authorisation column.
51.09	At the close of each financial year all incidental receipts in Major account code 055 shall be adjusted by credit to this account code.
52.01	Account Code-Cash in Chest is self-explanatory. Cash balance appearing in Cashbook at the close of month shall be shown against this Account Code.
52.02	Imprest issued to staff for petty expenses/purchases etc. shall be debited to this account code. On receipt of account this account code shall be adjusted by debit to final head of account code relating to expenses. This Account code is to be finally closed with NIL balance.
52.03	Funds received from Govt. of India, Ministry of Rural Development and State Government shall be kept in one account opened in any one Scheduled Bank in accordance with PMGSY guidelines. Funds shall be transferred to PIU's through' Bank Authorisations'
52.04	The tripartite agreement wit the bank provides for automatic investment of surplus funds with the bank in fixed deposits. This head is for that purpose
53.01	Tax deducted at source from the amount of Interest on Deposits etc. shall be debited to this Head of Account.
54.01 to 54.30	These account codes are self explanatory
55.01	Gross amount of interest received on deposits etc shall be credited to this Head of account.
55.02	This account code is self explanatory.

Note: –

1. Account code number 51.01 and 51.02 for the receipt/transfer of funds shall be operated by the SRRDA only.
2. Account head code 51.03 for the receipt of funds shall be operated by the PIUs only.
3. At the close of each financial year: –
   (a) Administrative Expenses shall be adjusted by debit to account code number 54.01 or 54.19
   (b) Incidental receipts shall be adjusted by credit to account code 51.02 or 51.04
4. Balance sheet as on 31st March shall show only the unspent amount of the fund on liability side and cash/Bank balance on asset side.
5. Subsidiary registers for administrative/incidental receipts shall be maintained as laid down by the State Govt.
6. Unspent balance amount of the fund as on 31st March shall be carried forward in the next year.

CHART OF ACCOUNTS FOR PMGSY MAINTENANCE FUND

Head of Account	Credit / Debit Balance	Account Head Number	Entry To be made By
Maintenance Fund			
Central Maintenance Fund (received by SRRDA from GOI)	Credit	**101.01**	SRRDA
Central Maintenance Fund transferred by SRRDA to PIU	Debit	**101.02**	SRRDA
Central Maintenance Fund received by PIU from SRRDA	Credit	**101.03**	PIU
State Maintenance Fund received by SRRDA from State Government	Credit	102.01	SRRDA
State Maintenance Fund transferred by SRRDA to PIUs	Debit	102.02	SRRDA
State Maintenance Fund received by PIU from SRRDA	Credit	102.03	PIU
Maintenance Funds from Other Sources			
Source A	Credit	**103.01**	SRRDA
Source B	Credit	**103.2**	SRRDA
Maintenance funds from Other Sources transferred to PIUs	Debit	**104.01**	SRRDA
Maintenance Funds from Other Sources received by PIUs	Credit	**105.01**	PIU
Bank Authorization Account (Books of SRRDA)	Credit	**106.01**	SRRDA
Bank Authorization Account (Books of PIU)	Debit	**106.02**	PIU
Incidental funds generated from interest and net Incidental Receipts etc.	Credit	**107.01**	SRRDA/PIU
Statutory Deductions from Contractors/suppliers			
Income Tax and Surcharge from contractors/ Suppliers	Credit	108.01	PIU
Commercial/Sales/Entry tax from contractors / Suppliers	Credit	108.02	PIU
Any Other statutory deductions	Credit	108.03	PIU
Deposits Repayable			
Earnest Money Deposits from Contractors / Suppliers	Credit	109..01	PIU
Security Deposit from contractors/ Suppliers	Credit	109..02	PIU
Sums due to contractors on closed accounts.	Credit	109..031	PIU
Miscellaneous Deposits	Credit	109..04	PIU
Purchases (Suspense)	Credit		
Purchase (Suspense)		**110.01**	PIU
Spare number for future use			
Maintenance of Roads			
Maintenance of newly constructed roads			

Head of Account	Credit / Debit Balance	Account Head Number	Entry To be made By
First Year Maintenance	Debit	120.01	SRRDA/PIU
Second Year Maintenance	Debit	120.02	SRRDA/PIU
Third Year Maintenance	Debit	120.03	SRRDA/PIU
Fourth Year Maintenance	Debit	120.04	SRRDA/PIU
Fifth Year Maintenance	Debit	120.05	SRRDA/PIU
Maintenance of up-graded roads			
First Year Maintenance	Debit	121.01	SRRDA/PIU
Second Year Maintenance	Debit	121.02	SRRDA/PIU
Third Year Maintenance	Debit	121.03	SRRDA/PIU
Fourth Year Maintenance	Debit	121.04	SRRDA/PIU
Fifth Year Maintenance	Debit	121.05	SRRDA/PIU
Spare Numbers			
Renewal of Roads			
Renewal of PMGSY roads	Debit	126.01	SRRDA/PIU
Maintenance of Zonal Roads			
First Year Maintenance	Debit	127.01	SRRDA/PIU
Second Year Maintenance	Debit	127.02	SRRDA/PIU
Third Year Maintenance	Debit	127.03	SRRDA/PIU
Fourth Year Maintenance	Debit	127.04	SRRDA/PIU
Fifth Year Maintenance	Debit	127.05	SRRDA/PIU
Materials at Site Account (Material issued to Departmental Works)			
MAS account	Debit	131.01	PIU
Stores and Stock			
Stores and Stock	Debit	132.01	PIU
Misc. Works Advance			
Against Contractors	Debit	133.01	PIU
Against Staff	Debit	133.02	PIU
Cash Balance			

Head of Account	Credit / Debit Balance	Account Head Number	Entry To be made By
Cash in Chest	Debit	**134**.01	SRRDA/PIU
Imprest with Staff	Debit	**134**.02	SRRDA/PIU
Bank Balance			
Bank	Debit	**135**.01	SRRDA
Advances			
Advance Payment to Contractors	Debit	136.01	PIU
Materials issued to contractors	Debit	136.02	PIU
Secured Advance against materials	Debit	136.03	PIU
Mobilisation Advance	Debit	136.04	PIU
Machinery Advance	Debit	136.05	PIU
Advances to Suppliers	Debit	136.06	PIU
Other Advances	Debit	136.07	PIU
Spare No.			
Income Tax			
Tax deducted at Source on the investments of SRRDA	Debit	139	SRRDA
Incidental Receipts			
Interest received from Bank Account	Credit	140.01	SRRDA
Forfeiture of Earnest Money Deposit	Credit	140.02	PIU
Fines, Forfeitures, Penalties etc	Credit	140.03	PIU
Any Other non refundable Deductions from Contractor / Supplier Bill	Credit	140.04	PIU
Miscellaneous Receipts	Credit	140.05	PIU / SRRDA
Spare numbers for future use			

13.2.4 Accounting System for the SRRDA

(i) SRRDA shall maintain a two column cash book – one for cash and another for bank transactions.

(ii) The funds received from Government of India will be accounted for on the receipt side of the cash book in bank column by showing classification Account Code No.1.01.

(iii) On receipt of requisition of funds from the PIU in the prescribed format, SRRDA's empowered officer will issue it a bank authorisation in the prescribed format with endorsement to the bank showing the amount, names of payees, etc.

(iv) One signed copy of the bank authorisation will become the voucher for the entry in the "Bank Authorisation Transfer Entry Book". No bank authorisation will be dispatched to a PIU before an entry is made in the Bank Authorisation Transfer Entry Book. Bank Authorisation authority to PIU will bear the entry number in the Register. Entry in the Bank Authorisation Transfer Entry Book will be debited to the account head 1.02 Programme Funds Transferred to the PIU; and credited to the head 1.04 Bank Authorisation. The detailed account of each PIU will be kept in the PIU Programme Funds Transferred and PIU Bank Authorisation Register.

(v) Each PIU will send to SRRDA monthly account, monthly balance sheet with the prescribed schedules including a statement of the cheques drawn during the month and bank reconciliation statement. The statements should reach the SRRDA latest by the 5th day of the next month. On receipt of this monthly bank reconciliation statement, the SRRDA shall pass an order for its acceptance and make an entry in the cash book, bank column, payment side, of the amount of the cheques issued during the month. It will treat the bank reconciliation statement as a voucher. Apart from posting the entry from the cash book to the Ledger of Credit Balances, Bank Authorisation Account, it will also make an entry in the PIU Bank Authorisation Register, make an entry of each cheque issued on the payment side of cash book showing the total amount of cheques drawn during the month by the PIU in bank column by debit to "Bank Authorisation Account" in the same month. It will post the amount to the PIU Bank Authorisation Register. Details of the cheques will always be available in the voucher, namely the bank reconciliation statement.

(vi) Net credit balance in the PIU Bank Authorisation Register should agree with the amount shown in the balance sheet of the PIU. Any difference should be promptly investigated and set right.

(vii) Moneys received by PIUs by cheques/ demand drafts/ pay orders, etc. against the PMGSY programme shall be deposited by the PIU in the branch of the bank at its Headquarter in the account of SRRDA. Intimation for such deposit shall be furnished by the PIU to SRRDA in the prescribed form along with photocopy of bank pay-in-slip. On receipt of such intimation the SRRDA shall pass an transfer entry order crediting the account head 1.02 Programme Fund transferred to PIU and crediting the head to which the receipt relates.

(viii) Net debit balance of programme fund of the PIU in the accounts of SRRDA shall be in agreement with the net credit balance in the accounts of PIU. Any difference should be promptly investigated and set right.

(viii) In order to avoid any difference there shall be no issue of bank authorisation during the last five working days of the month, to prevent difference, which arise because of delays in transit.

(ix) Gross amount of interest received from bank on the balances shall be taken as receipt in bank column in the cash book Account Code 21.01. The tax deducted at source by bank shall be shown on payment side in the bank column "tax deducted at source" Account Code 19.01. Refund for tax deducted at source shall be claimed from Income Tax Department.

(Note: It would be better for the SRRDA to obtain exemption from payment of income tax.)

(x) Each SRRDA will send monthly consolidated balance sheet to NRRDA by the 15th of the succeeding month.

(xi) Each SRRDA will send to NRRDA a statement of closing balance in the Programme Account in the prescribed format by the 5th of the succeeding month.

13.2.5 ACCOUNTING SYSTEM FOR PIUS

13.2.5.1. The PIU entrusted with the task of PMGSY may be a Public Works Division under any Govt. Department like the Public Works Department, Panchayati Raj Department, Rural Development Department etc. or it may be an engineering division under DRDA or District Panchayat. It will be declared ex-officio part of the State SRRDA and it will keep the accounts in the manner described in this sub-section.

13.2.5.2 The PIU will keep three separate sets of books of accounts as follows:

Programme Fund: It will be for the execution of works.

Administrative Expenses: It will be for the administrative expenses given by the Ministry of Rural Development and by State Government.

Maintenance Expenses Account:- It will be for maintenance of roads .Funds for this shall be provided by State Governments and the accounts shall be maintained as per guidelines issued by Ministry of Rural Development from time to time

13.2.5.3 Accounting for Programme Funds

1. Since the PIU will work on Bank authorisation from the State SRRDA, its Cash Book would show the authorisation received and utilised and the balance available. The PIU does not have an independent Bank Account, therefore, its Cashbook will not have a Bank column. Instead it will have a Bank authorisation column. Thus, its Cashbook will have two columns on the receipt side, namely, Cash column and Bank authorisation column to show the cash received or the authorisation received. Similarly, its payment side will have two columns, namely, cash column and Bank authorisation column to show the cash payments and the cheques issued against Bank authorisation.
2. The PIU will send to the SRRDA a statement of the cheques drawn by it during the month so as to reach the SRRDA latest by the 3rd of the next month.
3. Moneys received by PIUs by cheques/demand draft/pay orders, etc. against the PMGSY programme shall be deposited by the PIU in the branch of the Bank at its Headquarters in the account of SRRDA. Intimation for such deposit shall be furnished by the PIU to SRRDA in the prescribed form alongwith photocopy of Bank pay-in-slip. On receipt of such intimation the SRRDA shall make an entry oh the receipt side of cash book in 'Bank' column by credit to Programme Fund transferred by SRRDA. Programme Fund balance of the PIU shall be reduced. Net debit balance of programme fund of the PIU in the accounts of SRRDA shall be in agreement with the net credit balance in the accounts of PIU.
4. The PIU shall submit the requisition of funds for the next quarter in the prescribed format to the SRRDA showing the work-wise details and name of contractors/payees, etc.
5. Contra entry shall be made for the self cheque drawn by PIU on both sides of the Cash Book. On payment side of Cash Book it shall be shown in "Bank Authorisation" column as cash received from Bank.
6. The advances, if any, to the Contractors would be shown separately as advances. This will mean that that there is no variation between physical progess and the payments made for work done and measured. The expenditure on works will show the actual progress of works.
7. The material issued shall be debited to the Material at Site account. Such materials on consumption shall be debited to the works concerned by contra credit to Material at Site account.
8. General Ledger is the most important record for preparing the monthly account. It is a book of final entry containing all the accounts. Its purpose is to bring together all the related financial transactions with uniform account structure. It is the source for monthly account and Balance Sheet.

   Accounts opened in the General Ledger shall correspond to the order indicated in chart of accounts to facilitate preparations of monthly account. Separate ledger folio shall be given for each account code and work. Posting of the ledger shall be made from the Cash Book and transfer entry book. The Ledger shall be balanced at the close of each month and the balance of each account code shall be worked out for the month and to end the month.
9. Schedule of Works Expenditure in Form-53 shall be separately prepared for (a) Construction of New Roads; (b) Up-gradation of existing roads; (c) Roadside Plantation; (d) Road sign boards. Expenditure for all the works included in the schedule shall be totalled to work out the total works expenditure for the monthly account and balance sheet. Expenditure on completed works shall be transferred from the Schedule in Form-53 to Schedule in Form-54. All the schedule have been provided for in the OMMS and can be generated online.

13.2.6 Initial Account Records, Subsidiary Registers, Monthly Account & Balance Sheet for Programme Funds:- The PIU and the SRRDA will use the following forms for the Initial Account Records, Subsidiary Registers, Stores & Stock Account Records, Monthly Account and Balance Sheet. The forms pattern is broadly that the Central Public Works Account Code, with deviations sometimes for meeting the requirements of the Programme. Wherever changes have been made in the form of CPWA Code – "R" has been suffixed. The formats are available in the vol. III of Accounts Manual for Programme Funds.

S. No.	Name of Record	PMGSY Form No.	Relevant CPWA Code Form No.
	MONTHLY ACCOUNT & BALANCE SHEET		
1.	Monthly Account (State)	PMGSY-F-1	New
2.	Monthly Account (SRRDA.)	PMGSY-F-1A	New
3.	Monthly Account (PIU)	PMGSY-F-1B	Form-80 / R
4	Annual Account (State)	PMGSY-F-1 (Annual)	New
5	Annual Account (SRRDA)	PMGSY-F-1A (Annual)	New
6.	Balance Sheet Monthly (State)	PMGSY-F-2	New
7	Balance Sheet Annual (State)	PMGSY-F-2annual	New
8	Balance Sheet Monthly(SRRDA)	PMGSY-F-2A	New
9	Balance Sheet Annual (SRRDA)	PMGSY-F-2Aannual	New
10	Balance Sheet Monthly (PIU)	PMGSY-F-2B	New
	INITIAL ACCOUNT RECORDS		
11	Cash Book of SRRDA	PMGSY/IA/F-3	Form-1 / R
12	Cash Book of PIU	PMGSY/IA/F-3A	Form-1 / R
13	Register of Cheques Received and Adjusted	PMGSY/IA/F-3B	Form 1A/R
14	Imprest Cash Book	PMGSY/IA/F-4	Form-2
15	Money Receipt Book	PMGSY/IA/F-5	Form-3 / R
16	Payment Voucher	PMGSY/IA/F-6	Form-28/ R
17	Transfer Entry Book	PMGSY/IA/F-7	Form-54 / R
18	General Ledger (Debit)	PMGSY/IA/F-8	Form-61 / R
19	General Ledger (Credit)	PMGSY/IA/F-9	Form-61 / R
20	Ledger for Funds Transferred by E.A./ GOI to PIU	PMGSY/IA/F-10	New
21	Running Account Bill	PMGSY/IA/F-11	Form-26 / R
22	Account of Secured Advance	PMGSY/IA/F-12	Form-26A / R
23	Account of Advance against Machinery	PMGSY/IA/F-13	New
24	Indenture for Secured Advance	PMGSY/IA/F-14	Form-31 / R
25	Record Measurement Book	PMGSY/IA/F-15	Form-23
26	Bill Measurement Book	PMGSY/IA/F-16	New
27	Transfer Entry Order	PMGSY/IA/F-17	Form-53
28	Contractor's Ledger	PMGSY/IA/F-18	Form-43 / R

S. No.	Name of Record	PMGSY Form No.	Relevant CPWA Code Form No.
29	Register of Works	PMGSY/IA/F-19	Form-40 / R
30	Register of Departmental Works	PMGSY/IA/F-19A	Form 43A/R
31	Detailed Completion Report	PMGSY/IA/F-20	Form-44
	SUBSIDIARY REGISTERS		
32	Register of Statutory Deductions from Contractors/ Suppliers	PMGSY/SR/F-21	Form-67
33	Register of Deposits Repayable	PMGSY/SR/F-22	Form-67
34	Register of Miscellaneous Works Advance	PMGSY/SR/F-23	Form-67
35	Register of Sale of Tender Forms	PMGSY/SR/F-24	New
36	Register of Tenders Received	PMGSY/SR/F-25	New
37	Register of Contract Agreements	PMGSY/SR/F-26	New
38	Register of Interest Bearing Securities / Bank Guarantees	PMGSY/SR/F-27	Form-85 / R
39	Account of Interest Bearing Securities	PMGSY/SR/F-27A	Form 86
40	Register of Measurement Books	PMGSY/SR/F-31	Form-92
41	Register of Cheques/ Receipt Books	PMGSY/SR/F-32	Form-52
42	Register of Miscellaneous Recoveries	PMGSY/SR/F-32A	Form 95
43	Register of Term Deposits	PMGSY/SR/F-33	New
44	Ledger of Term Deposits	PMGSY/SR/F-34	New
	STORE AND STOCK ACCOUNT RECORD FOR DEPARTMENTAL EXECUTION		
45	Goods Received Sheet	PMGSY/SS/F-35	Form-8A
46	Summary of Stock Receipt	PMGSY/SS/F-36	Form-9
47	Stores Indent	PMGSY/SS/F-37	Form-7
48	Summary of Indents	PMGSY/SS/F-38	Form-10
49	Register of Indents	PMGSY/SS/F-38A	Form 7A
50	Bin Cards	PMGSY/SS/F-39	Form-8
51	Priced Store Ledger	PMGSY/SS/F-40	Form-12
52	Register of Goods Received Sheet	PMGSY/SS/F-41	Form-12A
53	Register of Bin Cards	PMGSY/SS/F-42	Form-12B
54	Sale Account form	PMGSY/SS/F-42A	Form 19
55	Statement of Receipts, Issues and Balance of Road Metal	PMGSY/SS/F-42B	
56	Register of Materials at Site Account	PMGSY/SS/F-43	Form-35
57	Register of Issues from Material At Site Account	PMGSY/SS/F-44	Form-35
58	Register of Materials Issued to Contractors	PMGSY/SS/F-44A	Form-35A
59	Register of Advances to Suppliers	PMGSY/SS/F-45	New
60	Register of Purchases-Suspense	PMGSY/SS/F-46	Form-67

S. No.	Name of Record	PMGSY Form No.	Relevant CPWA Code Form No.
61	First & Final Bill	PMGSY/SS/F-47	Form-24
62	Muster Roll	PMGSY/SS/F-48	Form-21
63	Register of Unpaid Wages	PMGSY/SS/F-49	Form-21A
64	Register of Muster Rolls	PMGSY/SS/F-50	New
65	Register of Scrap	PMGSY/SS/F-51	New
66	Hand Receipt	PMGSY/SS/F-51A	Form 28
67	Bill for Refund of Lapsed Deposit	PMGSY/SS/F-51B	New
	SUPPORTING SCHEDULES WITH MONTHLY ACCOUNT/ BALANCE SHEET		
68	Bank Reconciliation Statement	PMGSY/SCH/F-52	Form-51 / R
69	Schedule of Programme Funds received	PMGSY/SCH/F-52A	New
70	Schedule of Incidental Funds/Misc. Income	PMGSY/SCH/F-52B	New
71	Schedule of Deposits Repayable	PMGSY/SCH/F-52C	
72	Schedule of Current Liabilities	PMGSY/SCH/F-52D	
73	Schedule of New Roads Constructed	PMGSY/SCH/F-53E	
74	Schedule of Up-gradation of Roads	PMGSY/SCH/F-53E	
75	Schedule of Other Expenditure on Roads	PMGSY/SCH/F-53F	
76	Schedule of Current Assets	PMGSY/SCH/F-53G	
77	Funds Reconciliation Statement (Funds in Transit)	PMGSY/SCH/F-55	New
78	List of Schedules to be Annexed with Balance Sheet of PIU	PMGSY/SCH/F-56	Form-83 / R
79	Schedule for Statutory Deductions from Contractors /Suppliers	PMGSY/SCH/F-57	New
80	Schedule for Deposits Repayable	PMGSY/SCH/F-58	New
81	Schedule for Incidental Receipts	PMGSY/SCH/F-59	New
82	Schedule for Cash Balance	PMGSY/SCH/F-60	New
83	Schedule for Materials At Site	PMGSY/SCH/F-61	New
84	Schedule for Miscellaneous Works Advance	PMGSY/SCH/F-62	New
85	Schedule for Advances to Contractors / Suppliers	PMGSY/SCH/F-63	New
	GENERAL		
86	Requisition for Funds	PMGSY/GEN/F-64	New
87	Bank Authorisation	PMGSY/GEN/F-65	New
88	Monthly Statement of Cheques issued by PIU against Bank Authorisation	PMGSY/GEN/F-66	New
89	Advice for Amounts Deposited by PIU in Bank Account 97of SRRDA	PMGSY/GEN/F-67	New

13.2.7 The Monthly Account will be compiled from Cash Book, the Ledger and Schedule for Works Expenditure in the following format:

Pradhan Mantri Gram Sadak Yojana

Monthly Account (for PIU)

Name of PIU _____

Month _____**200** **PMGSY/F-1B**

Account Code Number	Head of Account	Ledger folio	Debit balances		
			To end of Previous Month	For the Month	To end of Month (4+5)
1	**2**	**3**	**4**	**5**	**6**
1.05	Bank Authorisation Account				
6.01	Cheques/Demand Drafts etc. received by PIU				
6.02	Cheques/Demand Drafts etc. transferred by PIU to SRRDA				
11.01	Expenditure on construction of New Roads				
	A – In Progress	Sch/F-53			
	B – Completed	Sch/F-54			
11.02	Expenditure on Up-gradation of Existing Roads				
	A – In Progress	Sch/F-53			
	B – Completed	Sch/F-54			
11.03	Expenditure on Plantation				
	A – In Progress	Sch/F-53			
	B – Completed	Sch/F-54			
11.04	Expenditure of Road Sign Boards				
	A – In Progress	Sch/F–53			
	B – Completed	Sch/F–54			
12.01	Expenditure on Materials At Site for Construction of New Roads				
12.02	Expenditure on Materials At Site for Up-gradation of Existing Roads				
13.01	Store and Stock				
14.01	Miscellaneous Works Advance against Contractors				
14.02	Miscellaneous Works advance against Staff				
15.01	Cash in Chest	CBF*			
15.02	Imprest With Staff				
17.01	Advance payment to Contractors				
17.02	Materials issued to Contractors				
17.03	Secured Advance against Materials				
17.04	Mobilisation Advance				
17.05	Machinery Advance				
17.06	Advance to Suppliers				
17.07	Other Advances				
19.01	Tax deducted at source				
	TOTAL				

*Cash Book Folio

Notes:

1. Cash in chest ***"to end of the month"*** shall be the closing balance as shown in the Cashbook. Cash Balance for the month shall be worked by deducting the balance ***"to end of the previous month"*** from the balance ***"to end of the month"*** i.e. column 6 minus column 4.
2. Schedule for Works expenditure (Work in progress)/(completed works) shall be enclosed with the monthly/annual account.
3. ***Vouchers*** shall be retained by PIU for Audit
4. Completed works shall be transferred from Sch/F–53 to Sch/F–54

Pradhan Mantri Gram Sadak Yojana
Monthly/Annual Account (for PIU)

Name of PIU _____
Month _____ **200** **PMGSY/F-1B**

Account Code Number	Head of Account	Ledger folio	Debit balances		
			To end of Previous Month	For the Month	To end of Month (4+5)
1	2	3	4	5	6
1.03	Programme Funds Account				
1.06	Incidental funds generated from interest and net incidental receipts (under the old system)				
21.02	Forfeiture of Earnest Money Deposit				
21.03	Fines, Forfeitures, Penalties etc.				
21.04	Any Other Non-refundable deduction from Contractors/ Suppliers				
21.05	Miscellaneous receipts				
2.01	Income tax from Contractors/Suppliers				
2.02	Commercial/Sales/Entry Tax from Contractors/Suppliers				
2.03	Any other Statutory deduction				
3.01	Earnest Money Deposits				
3.02	Security Deposit from Contractor/Suppliers				
3.03	Sums due to Contractors on closed Accounts				
3.04	Miscellaneous Deposits				
4.01	Purchases (Suspense)				
21.02	Forfeiture of Earnest Money Deposit				
21.03	Fines, Forfeitures, Penalties etc.				
21.04	Any Other Non-refundable deduction from Contractors/ Suppliers				
21.05	Miscellaneous receipts				
	TOTAL				

Notes: Total amount of incidental receipts shall be credited to Incidental Funds generated from interest etc. in the annual account.

13.2.8 The monthly balance sheet from 1st April 2002 shall be prepared from the monthly account in the following format:

Pradhan Mantri Gram Sadak Yojana
Monthly/Annual Account (for PIU)

Name of Unit (PIU) _____
Month _____ **PMGSY/F–2B**

Liabilities	Amount	Assets	Amount
1. Programme Fund Control		1. Cash Balance (i) Cash in Chest (ii) Imprest with Staff	
2. Incidental Funds generated from interest and net incidental receipts		2. Bank Authorisation account	
3. Payables (a) Statutory Deductions form Contractors/ Suppliers (b) Deposits repayable		3. Cheques/Demand Drafts Received by PIUs	
4. Purchases-Suspense		4. Cheques/Demand Drafts Transferred to NA 5. Deposits with State Govt. 6. Construction of New Roads A. In Progress (Sch/F-53) B. Completed (Sch/F-54) 7. Upgradation of existing roads A. In Progress (Sch/F-53) B. Completed (Sch/F-54) 8. Roadside Plantation A. In Progress (Sch/F-53) B. Completed (Sch/F-54) 9. Roadside Sign Boards A. In Progress (Sch/F-53) B. Completed (Sch/F-54) 10. Materials At Site (Sch/F-61) 11. Stores and Stock 12. Miscellaneous Works advance (Suspense) 13. Advances to Contractors/] Suppliers	

Enclosures: Schedule of Works Expenditure (Sch/F–53 & 54)

13.2.9 Accounting for Administrative Expenses Funds:- Accounting for Administrative Expenses Funds is on the same principles as for the Programme Funds, with minor changes. Its Cash Book will also have a Bank authorisation column.. Chart of accounts Administrative Expenses Funds is given in 13.2.3. The Empowered Officer will intimate the Bank whether or not the PIUs will be the Authorised Payees for the amounts/cheques released by the Autonomous Agency. There is no objection if the other administrative funds of the Autonomous Agency including miscellaneous receipts and State Government grants are also held in the same account provided they are subject to the same procedure including computerisation. Other programme and maintenance funds of the State Govt. handled by the Agency shall not, however, be kept in this account.

13.2.10 Accounts procedure for Expenses:- All the payments for various expenses like travel, stationery etc., after being recorded in the cash book, shall be posted to the relevant heads of accounts in the Ledger of Debit Balances. At the end of the year, the amount will be transferred to the Income and Expenditure Account, to close the balance to a nil amount. This will be done through a transfer entry. The net effect of the transactions in the Income and Expenditure Account will be transferred to the Central (or State) Administrative Expenses Fund, which will then appear in the Balance Sheet.

13.2.11 Accounts Procedure for Assets:- The expenditure or purchase of assets will be booked to assets account and not carried to the Income and Expenditure Account. Assets will be shown in the Balance Sheet.

13.2.12 Ledger of Debit Balances:- All the transactions appearing on the credit side of the Cash Book, or in the Debit column of the Transfer Entry Book will be posted in the debit column of the relevant head of account in the General Ledger. All the transactions appearing on the debit side of the Cash Book, or in the credit column of the Transfer Entry book will be posted in the credit column of the relevant head of account of the General ledger.

13.2.13 Initial Accounting Records, Subsidiary Registers, Monthly Account & Balance Sheet for Administrative Expenses Funds:- The PIU and the SRRDA will use the forms for the Initial Account Records in the form of ledger accounts, and such registers for administrative expenses as are laid down by the State Government. The PIU will also prepare a Monthly Account and Balance Sheet in the form given overleaf:

Pradhan Mantri Gram Sadak Yojana

Monthly Account of Receipts and Payments (for PIU)

Administrative Expenses Fund

Name of Unit (PIU) _____

Month _____ **200**

Account Code Number	Head of Account	Ledger folio	Debit balances		
			To end of Previous Month	For the Month	To end of Month (4+5)
1	2	3	4	5	6
51.08	Bank Authorization Accountant				
54.01	Travelling expenses				
54.02	Telephone Expenses				
54.03	Maintenance of Computers				
54.04	Internet Expenses				
54.05	Data Entry Costs				
54.06	Other Office Expenses				
54.07	Quality Monitoring Expenses				
54.08	Bank Charges				
54.09	Any other expenses with approval of MoRD				
54.10-54.19	Expenses approved by the State Government to be incurred from Funds it provided.				
54.20-54.24	Assets expenses allowed by the MoRD (i.e., computers).				
54.25-54.30	Assets expenses allowed by the State Government.				
56.02	Miscellaneous Advances				
52.01	Cash in chest	CBF			
52.02	Imprest with Staff				
	TOTAL				

Accountant **Officer-in-Charge/PIU**

Pradhan Mantri Gram Sadak Yojana
Monthly Account of Receipts and Payments (for PIU)
Administrative Expenses Fund

Name of Unit (PIU)_____
Month _____ 200

Account Code Number	Head of Account	Ledger folio	Debit balances		
			To end of Previous Month	For the Month	To end of Month (4+5)
1	2	3	4	5	6
51.03	Central Administrative Expenses Fund received from SRRDA.				
51.08	State Administrative Expenses Fund received by PIU from SRRDA				
51.09	Incidental funds generated from Interest and net incidental receipts.				
55.02	Miscellaneous Receipts				
56.03	Unpaid bills				
56.04	Deposits Repayable				
	TOTAL				

Accountant **Officer-in-Charge/PIU**

Note:- Amount of incidental receipts shall be credited to Incidental funds generated from Interest etc. in the annual account.

Pradhan Mantri Gram Sadak Yojana

Monthly/Annual Balance Sheet

Administrative Expenses Fund

As on _____

Name of Unit (PIU) _____

AS ON _____

CAPITAL FUND AND LIABILITIES	**Schedule**	**Amount**
Central Administrative Expenses Fund	**1**	___
State Administrative Expenses Fund	**1**	___
Incidental Funds (from interest and other receipts)	**2**	___
Misc. Income	**2**	___
CURRENT LIABILITIES		___
Deposits Repayable	**3**	___
Unpaid Bills	**4**	
TOTAL		
ASSETS		
Miscellaneous Advances	**5**	___
Cash in Chest		___
Bank Authorisation		___
Imprest with Staff		___

The same procedure as for Programme Funds will be adopted for preparing the balance sheet as on the 31st December, 2002 and its incorporation in the accounts.

13.3 REPORTING AND MONITORING

13.3.1 For PMGSY works, it is mandatory to maintain the progress of expenditure on each of the major activity (called sub-head) of the works.

13.3.2 The C-DAC Pune has already made a provision for this in its software. It requires a public works division to fill, in the prescribed format, the activity-wise details when entries of payment of the Contractor's claims are made in the online cash book. The following format of abstract of activities is recommended. This format should be part of the Contractor's claim. Its details are:

(a) Earthwork

(b) WBM and hard shouldering work

(c) B.T. work

(d) Road furnishing work

(e) CC Road and Protection wall

(f) Cross Drainage work.

13.3.3 The Balance Sheet of the public works division will show the following information:

Liabilities	Amount	Assets	Amount
1. Programme Fund Control Account PIUs 2. Incidental funds generated from interest and net incidental receipts 3. Payables (a) Statutory Deductions from contractors/ Suppliers (b) Deposits repayable		1. Construction of new roads (a) In progress (Sch/F-53) (b) Completed (Sch/F-54) 2. Upgradation of existing roads (a) In progress (Sch/F-53) (b) Completed (Sch/F-54) 3. Roadside Plantation (a) In Progress (Sch/F-53) (b) Completed (Sch/F-54)	
4. Purchase-Suspense	4.	Roadside Sign Boards (a) In Progress (Sch/F-53) (b) Completed (Sch/F-54) 5. Advances to Contractors 6. Material Issued to Works 7. Stores and Stock 8. Material Issued to Contractors 9. Deposits with State Govt. and others (for past balances) Cash and Bank Balances 10. Cash in hand 11. Cash with Bank 12. Bank Authorisation 13. Impreset with Staff	

The Balance Sheet has separate schedules showing the expenditure on each work. The Schedule will also show, whenever required, activity wise expenditure. Thus, the total expenditure on each work can be known at the end of each month.

13.3.4 Externally funded projects:- For externally funded projects, the funding agency meets part of the expenditure. It requires a funds flow statement both for the projects it funds, and other projects. Therefore, the expenditure on the road construction will need to be divided into two parts: roads funded by the Funding Agency and other works. The balance sheet will reflect the expenditure on the roads funded by the funding Agency as separate line expenditure.

13.4 AUDIT

13.4.1 Statutory Audit:- The Comptroller and Auditor General of India (CAG) is the auditor for Government accounts. He also audits the accounts of bodies receiving grant or loan if the amount from Government of India and State is more than Rs. 25 lakhs and not less than 75 percent of its total expenditure [Section 14 (1) of the Comptroller and Auditor General (Duties, Powers and condition of Services] Act, 1971. Therefore, all the funds received by the State level Rural Roads Development Agency will fall in his audit jurisdiction.

The SRRDA will also appoint its own auditors from the panel of Chartered Accountants the CAG maintains for the audit of Government companies. The auditors may be appointed for not more than 3 years at a time, with the approval of the Executive of the SRRDA. It may be ensured that the Audited Accounts are approved by the General Body of the SRRDA by 30th September, and printed along with the Annual Report.

The PIUs will function as ex-officio officers of the SRRDA. Therefore, their accounts will form part of its accounts, and thus subject to audit by the CAG and the Chartered Accountants.

13.4.2 Internal Audit:- Internal audit can be entrusted to independent auditors. The SRRDA will appoint the independent internal auditors. The general methodology of the selection will be similar to that of selection of Statutory Auditors. The selection should be from a panel of auditors obtained from the office of the C&AG of India and approved by the State Government (Nodal Department).

13.5 ORGANISATIONAL SET-UP

At the central level, the NRRDA shall be responsible for the compilation of activity-wise progress reports of the PMGSY and the use of the funds.

At the State level, the SRRDA shall maintain the PMGSY accounts, prepare Balance Sheet, maintain ledger account of each PIU and reconcile each month the Bank account and PMGSY programme account. In order to install the new accounting system it is essential that each SRRDA have in place a Financial Controller and a Senior level Accountant having experience in works accounts. Each PIU should also have one Divisional Accounts Officer / Divisional Accountant.

13.6 PROCEDURE FOR RELEASE OF PROGRAMME FUNDS TO THE SRRDA

13.6.1 Since the PMGSY has adopted a Project approach where road works have to be completed within a stipulated time-limit, the cost of the projects for a State for each Phase of the PMGSY will be made available to the SRRDA in two instalments.

13.6.2 The first instalment amounting to 50% of the cleared value of projects, (for annual allocation whichever is lower) shall be released subject to fulfilment of conditions, if any, stipulated earlier.

13.6.3 Since the cost of only the contracted works have to be paid, the second instalment would be calculated on this basis, and would be equal to the balance due on the cost of the awarded works. Release would be subject to utilisation of 60% of the available funds and completion of at least 80% of the road works awarded in the year previous to the preceding year and 100% of the awarded works of all the years preceding that year, and fulfilment of other conditions, if any, stipulated while releasing the previous instalment. Works cleared and not awarded by the time of the 2nd instalment would be deemed as lapsed. Available funds will be the funds available with the SRRDA on 1st April of the Financial year (including interest accrued) plus the amount of the instalment released, if any, during the Financial Year.

13.6.4 The release of the second instalment in a year shall be subject to submission of the following documents:-

a. Utilisation Certificate for the funds released earlier, year-wise in the form prescribed.

b. Certificate by the Bank Manager indicating the balance amount on date of issue of the Certificate and the interest credited.

c. A Certificate regarding the requisite physical completion of works.

d. For all releases after October of a year, production of an audited Statement of Accounts and a Balance

Sheet and related Statements, duly certified by the Chartered Accountant for the accounts of the previous financial year.

e. Outputs of the relevant modules of the OMMS, duly certified by the SRRDA as being correct.

13.6.5 For the purpose of releasing funds, the State would be the Unit.

13.6.6 The estimation of expenditure and of completed road works will be based on data entered in the OMMS.

13.7. PROCEDURE FOR RELEASE OF ADMINISTRATIVE EXPENSES FUNDS

13.7.1 At the District level, the Programme will be co-ordinated, and implemented through a dedicated Programme Implementation Unit (PIU). All PIUs will be manned by competent technical personnel from amongst the available staff or through deputationists. In exceptional cases and with the prior approval of NRRD, Consultants may be engaged to build up or enhance capacity. NRRDA's Model documents shall be used for the purpose.

13.7.2 All staff costs will be borne by the State Government. The Pradhan Mantri Gram Sadak Yojana does not provide for any staff costs. However, the administrative and travel expenses of PIUs and SRRDA costs will be met to the following extent, with the State Government bearing any additional costs:

	Item	% of funds released
(a)	Admin. Expenses for PIUs	1.00%
(b)	Travel Expenses of PIUs	0.50%
(c)	Admin. & Travel Expenses (SRRDA)	0.25% (Rs. 25 lakh maximum)
(d)	Independent Quality Monitoring 2nd tier	0.50%

For this purpose:

(i) Administrative expenses shall, in addition to usual office expenses, include all expenses incurred in relation to the operation of the OMMS computers and their maintenance, including internet charges and data entry costs. Amounts paid on account of outsourcing of execution and management related functions may also be paid out of administrative expenses within the limits prescribed. However, expenditure on purchase of vehicles, payment of salaries & wages and purchase or construction of buildings is not permissible.

(ii) The amounts shall be released to the SRRDA along with programme fund releases. The SRRDA shall further allocate the amounts (by way of limits set by the Empowered Officer) in respect of sl.no.a) & b) to PIUs generally in proportion to the funds released to them, also keeping in view the actual pace of work and requirement in the PIUs.

(iii) In case works lapse or are dropped at a later stage, necessary adjustment will be made while releasing the next tranche of expenses.

(iv) Funds for the purpose will be kept in a separate account ('Administrative Account') operated in a manner similar to the programme account (see Para 18 of the NRRDA Guidelines Nov. 2004). State Government funds for administrative expenses and incomes of the Agency used for administrative purposes may also be kept in the same account, but no other funds shall be credited to the account nor shall the account be used other than for defraying admissible administrative, travel and quality monitoring expenses.

(v) The releases of administrative and travel expenses shall be dependent on:

- Continued updating of OMMS modules.
- Appropriate dedication of the PIU and its clear linkage to the SRRDA;
- Adequate institutional mechanism at the SRRDA level including nodal IT officer, State Quality Coordinator, Financial Controller and Empowered Officer.

13.7.3 No Agency charges will be admissible for road works taken up under this Programme. In case Executing

Agencies levy charges in any form, such as Centage charges etc., it would have to be borne by the State Government.

13.8 UTILISATION CERTIFICATE

13.8.1 From 2003-04 onwards, each State will be treated as one Accounting Unit since the funds were released to single account of the State. As such from 2003-04 onwards the requirements are:-

a. One Utilisation Certificate for the Programme Account and one single Utilisation Certificate for Administrative Account upto 31st March of each year.

b. An interest accrual Certificate for each of the 2 accounts and.

c. A certificate of closing balance in the accounts as on 31st March each year for each of the two accounts.

d. Audit Report of the year.

The format to be used for submission of the utilisation certificate of the programme and administrative expenses funds will be as specified from time to time.

CHAPTER 14

MAINTENANCE

14.1 INTRODUCTION

Road maintenance is a routine work performed to upkeep pavement, shoulders and other facilities provided for road users, as nearly as possible in its constructed condition, and at least at an adequate level of serviceability. Even with the highest possible quality of construction, maintenance is essential to get optimum service from the pavement structure during its life period. All pavements require maintenance as they are subjected to traffic and environmental effects. Maintenance helps in preserving the pavement surface, and thus postpones the need for costly investments in rehabilitation. Unsealed roads deteriorate at a faster rate compared to sealed roads and hence need greater attention; at the same time maintenance operations on unsealed roads are more easily done, particularly at community level. Maintenance requirements are dependent on traffic, terrain, soil type, climate etc. and it is possible therefore to devise management systems which optimise maintenance costs and maintenance efforts.

14.2 PMGSY PROVISION

As per Para 17 of PMGSY Guidelines, State Governments are required to undertake the maintenance of the entire Core Network, particularly the road works constructed/upgraded under the PMGSY. State Governments are required to develop sustainable sources of funding for undertaking the maintenance functions. In respect of roads constructed / upgraded under the PMGSY, as per the Standard Bidding Document, 5-year routine maintenance is contracted out along with the construction itself to the same contractor who is constructing the road. In respect of Through Route subjected to PMGSY investments a further 5-year maintenance on Zonal contract basis will need to be done as per para 17.3 of the PMGSY guidelines

14.3 SPECIFIC PROVISIONS IN RRM FOR ROUTINE MAINTENANCE

Maintenance operations during the period of 5 years shall be based on Chapter 11 of Rural Roads Manual (IRC: SP: 20:2002). Its specific provisions are:-

(i) Clause 11.2, which, explains the various types of distress/defects of pavements. For example, cracks, ravelling, rutting, pot holes etc.

(ii) Clause 11.3, which, defines different maintenance activities. For example, fog seal, bituminous surface treatment, etc.

(iii) Clause 11.4, which suggests planning of routine maintenance.

(iv) Clause 11.5 and Clause 11.6 (a), which, define preventive and corrective maintenance, and classify activities of routine maintenance and repairs.

(v) Clause 11.7, which, discusses in detail the assessment of defects and maintenance measures for sealed roads, roads with rigid / RCCP and Roads with special pavement.

(vi) Appendix 11.1of Rural Roads Manual lays down the periodicity of routine maintenance (attached as annexure-14.1)

(vii) Appendix 11.3, of Rural Roads Manual, covers the special problems of Road Maintenance in Heavy Rainfall / Snow fall areas (attached as annexure-14.2)

(viii) Appendix 11.4, of Rural Roads Manual, explains the nature of activities in maintenance of shoulders, drainage structures and causeways (attached as annexure-14.3)

14.4 SPECIFIC PROVISIONS IN STANDARD BIDDING DOCUMENT (SBD)

Clause 32: Correction of defects noticed during the Defect Liability Period and Routine Maintenance of Roads for five years

Clause 32.2.1: The Contractor shall do the routine maintenance of roads, including pavement, road side and cross drains to the required standards and keep the entire road surface and structure in defect free condition during the entire maintenance period which begins at completion and ends after five years.

Clause 32.2.2: The routine maintenance standards shall meet the following requirements:-

(i) Potholes on the road surface to be repaired soon after these appear or brought to his notice either during Contractor's monthly inspection or by the Engineer.

(ii) Road shoulders to be maintained in proper condition to make them free from excessive edge drop offs, roughness, scouring or potholes.

(iii) Cleaning of surface drains including reshaping to maintain free flow of water

(iv) Cleaning of culverts and pits for free flow of water.

(v) Any other maintenance operation required to keep the road traffic worthy at all time during the maintenance period.

Clause 32.2.3: To fulfil the objectives laid down in clauses 32.2.1 & 32.2.2 above, the Contractor shall undertake detailed inspection along with JE of the roads at least once in a month. The Engineer can reduce this frequency in case of emergency. The Contractor shall forward to the Engineer the record of inspection and rectification each month. The Contractor shall pay particular attention on those road sections which are likely to be damaged or inundated during rainy season.

Clause 32.2.4: The Engineer may issue notice to the Contractor to carry out maintenance of defects, if any, noticed in his inspection, or brought to his notice. The Contractor shall remove the defects within the period specified in the notice and submit to the Engineer a compliance report.

Clause 46.1: In case contractors quote low for maintenance activities, performance security for such activity should be obtained as security towards unbalanced bid.

14.5 ROUTINE MAINTENANCE AND REMEDYING DEFECTS DURING THE CONTRACT PERIOD OF FIVE YEARS

14.5.1 As per the provisions in the Standard Bidding Document the PMGSY roads shall be maintained by the contractors for five years from the date of completion of the work. During this period the Contractor shall carry out all routine maintenance works required to keep the road in good condition. The various work items for Routine Maintenance are listed below:

(i) Clearing/re-shaping of road side drains.

(ii) Pothole filling (WBM & BT).

(iii) Filling up edges of asphalt surface.

(iv) Dressing of berms, earth work on berms, rain cuts and dressing of earthen embankments, Turfing whenever necessary.

(v) Refixing displaced guard stones, White washing guard stones, parapets of CD works.

(vi) Fixing disturbed caution board / Village Name board / Speed limit board, etc.

(vii) White washing and Geroo painting of trunks of trees.

(viii) Cutting of branches of trees etc obstructing flow of traffic and line of sight, and cleaning wild growth on berms.

(ix) Topping of W.B.M. blindage including picking of loose metal.

(x) Maintenance of catch water drains.

(xi) Clearance and desilting of cross drains.

(xii) Making up the loss of profile (for gravel roads).

(xiii) Rectifying Corrugated Surface (for gravel and WBM Roads).

(xiv) Filling up local depressions, ruts, potholes and erosion control (for gravel and WBM Roads).

(xv) Regravelling (for gravel roads).

(xvi) Repairing damaged edges (for WBM).

(xvii) Rectifying revelled surface (for WBM).

(xviii) Periodic surface renewal (for WBM).

(xix) Painting of Km & Hecto stones, Logo & Sign Boards

As per PMGSY guidelines, the cost estimation of routine maintenance is required to be done at the time of preparation of DPRs, as such the estimates of every work shall be prepared in two parts. The first part of the estimate will cover construction of road, CDs and related works and the second part shall cover the estimates of routine maintenance for five years calculated separately for each year after the completion of work. Based on estimation of work to be carried out every year, a lump-sum amount will be worked out for every work every year and this lump-sum amount will be put into the BOQ at the time of tendering. The contractor will be required to quote rates in Lump sum only, for every year.

The estimates for routine maintenance shall be based on actual estimated requirements calculated on the basis of actual experience of routine maintenance of similar types of roads existing in similar conditions in the State. Norms for working out quantities of various items of maintenance activities shall not be lower than the norm prescribed in Annexure 14.4. The specifications of items of routine maintenance shall be as per "Specification of Rural Roads"-IRC, Aug-2004 and analysis of rates shall be based on the Standard Data Book.

14.5.2 Annexure 14.1 lists out these works and their periodicity. Annexure 14.5 gives the Guidelines for inspection of Rural Roads as part of maintenance activity.

14.5.3 Recognising that the present need for upgrading the Through Routes primarily arises out due to inadequate investments in planned and systematic routine maintenance and periodic renewal, maintenance of the assets created under the PMGSY, particularly the Through Routes should be given the priority it requires.

As such, for Through Routes the construction /upgradation part of which was funded out of PMGSY, as addition to the 5-year contracted routine maintenance at the end of this period, a **Zonal Contract** will be entered into, covering all the Through Routes in the District which have received PMGSY investments in that batch. The batch Zonal Contract would comprise an initial surface renewal on the Through Routes followed by 5- year of routine maintenance. The funding of the maintenance part will continue to be the responsibility of the State Governments.

14.6 ROLE OF DPIU DURING THE MAINTENANCE CONTRACT PERIOD

The DPIU is the authority for managing the maintenance contract for five years after completion of the construction of the road. For facilitating the maintenance operations, each road should be divided into Km stretches, and each Km should be sub-divided into 200 metres sections. The Junior Engineer shall inspect each Km of the road at least once in a month. The Assistant Engineer shall inspect the road at least once in three months, and the Executive Engineer shall inspect the road at least once in six months. One of the inspections of the Executive Engineer shall be before the monsoons and one after the monsoons.

During the above inspections, the Contractor's engineer shall be present. All defects such as potholes, berms needing dressing, clearing of road side drains and weeds, cross-drainage works and repairs for Road furniture should be identified, recorded and intimated to the Contractor. The supervisory staff shall ensure that the repairs are carried out as per specifications with due regard to quality control. Painting, whitewashing, colour washing of road furniture items at the specified periodicity must be got done through the Contractor. All

maintenance work shall be noted in a checklist in the routine inspection card attached with Annexure 14.6. A maintenance log book for each road under the Contract package shall be maintained. The date(s) of inspection, defect and deficiencies noticed during each inspection (recorded in the proforma of Annexure 14.6) and whether defects have been rectified or not shall also be recorded in the log book. The rectification of defects can be marked in different colour on to the routine Inspection Card (Annexure 14.6) for easy reference.

The DPIU shall verify every time the Contractor submits his bill whether the defects noted during the inspections have been rectified. If the Contractor has failed to carry out an item of work ordered, the DPIU shall withhold the payment of the bill in that month.

14.7 MAINTENANCE AFTER COMPLETION OF PMGSY CONTRACT

14.7.1 PMGSY roads are designed for a 10 year life. If quality of construction, proper maintenance and periodic renewal is ensured, subject to traffic considerations, PMGSY roads can give continued service provided maintenance is continued.

Para 17.1 of the PMGSY guidelines require the State Government to build up the capacity in the District Panchayats to maintain Rural Roads and to *devolve funds* and functionaries on to the Panchayats in order to be able to manage maintenance contracts for Rural Roads. To this end, PIUs may function as the technical agency to operationally manage the contracts, with the District Panchayat approving the contracting out of maintenance on a Zonal basis by prioritising the road works within the maintenance budget allocation. To enable this to be done, the PIU may:

(i) Prepare and submit to the SRRDA and the District Panchayat a detailed annual estimate of funds for proper maintenance of the Rural Core Network;

(ii) Apply a prioritisation criteria developed at SRRDA level Fig. 14.1 for allocation of the budgeted maintenance funds. The criteria would be based on the Pavement Condition Index (PCI) giving weightage to conditions like traffic and population. It is expected that Rural Through Routes would secure higher priority for maintenance funding.

14.8 MAINTENANCE PLANNING

The SRRDA shall implement a simplified Rural Road Maintenance system, which consists of a road condition survey (based on simple visual inspection), which yields a Pavement Condition Index (PCI). The flow chart for such a system is shown in Fig. 14.1.

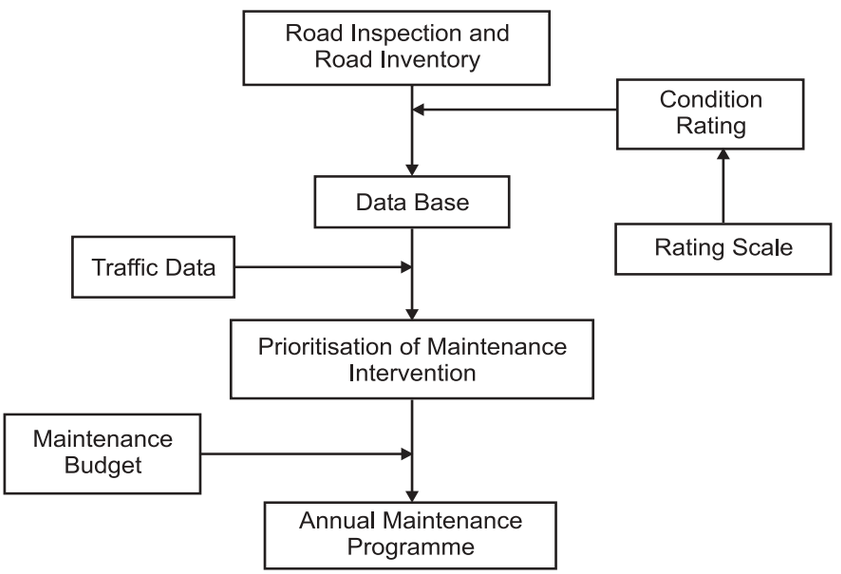


Fig. 14. 1. Flow Chart for Rural Road Maintenance Management System

14.9 PAVEMENT CONDITION SURVEY

Annexure 14.7 gives the Methodology for determining the Pavement Condition Index (PCI).

The PCI data is an integral part of the OMMS and the data will be included in the "Road Master" for each kilometre. The PCI data collected as per Annexure 14.7 will be entered in the OMMS data base by the PIU and a District wise output generated, copy of which will be furnished to the State Road Development Agency. Another copy will be supplied to the STAs for record. The proforma is given in Annexure 14.8

The OMMS software will incorporate provisions which enable selection of roads for upgradation from the short-list on the basis of the PCI.

The States shall get the PCI survey of the Core Network conducted once in 2 years immediately after the rainy season. Costs not exceeding Rs. 50 per km (except road lengths constructed under PMGSY for which PCI of 5 will be used) will be allowed for getting the PCI survey done and Rs. 10 per road for completing the Road Master in the OMMS (including surface nature, surface condition, population and facilities linked etc.). The PCI survey will be repeated every 2 years and prioritisation of roads for upgradation and or maintenance shall be redrawn accordingly.

14.10 MAINTENANCE PRIORITISATIONS

Given the scarcity of maintenance funds, the basic principle governing the application of routine maintenance funds is that these should be applied to those roads whose maintenance is in the greater public interest (Core Network Through Routes which generally have much more traffic) and which are manageable at relatively low cost i.e., which are presently in good condition. Accordingly, Routine Maintenance Priority List (RMPL) will be prepared at District level based on the following.

(a) The roads will include all Through Routes (or main Rural links) already included in the Core Network, at a higher priority.

(b) The roads in each District will be ranked according to the Pavement Condition Index (PCI). Subject to the overall availability of funds, roads of progressively lower PCI will be uniformly taken up in all Districts for inclusion in the list. For this purpose abstract of District-wise length of roads of each PCI will be prepared and fund allotment done generally in ratio of the road lengths of the PCI classes to which maintenance funding is to be applied. For this purpose, each District may compile and make available to the budgeting centre the information as follows:-

PCI class	Total length of TR/MRL	Amount required for routine maintenance

Total

(c) In case it is necessary a further sub-prioritisation will be done as follows on the basis of Average Annual Daily Traffic (AADT) which will need to be applied only in case if all roads of a particular class cannot be taken up for maintenance given the scarcity of resources.

PCI class	**Name of road**	Length	AADT	Amount required for routine maintenance

Sub total for PCI

(d) Subject to earmarking of maintenance funds on project basis e.g., World Bank aided projects, PMGSY maintenance contracts, etc., the divisible pool of maintenance fund will be distributed among the Districts in ratio of the total length of roads of the priority classes being taken up for maintenance. For example, if the maintenance funds allow roads upto PCI 3 and above to be taken up (though the funds may not be adequate to take care of all roads of that PCI value and further categorisation on basis of ADT may need

to be done) the total length of roads in each District upto value of PCI 3 would be worked out from the Core Network and maintenance funds would be divided in that ratio.

(e) The District RMPL will be got verified on the ground on sample basis through the STAs and the NQM system before it is processed for further approvals.

(f) After the District RMPL is prepared and verified, it shall be placed before the District Panchayat for approval; thereafter it shall be vetted by the State level Standing Committee (SLSC).

14.11 STATE MAINTENANCE FUND

The approved and vetted RMPL would be basis for undertaking routine maintenance. In order to operationalise the system, routine maintenance funds will need to be placed in a separate 'Maintenance Fund' with the State Autonomous Agency and the PIUs responsible for rural road construction activities would operate the Fund in a manner identical to the PMGSY programme fund.

14.12 MAINTENANCE OPERATIONS

Routine maintenance operation will be carried out on the basis of maintainance prioritisation and taking into account the availability of funds with the State. However, it must be ensured that the execution of various maintenance activities is carried out as per "Specifications for Rural Roads". States with a comprehensive Rural Road Maintenance System already in place may continue with the present practice in consultation with NRRDA.

Annexure-14.1
(See Para 14.5.2)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Periodicity of Routine Maintenance Activities

S. No.	Name of Item/ Activity	Frequency of operation in one year
1	Restoration of rain cuts and dressing of berms as per clause 1902 of the Specifications.	Once generally after rains (In case of areas having rainfall more than 1500 mm per year, as and when required).
2	Making up of shoulders as per clause 1903 of the Specifications	As and when required.
3	Maintenance of Bituminous surface road and/ or gravel road and/or WBM road including filling pot holes and patch repairs etc as per clause 1904, 1905 and 1906 of the Specifications.	As and when required.
4	Maintenance of drains as per clause 1907 of the Specifications	Twice (In case of hill roads as and when required).
5	Maintenance of culverts and cause ways as per clause 1908 and 1909 of the Specifications	Twice (In case of hill roads as and when required).
6	Maintenance of road signs as per clause 1910 of the Specifications	Maintenance as and when required. Repainting once in every two years.
7	Maintenance of guard rails and parapet rails as per clause 1911 of the Specifications	Maintenance as and when required. Repainting once in a year.
8	Maintenance of 200 m and Kilo Meter stones as per clause 1912 of the Specifications	Maintenance as and when required. Repainting once in a year.
9	White washing guard stones	Twice
10	Re-fixing displaced guard stones	Once
11	Cutting of branches of trees, shrubs and trimming of grass and weeds etc as per clause 1914 of the Specifications	Once generally after rains (In case of areas having rainfall more than 1500 mm per year, as and when required).
12	White washing parapets of C.D. Works	Once

Annexure: 14.2
(See Para 14.3)

Ref: Appendix- 11.3 of the Rural Roads Manual

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Special Problems of Road Maintenance in Heavy Rainfall/Snowfall Areas

i) Major problems for maintenance of roads in heavy rainfall areas in hilly terrain include landslides, drainage failure, soil erosion and damage to pavements. The maintenance regime required for up keep of the roads will be similar to the type of activities for normal roads, but with higher intensity of effort and monitoring.

ii) Proper drainage of rainwater and snowmelt and protection of land surface should be the focus of activities for prevention of landslides. Erosion of soil from both above and below the road formation must be controlled. Prevention of deforestation of hillside, maintenance of slope stability, through turfing, plantation, terrace benching, catch water drains, avoidance of excessive blasting and protective measures like toe wall, retaining walls, breast walls, etc. are some of the recommended measures for prevention of soil erosion and landslides.

iii) Landslides that occur on rural roads will have to be removed manually using minor hand tools as major earth moving equipment like dozer; shovel, etc. are not likely to be available for rural road maintenance. Proper care should, however, be taken to ensure that the workers are not exposed to the threat of fresh slides. A watchman should be posted to constantly monitor the behaviour of the hill above and to warn the workers of the possibility of a fresh slip coming down.

(iv) Snowfalls in the high altitude areas can also cause landslides, avalanches destruction to protective structures, pavement damages, etc. besides the blockage to traffic and reduction in worker efficiency. The main effort in clearance of snows should be to open a minimum track to enable to traffic to move.

(v) The side drains and the CD structures should also be cleared to enable drainage snowmelt. The avalanche prone areas should be identified and camping of commuters and stoppage of the traffic near such areas should be prevented.

Annexure: 14.3
(See Para 14.3)
Ref: Appendix- 11.4 of the Rural Roads Manual

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Maintenance of Shoulders, Drainage Structures and Causeways

1. MAINTENANCE OF SHOULDERS

1.1. Properly built-up and well maintained shoulders provide lateral support to the pavement. The slow moving vehicles, like, bullock carts or hand driven carts tend to ply over the shoulders. The shoulders are also used for parking of vehicles.

1.2. The shoulders shall be kept free from obstructions, like, logs, shrubs, deep cuts, boulders, etc. The wild growth on them shall also be removed from time to time. In hill roads located in high rainfall zones, the overgrowths on the hillsides and the valley side must be cleared twice a year, at least once before the onset of winter. The extent of clearance area should be enough to provide six hours of sunshine to the road surface during fair weather. It must, however, be seen that the roots of the grass are not removed, so that rains hitting on the exposed surface do cause erosion and induce landsides. The debris of leaves, branches and stems of the cut trees shall be cleared form the drain, pavement and the shoulder of the road, removed beyond the road edge on the valley side by at least 2 m. The shoulders should be kept flush with the pavement edge and then given slightly steeper slopes than the pavement to facilitate effective draining of rainwater flowing across the pavement. The shoulders shall be maintained by filling moorum or sand and scrapping the heaved-up portion wherever necessary.

Since the shoulders also form part of the body of the road, they shall be kept free from encroachments.

2. MAINTENANCE OF ROAD FURNITURE

2.1. Traffic signs are the principal means of conveying information about the road to the road users. Signs which are erected at proper places and which are in good condition free from any obstruction can be properly understood and they inspire confidence in the minds of the road users. Damaged, missing or obliterated signs shall be replaced promptly. The signs shall be inspected and cleaned at least twice a year. At the junctions of two or more roads proper information boards or information pillars giving information about various destinations would be of immense help. They shall preferably be located at least 200 m ahead of the junctions to guide the road users.

2.2. Guard rails, guard walls, parapets of bridges, guard stone delineators, etc. shall also be maintained properly. If they are damaged due to moving vehicles, the same shall be repaired or replaced promptly.

2.3. Kilometre/200-metre/boundary stones shall be painted twice in a year. The wild growth along the kilmetre/ 200-metre boundary stones, which obstructs the visibility, shall be removed. Delineators and header stones on the curves shall be properly painted and kept in good condition to guide the driver properly at these locations.

3. MAINTENANCE OF CROSS DRAINAGE STRUCTURES

3.1. Structures are provided for effective drainage of runoff water etc. It is, therefore, essential that the cross drainage structures shall be maintained effectively and it shall be ensured those drainage elements, waterways remain free of obstructions and retain their intended cross-sections and grades. They must function properly so that surface water and ground water can drain freely and quickly away from the road or under the road. Water is the worst enemy of every road element. It can erode soil, weaken the pavement and subgrade, and destroy shoulder and slope, even wash out cross drainage structures or bridges.

3.2. The parapet, railing, guard stone etc, of the CD work should be repaired if broken. These should be properly painted for improving visibility during night.

3.3. In the following paragraphs maintenance of mainly culverts and causeways is discussed as these are usually used as cross drainage structures on rural roads.

3.4. Inspection: Inspection of drainage system and structures shall be a routine task. If it is not possible then the inspections should be carried out at least on four occasions. Firstly before onset of monsoon, Secondly, during monsoon particularly after first flash floods, Thirdly after heavy floods, and Fourthly after monsoon.

3.4.1. Inspection before monsoon: Following points shall be inspected:

(i) Waterway is clear and not blocked by debris or silt

(ii) Settlement cracks in foundations or in superstructure

(iii) Cracks or damages in pavement

(iv) Guide stones are properly fixed and pointed

(v) Warning signs are placed on both sides of cross drainage structures giving clear warning that when water is flowing above the guide stones, vehicle shall not cross the cross drainage structure

(vi) Approaches are in sound condition and there is no erosion

(vii) Debris arrestors if provided are properly fixed.

3.4.2. Inspection after first flash flood: It is generally observed that during first flash flood or during next two, three spells, there is substantial load of floating debris along with flood water. If the vents are not of sufficient opening, then waterway is blocked by the debris and water starts flowing on approaches or by breaching the adjoining road sections. It is, therefore, essential to remove this blocked debris from pipe vents or waterway immediately so that there will be minimum damages in subsequent floods. In view of this, close and repeated inspections are essential during rainy season.

3.4.3. Inspection after heavy floods: During heavy floods, causeways are generally over topped. This results in heavy damages to pavement, approaches as well as scouring on down streamside of structures. In some cases there is breaching of approaches. All these points shall be closely inspected after every heavy flood, so that timely protective measures can be taken.

3.4.4. Inspection after monsoon : Once the monsoon season is over, the structures shall be inspected closely for any damage, any heavy silting or scouring to pavement, damages to guide stones etc. Repairs to these damages shall be carried out promptly.

4. MAINTENANCE OF CULVERTS

4.1. Defect: Silting, Sanding and Blockage by debris

If a culvert structure is constructed too low, resulting in deposition of silt or sand, vegetation or floating debris gets blocked in vents of culvert. Blockages of waterway lead to ponding and heading up of floodwater, which results in over flooding the embankment. This damages the embankment or causes breaching in roadway. Slopes of bed shall be corrected by Nalla training properly: Debris arrestors shall be provided on upstream side so that floating debris will not enter the vents and there will be no blockage of vents. It is also comparatively easy to clear the debris from arrestors.

4.2. Defect: Erosion of Streambed on Downstream Side

Due to flowing water or overtopping of water from culvert, the downstream side bed sometimes gets eroded. Due to heavy scouring, the foundations of headwalls are also exposed and endangered. Due to steep slope of bed or vents or due to inadequate waterway, the velocity of flowing water increase on downstream side and results in erosion below headwall, wing walls or even approaches. This may result in collapse of headwall or wing walls in due course of time. Protection work to the bed with properly designed apron at downstream side shall be provided. Also adequate waterway shall be provided.

4.3. Defect: Settlement Cracks in Masonry Structure

Settlement of foundations takes place due to weak founding strata. If the settlement is negligible then the damages can be checked and repaired. But, if the settlement is major in nature, then reconstruction of structure will be only the remedial measure.

5. MAINTENANCE OF CAUSEWAYS

5.1. Defect: Cracks in Paved Surface

Settlement of fill below pavement, dislocation of stones in stone set pavements, scouring of filler material due to eddy currents. Damaged area shall be opened, refilled and compacted properly and then pavement shall be re-laid. In case of stone pavements, dislocated stones shall be refixed properly. If there is scouring below fill, then it shall be sealed properly so that there will be no damage due to eddy current.

5.2. Defect: Blockage of Vents Due to Debris

Floating debris block the vents. Debris arrestors shall be provided on upstream side.

5.3. Defect: Damages Due to Overtopping of Water

Structure is not properly designed or provision of inadequate waterway or inadequate protection measures. The geometry of the structure shall be properly designed. Water way shall be provided in such a way that it shall effectively pass at least 20 per cent of high flood discharge. The Road Top Level shall be properly protected with pitching on upstream and downstream side as well as at top of formation extending upto high flood level. If possible RCC Wearing Coats must be provided.

5.4. Defect: Damages to guide stones, information boards

Due to flood water or due to vandalism such damages are experienced. Guide stones, information boards, and kerb stones shall be a replaced promptly. If neglected, when the pavement gets submerged during floods, the edge of pavement can not be seen, more over if guide stones are missing, the depth of water on road top level can not be judged. This may result in serious accidents.

6. MAINTENANCE OF DRAINAGE FEATURES

For proper upkeep of drainage features, maintenance should take care of the following:

Camber: A proper camber needs to be maintained for surface water. Whereas it is found improper or inadequate, corrective measures need to be taken. In case of unsealed roads, blading, grading and shaping may be required. For sealed roads, a profile corrective courses may be provided on the existing surface.

Shoulder and Side Slope : The shoulder on both sides should have required outward slope starting from the edge of pavement. Also, side slope is to be maintained at the end of shoulders, especially on high embankments.

Longitudinal Drainage : A lined or unlined longitudinal drain provided in a rural road,as the case may be, shall be cleared of any accumulated debris. The blockage of the drains by silting also may be cleared regularly.

Annexure- 14.4
(See Para 14.5.1)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Norms for Routine Maintenance activities during the Contract period of 5 years.
(Refer para 14.5.1)

A) Quantity for the relevant item(s) for filling up of pot holes shall be dependent upon the average annual rainfall & volume of Commercial Vehicles.

- *Factor on the basis of annual average rainfall.*
  High : More than 1500mm mean rainfall per year and hilly roads.
  Medium : Between 500mm to 1500mm mean rainfall per year.
  Low : Less than 500mm mean rainfall per year.

	Rainfall		
	High	**Medium**	**Low**
I Year	1%	0.5%	-
II Year	2%	1.0%	0.5%
III Year	3%	1.5%	1.0%
IV Year	4%	2.0%	1.5%
V Year	5%	2.5%	2.0%

For I and II Year percentage of the BT surface area only to be taken.

For III, IV and V Year percentage of the BT surface area and WBM top layer to be taken.

- In addition to this Multiplying Factor of Traffic Intensity (TI) shall also be considered in obtaining the quantity.

  Low - Multiplying Factor of 1 with TI up to 15 commercial vehicles per day.

  Medium – Multiplying Factor of 1.25 with TI between 15 to 45 commercial vehicles per day.

  High – Multiplying Factor of 1.5 with TI more than 45 commercial vehicles per day.

B) Making up of Berms/ Shoulders, stripping excess soil from the shoulder surfaces to achieve the required level etc.:

	Rainfall		
	High	**Medium**	**Low**
I Year	15%	10%	7.5%
II Year	18%	12%	9.0%
III Year	21%	14%	10.5%
IV Year	24%	16%	12.0%
V Year	27%	18%	13.5%

Percentage area of the Berms to be taken and multiplied by the Multiplying Factor considering the Traffic Intensity (TI) as given in the item of pot holes.

C) Restoration of berms, restoration of rain cuts with soil, moorum, gravel etc.

Rainfall			
	High	**Medium**	**Low**
I Year	7.5%	6.0%	5.0%
II Year	9.0%	7.2%	6.0%
III Year	10.5%	8.4%	7.0%
IV Year	12.0%	9.6%	8.0%
V Year	13.5%	10.8%	9.0%

Percentage area of the berm to be taken with an average depth of 0.30 metre.

The quantity is to be multiplied by the Multiplying Factor considering the Traffic Intensity (TI) as given in the item of filling up of potholes.

D) For items such as White washing guard stones, Refixing displaces guard stones, Clearance of CD works and White washing parapets of CD works. Approximate quantity may be accessed as per the DPR.

E) For item such as White washing and Geroo painting of trunks of trees, Cutting of branches of trees, Clearing of wild seasonal growth on berm etc. The quantity may be accessed as per actual requirement at site.

F) For remaining item quantities shall be considered based on the basis of actual experience of routine maintenance of similar type of roads existing in similar locations.

Annexure-14.5
(See Para 14.5.2)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
GUIDELINES ON INSPECTION OF RURAL ROADS FOR MAINTENANCE

1. Frequency

The minimum frequency of inspections for condition of road is suggested in Table 1.

Table 1 : Frequency of inspections

Sl. No.	E.E.		A.E.		J.E.	
	Routine	Special	Routine	Special	Routine	Special
1.	Twice in a year (April & October)	Before and after monsoons	Once in two months Jan. March May July Sept. Nov.	Before and after monsoons Twice during rains	Once a month	Every week

The inspection should be carried out not only to check the conditions of works but also for planning future strategies. Senior officers should make it a point to note and communicate the instructions to the subordinates. While on inspection, the senior officer should go through the notes of Junior colleagues and make suitable suggestions so that inspections are meaningful.

2. DUTIES

The duties of Junior Engineer (JEs), Assistant Engineers and Executive Engineers are as follows :

2.1. Duties of JEs

(i) Inspection and supervision of works as per prescribed norms

(ii) Reporting observations to higher authorities

(iii) Preparing estimates for repairs after conducting condition surveys of road

(iv) Reporting about closure of road/ obstructions due to any of the following reasons :

  (a) Over topping/ breach

  (b) Landslides

  (c) Earthquake

  (d) Accident

  (e) Any other reason (specify)

(v) Arranging for removal of obstructions, dead animals and other debris lying on the road

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

2.2. Duties of Assistant Engineers

(i) Inspection and supervision of works

(ii) Reporting observations with suggestion for remedial action to higher authorities

(iii) Getting estimates prepared and checked after conducting surveys and site investigations

(iv) Reporting about heavy rainfalls 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.

2.3. Duties of Executive Engineers

(i) Inspection and recording of observations

(ii) Planning and finalizations of nature of maintenance activity e.g. surface renewal, repair to CD works etc.

(iii) Arranging men, materials and machinery in advance as per requirements

(iv) Finalising action on reports of Assistant Engineers and also on safety measures, diversion in case of breaches and flood damages

(v) Coordination with various agencies like traffic police, local administration, publicity media etc., in case of emergent repairs, interruption to traffic by road blockage, etc.

(vi) Initiate steps for finalizing permanent restoration work.

3. Identification of Defects

It is important to identify and locate the defects of surface, shoulders, side drains and cross drainage during the inspection of the road by various officers.

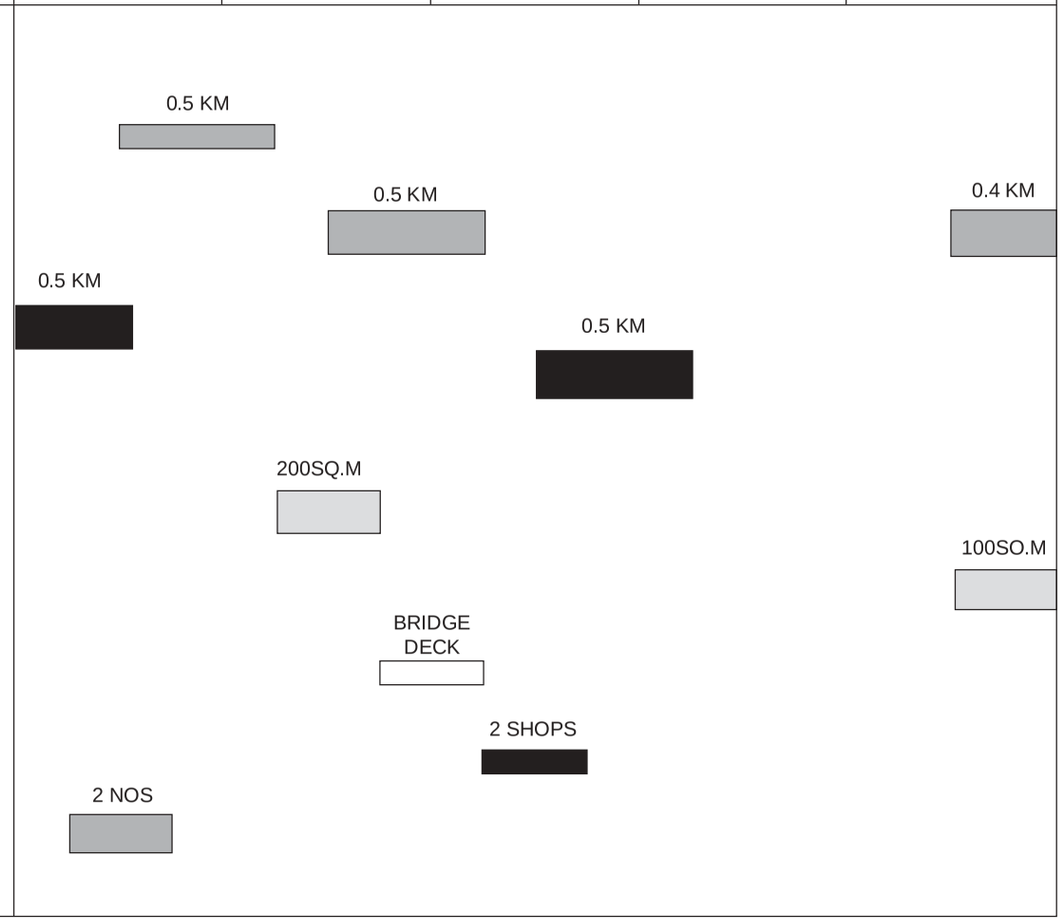
PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
ROUTINE INSPECTION CARD (RECORDING FORMAT)

Name of District **Contract Package No.** **Road Code No.**

RECORDED BY_____ **Date:**

AE/ JE

Sl.No.	PARTICULARS ACTION TO BE TAKEN		KM - 100				KM - 101				KM - 102				KM - 103				KM - 104			
			.2	.4	.6	.8	.2	.4	.6	.8	.2	.4	.6	.8	.2	.4	.6	.8	.2	.4	.6	.8
1.	**SIDE DRAIN**																					
	RESECTION	R																				
	FILL SCOUR HOLE / CLEAR SITE	L																				
		R																				
		L																				
2.	**SHOULDER & SLOPE**																					
	CORRECT CAMBER	R																				
		L																				
	FILL POT HOLES	R																				
		L																				
	FILL EROSION CUTS	R																				
		L																				
	FILL RAIN CUTS	R																				
		L																				
3.	**CARRIAGE WAY**																					
	(i) FILL PATCHES																					
	(ii) FILL POT HOLES																					
	(iii) GRIT FOR BLEEDING																					
	(iv) RENEWAL NEEDED																					
4.	**C.D. WORKS**																					
5.	**ENCROACHMENTS**																					
	DETAILS	R																				
		L																				
6.	**ROAD FURNITURE**																					
	(i) MISSING BOARDS																					
	(ii) Km, STONES																					
	(iii) REPAIRABLE BOARDS																					
	(iv) PAVEMENT MARKING																					



REQUIRING URGENT ACTION

REQUIRING SPECIAL ATTENTION

REQUIRING RECURRENT ATTENTION

REQUIRING ROUTINE ATTENTION

Annexure-14.7
(See Para 14.9)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)

Methodology for determining the Pavement Condition Index (PCI)

1. Background

The measurement of the condition rating of Rural Roads can be done by several methods. Automated equipment like Bump Integrator are perhaps more accurate but given the huge length of the network and the fact that the condition rating is used as a qualitative and relativistic parameter as rather than as a quantitative parameter in the context of the investment resource scarcity, simple and low cost methods may be used to initiate a Pavement Management System. Once the system stabilises and the utility of the condition rating becomes more important, it may be appropriate to switch over to more intensive and accurate measurement methods. Accordingly 3 simple, low cost methods are suggested for the present, which can be done by the PIU staff without much equipment.

2. Methods suggested

(i) *Measurement based on Visual Inspection only*

An experienced engineer can rate the PCI by visual inspection of the pavement for each kilometre, a Pavement Condition Index (PCI) of 1 to 5 is adopted, as under:

Description of Surface Condition	**PCI**
Very Good	5
Good	4
Fair	3
Poor	2
Very Poor	1

(ii) Based on Riding Comfort

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

Riding Comfort @ 50 km/hr.	**PCI**
Smooth and Pleasant Ride	5
Comfortable	4
Slightly Uncomfortable	3
Rough and Bumpy	2
-Dangerous	1

(iii) 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

3. Determination of PCI for a Road

In order to get the PCI of the road, the arithmetic mean of the condition assessed for each km is taken if the kilometre-wise PCI is varying within a small range. However, if the variation of PCI is large from section to section of the road under consideration, the road is to be divided into homogeneous sections and the arithmetic mean of PCI is taken for each section.

Annexure 14.8
(See Para 14.9)

PRADHAN MANTRI GRAM SADAK YOJANA (PMGSY)
Proforma of Output of PCI Data for Each Road on OMMS

Name of Road	TR/LR/ MRL*	Code# in CN	Length	Name of the habitations connected	Population served	Year of Construction	Year of last periodic renewal (PR)	Amount spent on routine maintenance since PR	Type of pavement	Km#	AADT**	PCI	Date of PCI

* MRL-Main Rural Link (In case TR is not a rural road)

** If already done(can be done separately)

CHAPTER 15

ROAD SAFETY

15.1 BACKGROUND

The traffic on most existing earthen tracks and substandard existing links consists mainly of bicycles, some two-wheelers, some animal-drawn vehicles and a few agricultural tractors. The construction of new links to hitherto unconnected habitations and upgradation of existing links will generate a considerable amount of motorised traffic on Rural Roads.

The sudden influx of high speed motorised vehicles to the rural roads can severely endanger the safety of road users, particularly of vulnerable road users like children (going to the schools), women carrying headloads of agricultural produce, cyclists etc. The problem gets aggravated because all the road users utilise the same narrow road width of a single lane, where crossing and overtaking becomes very difficult. Moreover, drivers of agricultural tractors, jeeps, light commercial vehicles, two-wheelers and buses in the rural areas are not always given to adequate observance of driving rules and traffic signs. It is thus expected that as the rural roads get constructed and upgraded, road safety will be an issue requiring serious consideration. When accidents do take place, trauma care and other facilities available in hospitals of towns and cities are not within the easy reach of the accident victims. Under these circumstances, preventive measures, both engineering and social, must be taken up to the extent feasible.

15.2 ENGINEERING MEASURES IN THE DESIGN PHASE

Incorporating appropriate safety design standards and features in the rural roads can enhance road safety to a great extent. In view of the lower levels of education in the rural areas, the engineering of roads to constrain users to follow safe driving and behavioural standards may be necessary to Supplement Cautionary Sign-board. Some of the engineering measures that should be in-built into the design of rural roads are enumerated below. These issues should also be considered at the time of the transect walk (See chapter 5) so that the local community alerts the engineers at design stage itself to local traffic and pedestrian movement patterns that may have road safety implications.

- Rural roads have to necessarily have a tortuous path, keeping in view the narrow land width available. All the same, the horizontal curves should be designed scientifically, conforming to the selected design speed and terrain. The horizontal curves must be provided with smooth transition curves and super-elevation. The pavements should be widened at curves.
- The vertical profile of the road should be designed such that the required minimum stopping sight distance is available. Suitable summit and valley curves should be provided.
- In hill roads, blind curves are a safety hazard. Suitable vision berms may be cut at such locations.
- Passing places must be provided at convenient locations particularly on hill roads.
- The provision of rural connectivity leads to the introduction of bus services. Properly designed bus-bays must be provided at bus stop to ensure that the buses do not hamper the normal traffic.
- Where the roads pass through habitations and school, it is necessary that the motorized vehicles travel at low speeds. This can be ensured by providing adequately designed road humps or rumble strips.
- The junction of rural roads with a main road is always a point of conflict and an accident-prone zone. Such junctions must be designed scientifically by providing minimum turning radii, flaring of the side road with taper, acceleration/deceleration lanes and adequate sight distances.
- Ramps must be provided where field paths and cattle crossings intersect the road.

- Traffic signages, incorporating warning and regulatory signs, can enhance road safety, especially near habitations and school zones, sharp curves, narrow bridges, junctions, submersible bridges and causeways. The design must incorporate these.
- Hazard markers like reflectorised delineaters must be provided at dangerous locations.
- Submersible bridges and causeways should be provided with water depth gauges and guide-posts that shall remain at all times above the highest water level.
- 300mm dia ducts should be provided in the embankment to enable cultivators to thread agricultural wise pipes for irrigating their fields lying on both sides of the road.

15.3 SAFETY DURING CONSTRUCTION OR MAINTENANCE OPERATIONS

Construction zones create an environment where the road user is confronted with sudden obstacles and unfamiliar conditions. Safety in construction zones must be enhanced by:

(i) Warning the road users (in the appropriate language) clearly and sufficiently in advance

(ii) Providing safe and clearly marked lanes for guiding road users

(iii) Providing safe and clearly marked buffer zones and work zones

- Barricades, drums, traffic cones, cylinders and signs around work zones
- Flagmen with red flags positioned to regulate and warn the road users.
- Using construction machinery carefully and parking such machinery at locations where they are not traffic hazards.
- Stacking construction materials such that only the quantity needed for one operation is stacked along the road, and obstruction to road users is minimised.
- Providing well designed temporary diversions as necessary so that the essential traffic moves with the least hindrance. The Contractor shall be asked to provide these as part of his work. The bidding document and specifications shall elaborate these requirements.

15.4 ROAD SAFETY DURING USE

The Head of PIU will be the District Rural Roads Safety Officer (DRRSO). To ensure operational safety the DRRSO shall ensure that

- Routine maintenance of rural roads are regularly carried out.
- All safety issues out of maintenance inspection are properly addressed.
- In all cases of accidents and inquiry/investigation thereof, safety issues are resolved, and a report is made to the SQC for examination whether standard design features need to be incorporated in other rural roads.
- All resolutions of Panchayats regarding safety issues are acknowledged and action proposed/taken intimated to the Panchayat.
- Road safety awareness camps are organised involving Panchayats, School, Rural road users (inhabitants as well as drivers), in accordance with programmes drawn up by the State Quality Coordinator.

The State Quality Coordinator will be the State Rural Road Safety Officer and shall ensure:

- Adequate coordination with the State Road Safety Council and road safety programmes.
- Formulation of rural road safety awareness programme proposals (for funding under PMGSY).
- Implementation and coordination of rural road safety awareness programmes in the field.
- Hold quarterly meeting with DRRSO and take feedback for improving safety standards.

15.5 INSTITUTIONAL ARRANGEMENT

In order to enhance road safety, coordination shall be maintained with the Road Safety Mission of the MORT&H. At the State level, SQCs and DPIUs shall ensure coordination with the State Government's Road Safety Programme, in particular through membership of the State Road Safety Council and District Road Safety Committees, created as per provisions of Section 215 of the Motor Vehicles Act, 1988 (Act No. 59 of 1988). For this purpose, the SQC may be nominated to the State Road Safety Council. For each district, the Executing Agency shall designate the Head of the DPIU or a senior engineer as the District Rural Road Safety Officer (DRRSO). The State Government shall nominate the DRRSO to the District Road Safety Committee. The State Government shall also nominate the Panchayati Raj Institutions designated to take over maintenance to the District Road Safety Committee. As part of the Rural Road development and maintenance programmes, the State Government shall ensure road safety audit of construction and maintenance works along with quality monitoring.

CHAPTER 16

IMPLEMENTATION RESPONSIBILITY

The PMGSY programme encompasses a wide range of activities and its success depends on the clear allocation of responsibilities at various levels. Table 16.1 lists out some of the key activities and identifies the officers/ organisations responsible for the implementation. The process for each activity has already been detailed out in each of the respective Chapters.

TABLE-16.1

Activity	**Officer/ Organisation Responsible**
Data collection, inventorying and condition survey	Head of PIU*
Preparation of Master Plan/ Core Network	Head of PIU*
Incorporation of suggestions of MPs and MLAs	Head of PIU*
Scrutiny of Master Plan/ Core Network	1. District Planning Committee 2. District Panchayat
Approval of Master Plan/ Core Network	
● at State Level	State Level Standing Committee
● at Central Level	NRRDA
Preparation of CNCPL /CUPL	Head of PIU*
Preparation of Annual Road List	State Nodal Agency
Allocation of funds among States	MORD
Distribution of State's allocation among districts	Nodal department in the State/SRRDA
Preparation of Project Proposals for each year	Head of PIU
Approval of Annual proposals	Distt. Panchayat
Clearance of Project Proposals	
● at State Level	SRRDA and State Level Standing Committee
● at Central Level	Empowered Committee, MoRD
Survey, Investigations, Design	Head of PIU*
Approval of drainage structures 15-25m	S.E.
Preparation of DPR	Head of PIU*
Technical Scrutiny of DPR	State Technical Agency
● Data Entry on OMMS	PIU
Compilation and forwarding of DPRs	SRRDA

15% Sample Scrutiny and submittal of proposals for clearance of EC	NRRDA
Technical Sanction	C.E / Designated Technical Officer of Executing Agency
Prepare NIT Documents	Head of PIU
Sample check of NIT	NRRDA
Advertise and Receive Bids	Head of PIU /SE/CE/SRRDA
Evaluate Bids and Decide on Award	As per State practice
Employer for Contract	As per State practice
Engineer for Contract	Head of PIU
Contract Management	Head of PIU*
Certification of Bills and Payments	Head of PIU*
Preparation of Progress Reports and Monitoring	Head of PIU*, Nodal Agency
Quality Control	
1st Tier	Head of PIU*
2nd Tier	SQC of SRRDA
3rd Tier	NRRDA
Analysis of NQM/SQM Reports	NRRDA/ PTA
Overseeing the Quality Monitoring System	State Quality Coordinator
On-line Management System	IT Nodal Officer of SRRDA / IT Division of NRRDA
On-line Accounting System	Financial Controller SRRDA/ Accounts Officer PIUs

* Head of PIU to allocate responsibilities to his subordinate Technical Officers depending on jurisdiction, with a fixed time frame for completion of activity.

Notes / Corrections / Slips

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